











*Chas. J. Stone*

*8/18/24*

VOLUME XXXV, NUMBERS 2 & 3

TRANSACTIONS

OF THE

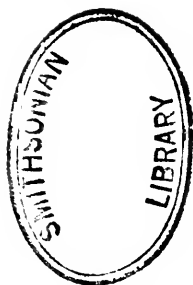
AMERICAN

ENTOMOLOGICAL SOCIETY



PUBLISHED BY THE AMERICAN ENTOMOLOGICAL SOCIETY AT THE  
ACADEMY OF NATURAL SCIENCES,  
PHILADELPHIA.

SUBSCRIPTION PRICE FOUR DOLLARS PER VOLUME.





by Insects  
U.S. Nat. Mus.

**The Robber-flies of America, north of Mexico, belonging to the Subfamilies Leptogastrinae and Dasypogoninae.**

BY ERNEST A. BACK, PH.D.

OF THE

MASSACHUSETTS AGRICULTURAL COLLEGE, AMHERST, MASS.

INTRODUCTION.

This contribution to our knowledge of the Asilidæ (Robber-flies) of America, north of Mexico, is the result of several years of more or less interrupted study at the Insectary of the Entomological Department of the Massachusetts Agricultural College, under the direct supervision of Doctors Charles H. and Henry T. Fernald, and forms a portion of a thesis for the degree of doctor of philosophy. It is an attempt to place before those interested in the Asilids of our country a single paper by the aid of which the identification of these interesting flies may be greatly facilitated.

The writer first became interested in the Asilidæ about six years ago when, on the departure of Mr. Geo. F. Babb, who had been working upon this family, the work was placed in his hands. Mr. Babb's original plan was a paper on the genus *Asilus*, sensu lat., and as a foundation, he had just completed the translation of the description of all the Asilidæ then known north of Mexico, when he was called away from the college. Through the lack of time and material in *Asilus*, it was decided to limit the work of Leptogastrinae and Dasypogoninae of America, north of Mexico, although the unique Cuban genus *Sphageus* and the Mexican *Archilestris*, have been included.

There are herein given the description of one hundred and ninety-four species and thirty-six genera, exclusive of those unrecognizable species referred by the older writers to the genus *Dasypogon*, which will be listed at the end of the paper. Of these, one genus, *Willistonina*, and twenty species are new. So far as has been possible, the type of each genus, and the location of the specific types, has been given at the end of each

generic and specific description respectively. Whenever it was not possible to obtain material of species, translations from the original description, were they in other than the English tongue, have been used, or were such in English, direct copies made; but in either case full credit given. In many instances, such as the most excellent and reliable descriptions of Baron Osten Sacken and Dr. S. W. Williston, the writer has preferred, even when he has had an abundance of material before him, to use the original description in quotation marks rather than attempt the most difficult task of improving them; such, for example, as Baron Osten Sacken's description of many *Cyrtopogon* species, specimens of which have not been taken since the original descriptions were made. *No description, however, of the type material of either Loew or Osten Sacken, and of most of that of Williston, has been used until it had been previously compared with the type itself, a fact which should make the description more reliable.*

In the preparation of this paper, the valuable Loew and Osten Sacken type collections, the translations above referred to, the most praiseworthy work of Dr. S. W. Williston, and Aldrich's Catalogue have proved indispensable. Up to this time almost no illustrations of North American Dasypogoninae have been published except the line drawings of Dr. Williston in the Transactions American Entomological Society of Philadelphia, and a half-tone plate by Dr. L. O. Howard in his Insect Book, Plate XIX. In this paper, each genus, with few exceptions, has been illustrated by an enlarged photograph of one or more species, and it is hoped that these will be of no small aid in the identification of genera.

The division of the family into four subfamilies, Leptogastrinae, Dasypogoninae, Laphrinae, and Asilinae has been retained. The table of genera is based upon that of Dr. Williston in the first edition of his Manual of North American Diptera, but has been revised in several ways. It is hoped that the reference in the table to the illustrations of the different genera will be of assistance. Keys to the species of the genera have been added whenever it has been feasible. Some trouble will be experienced in the identification of the species of

*Deromyia*, *Stenopogon*, and *Cophura*, especially of the last two, due, in the one case to variation, in the other to an assemblage of what the writer believes to be a somewhat heterogeneous collection of species.

Terms used are fully explained in Smith's Glossary of Entomology. The Schiner system of nomenclature for the wing venation has been used.

The writer wishes to express his gratitude to Doctors Charles H. and Henry T. Fernald for the many ways in which they aided and guided him in his work, to Prof. C. W. Johnson for his continued interest and assistance for the start, to Dr. S. W. Williston for valuable suggestions and that liberality so encouraging to a new worker, to Mr. D. W. Coquillett for assistance in very many ways, to Mr. Samuel Henshaw for the privilege of several times studying the Loew and Osten Sacken type collections in his charge at the Museum of Comparative Zoology of Harvard University, and to Dr. L. O. Howard, Dr. H. Skinner, Mr. W. Beutenmüller, and Mr. C. Schaeffer for the privilege of study at the National Museum, American Entomological Society of Philadelphia, American Museum, and the Brooklyn Institute, respectively. The writer also wishes to express his obligations to those who have made this paper more complete by the gift and loan of type and other material. Although this material has been secured through Dr. H. T. Fernald, who has kindly assumed all responsibility, as to the one most benefitted, I wish to thank most heartily, besides all the above-mentioned gentlemen, Dr. F. H. Snow, Dr. E. P. Felt, Prof. R. A. Cooley, Prof. J. M. Aldrich, Prof. F. Sherman, Jr., Prof. C. P. Gillette, and many others who have been of assistance in a similar way.

#### SYSTEMATIC WORK.

Linnaeus in the tenth edition of his *Systema Naturae* placed all the Asilidæ in the genus *Asilus*. Scopoli, in 1763, erected the genus *Erax*, and in 1803 Meigen, in *Illigers Magazin*, divided the Asilidæ into the genera *Dasyopogon*, *Leptogaster*, *Laphria*, and *Asilus* L. The *Asilus* of Meigen's classification included *Erax* of Scopoli. This Meigen classification was ac-

cepted by Fabricus, Wiedemann, Say, Macquart, Walker, and only a few genera were added up to the time when Loew began his memorable work upon this family.

Loew laid the real foundation for thorough work upon the Asilidæ in his monograph "Ueber die Europäischen Raubfliegern (Diptera Asilica\*)," supplemented by him in many later publications, especially in the "Bemerkungen über die Familie de Asiliden\*\*" and "Die Dipteren Fauna Süd Africa's,†" Schiner's "Fauna Austriaca,‡" "Die Wiedemann'schen Asiliden,||" and "Neue oder wenig bekannte Asiliden des K. zool. Hofcabinets in Wien,§" are as a whole rendered invaluable as a survey of all the genera of Asilidæ down to 1866, and for the analytical keys for their identification.

The foregoing mentioned works deal wholly or largely with species foreign to this country. While Say, the first American to work upon this family, and several foreign writers, described a few species from this country, Loew and Osten Sacken were the greatest contributors to our present knowledge of the Lepetogastrinæ and Dasypogoninæ, up to the time when Dr. Williston began his studies. Although Osten Sacken has described many less species than Loew, his untiring efforts in getting together collections from this country for Loew to study should not be undervalued. It is to the credit of his foresight that the types of Loew's North American species were deposited in the Museum of Comparative Zoology. Loew published his works chiefly between the years 1862-1874. Perhaps one can get the best idea of the amount of work done by these two gentlemen from the fact that at the time Osten Sacken published his Catalogue in 1878, of the 115 species from the territory covered by this paper, Loew had described 62.6%, and Osten Sacken 19.1%; thus making a total of 81.7% as the result of their labors. When we consider that the types of all these species are now at the Museum of Comparative

\*Linn. Ent., Vol. II, III, IV; Suppl. in Vol. V (1847-1851).

\*\*Berlin, 1851.

†Berlin, 1860.

‡1862-64.

||Verh. Zool. Bot. Ges., 1866.

§Verh. Zool. Bot. Ges., 1867.

Zoology, together with 11.3% additional species of other authors recognized by these gentlemen, we can judge how valuable a service Osten Sacken rendered American dipterologists in securing the return to this country of the material he sent to Loew for study. Of the genera for the same time and territory, 72.4% were erected by Loew, and 27.6% by Meigen, Wiedemann, Macquart, Jaenicke, and Phillipi.

Of American writers Dr. Williston stands forth as the first to do thorough systematic work upon the Asilids, and his publications in the Transactions of the American Entomological Society and in his Manual, are of great value, and have been very useful in the preparation of this paper. The work of Mr. D. W. Coquillett and Prof. C. W. Johnson, while given more to description of new forms, is indispensable. These three gentlemen have added nearly sixty new species and five new genera; of the latter, three are those of Dr. Williston, and one each of Mr. Coquillett and Prof. Johnson.

#### COLLECTIONS.

The best collection of Leptogastrinæ and Dasypogoninæ is the type collection of Loew and Osten Sacken now at the Museum of Comparative Zoology of Harvard University. The specimens, with few exceptions, are in good condition. The collections of the National Museum and of the American Entomological Society of Philadelphia are very good and growing, while those of the American Museum and Brooklyn Institute, though at present less in extent, contain valuable material. The collection of the Massachusetts Agricultural College contains several types, homotypes, and metatypes. The writer has never had the privilege of seeing the collection of the University of Kansas, but as this contains all the material worked on by Dr. Williston, together with his numerous types, it cannot fail to be most valuable. Of private collections, that of Prof. C. W. Johnson, Curator of the Boston Society of Natural History, is very good, and for systematic study takes a very high rank. Besides these, the collections of the New York State Museum, and of the Colorado and North Carolina Experiment Station, are worthy of mention.

## CREATION OF NEW SPECIES.

It goes without saying that great care should be exercised in the creation of new species. This is especially so in the genera *Deromyia*, *Stenopogon*, and *Cyrtopogon*. There will always be in any large collection of the genera specimens that cannot be identified with any degree of certainty, either because of a limited amount of material or on account of poor condition. For the proper identification both sexes in good condition should be had and pains should be taken in collecting to carefully label all species, and to keep the sexes together. Descriptions of new species, based on a single or several females, especially when in poor condition and belonging to *Stenopogon* and *Cyrtopogon*, are an abomination to future work. It would be far better to allow the material to wait until more specimens are at hand, even if one has to forego the pleasure of creating new species. Exceptions to this are found in forms so striking from the standpoint of size, coloration or habitat that they would be recognized easily in any collection. No one should attempt to describe new species in these genera without a good series of the already described species before him.

## CHARACTERS OF THE ASILIDÆ.

Predaceous species of moderate to large size, though sometimes very small, usually more or less elongated in form, in some cases very hairy, almost always bristly, the bristles usually conspicuously strong. Head flattened, usually broader than high, though sometimes quite narrow and when so less flattened, separated from the thorax by a freely movable neck. Vertex usually distinctly depressed between the eyes, in a few instances scarcely so; eyes in both sexes separated, rarely nearly contiguous above; three ocelli present, situated on a more or less rounded tubercle usually on the vertex. Antennæ porrect, simple, composed of three segments, the third usually more or less elongate, sometimes shorter and more oval, with or without a terminal style, the style sometimes thickened and forming one or two apparent antennal segments. Proboscis never elongate, firm and horny, adapted for piercing, directed forward or forward and downward; palpi

composed of one or two segments; labella not fleshy. Abdomen composed of eight distinct segments, only rarely apparently of six; the hypopygium usually prominent. Legs strong, bristly, of moderate length, rarely somewhat elongated, tarsi usually strong; empodia bristle-like, the pulvilli rarely vestigial. Tegulae small. Wing when at rest lying parallel over the abdomen; basal cells long; two or three submarginal, and five, rarely four, posterior cells present; first and fourth posterior cells and the anal cell open or closed.

#### EXTERNAL ANATOMY.

*Head.*—The hypognathous head is moderately large, usually broader than high, and quite disciform but sometimes as in *Stenopogon* and *Ospriocerus* much thicker and about as high as broad. The large compound eyes extend from the top of the head to the oral margin and occupy from two-thirds to nearly all (*Leptogaster*) the anterior aspect of the head, and extend over the sides to the occiput so that the cheeks are greatly, or quite, reduced. The eyes may be equidistant throughout, or widely divergent above and below (*Townsendia* and *Stichopogon*), more or less contiguous above only in *Plesiomma*. The faucets may be scarcely or considerably larger in the central region adjoining the facial margin.

The face in profile may be slightly convex (*Habropogon*), straight and hardly perceptible (*Taracticus*), convex (*Microstylum*), but very frequently more or less gibbose, the gibbosity extending evenly up in the front (*Ceraturgis*), greatest in the middle (*Myelaphus*), or confined to the oral margin (*Psilocurus*); an antennal protuberance (*Dioctria*, *Myelaphus*, and *Dicolonus*) sometimes occurs to make the profile more complex. The face varies in width from proportionately very broad (*Lyphystia* and *Holcocephala*) to very narrow (*Leptogaster*); the facial orbits may be parallel or nearly so (*Taracticus*) or divergent below (*Stichopogon*). The oral margin, the lower edge of the face, is nearly straight or well arched, dome shaped, according to the absence or presence of a facial convexity.

The front, like the face, presents much variation. It may be very narrow and of equal width (*Leptogaster*), very much widened above (*Townsendia*), or strikingly narrowed above so that the eyes approach a condition of contiguity found in no genus but *Plesiomma*. In *Townsendia*, the front and vertex occupy a large portion of the upper part of the head. The vertex is usually well depressed and the ocellar tubercle, bearing the three ocelli, quite prominent.

The mouth parts form a stout, firm, horny proboscis without fleshy labella at the tip. It may be very short (*Holcocephala*), or comparatively long (*Microstylum*). The palpi are of variable length but never prominent, single jointed in the Leptogastrinæ and Asilinæ, two jointed in the Dasygogoninæ and Laphrinæ.

The antennæ present many characters of generic and specific importance; of these one may obtain a fair idea by referring to Plates III and IV. The variations in size, shape, and clothing, are too numerous to receive special attention at this point. In general, the antennæ are divided into three distinct segments; the third segment distally with or without a terminal style or bristle. The two basal segments are always comparatively short, cylindrical, sometimes more rounded; the third is usually longer than the basal two taken together, and presents a considerable variety of form. The style present in nearly all the genera, may be distinctly separated from the third segment, or hardly so (*Holcocephala* and *Dioctria*); it may be long and slender (*Holopogon*), stout and short (*Psilocurus*), or greatly elongated and apparently forming distinct antennal segments (*Ceraturgus*). With few exceptions, under the compound microscope, the style will be found to be two-jointed, usually the basal segment being very short and the second segment long and slender (*Nicocles*), or the opposite may be true (*Stichopogon*), while again both segments may be short and stout (*Laphystia*). The terminal segment of the style may bear a terminal bristle of its own (*Laphystia*) or a lateral bristle (*Ceraturgopsis*).

The head, as the rest of the body, is variously clothed with bristles and pile, and the ground color is more often obscured



by a bloom upon the face, front and occiput. The face may be bare except for bristles or hairs upon the oral margin, called the mystax; or it may be densely pilose as in a species of *Cyrtopogon*, and every gradation between these conditions may be found. The clothing between the mystax and the antennæ is called the vibrissæ. The front may be pilose as in species of *Holopogon*, but more usually bare except for pile or bristles along the orbits and upon the ocellar tubercle. The occiput is variously clothed with bristles and hairs. The bristles along the orbits on the occiput are called the occipito-orbital bristles. The lower outer orbits of the eyes and the base of the proboscis may be variously clothed with pile and stiff hairs.

*Thorax* (Plate II, fig. 2).—The mesothorax is by far the most prominent part of the thorax, the pro- and metathorax being greatly reduced. The prothorax is naturally divided into two parts, the slender more or less elongated portion which articulates with the head and which may be termed the neck, and the larger posterior portion articulating with the mesothorax which may be called the collar. The neck joins the head at the center of the occiput which permits a very free movement of the latter. The collar is distinctly separated from the mesothorax behind by a suture, less distinctly so on the sides; the anterior margin of the pronotum is usually strongly elevated and well clothed with bristles or hairs. The prothorax in such species as belong to the genera *Holopogon* and *Holcocephala* is greatly reduced.

The mesonotum occupies the greater part of the dorsum of the thorax, and is usually well arched, reaching its greatest development in this respect in *Holcocephala*. It extends back to and includes the scutellum from which it is separated by a suture. On either side, before the insertion of the wings is a suture extending upward, being nearly or quite obsolete on the dorsum, the transverse suture. The anterior superior angles are called humeri; and the posterior superior angles, to the side and above the scutellum, are called in this paper, the posterior callosities. The mesonotum is separated from the pleuræ by the dorso-pleural suture. From before the insertion

of the wings running downward is a more or less indistinct suture, bending to the rear on the lower portion of the pleura, the mesopleural suture, dividing the mesopleura and the sternopleura before, from the pteropleura and the metasternum behind. About midway between the dorsopleural suture and the coxæ, the mesopleural suture gives off a branch suture running forward, the sternopleural suture, separating the mesopleura above, from the sternopleura below. Immediately above the halteres and below the scutellum is a rounded area, the metanotum, usually pruinose; before the halteres there is an ill defined area, somewhat swollen, and often with a fan-like fringe of hair or bristles, the hypopleura. Between the hypopleura and the mesopleura, and between the insertion of the wings and an indistinct backward directed branch of the mesopleural suture is the pteropleura. The metasternum and the metapleura are ill defined and occupy the remainder of the lower posterior portion of the thorax, and are not referred to in the descriptions.

The clothing of the thorax presents too numerous variation to receive full attention here. In species of *Holcocephala* (Pl. XI, figs. 5 and 6) it is without bristles or noticeable pile, in some species of *Cyrtopogon* (Pl. VIII, fig. 1) it is rather densely pilose, but in a larger percentage of species there will be found an irregular line of either well-developed bristles or hairs extending from the dorsopleural suture before the insertion of the wings backward and upward to above the posterior callosities, on the posterior callosities, posterior margin of the scutellum, and sometimes on the humeral angle as well. Usually when these bristles reach their fullest development, as in species of *Ospricerus*, *Microstylum*, and *Dermomyia*, the mesonotum is clothed with very short, more or less microscopic, stiff hair (Pl. VII, fig. 5) and the prothorax is strongly armed with bristles. This is not always the case. In species of *Stenopogon* (Pl. XII, figs. 1 to 3) there may be a great development of bristles and hairs upon the lateral and posterior portions; in *Lestomyia* the bristles are arranged in four rows running longitudinally along the mesonotum from the pronotum to the scutellum; again, the pile may be almost

scale-like and strongly appressed as in species of *Ablautus*, or it may, as in *Cophura fallei* and *Stenopogon jubatus*, form an erect crest extending from the pronotum to the scutellum along the middle line. The pleura, in the more bristly species, is nearly destitute of pile and bristles; however, bristles or hair, or both, are found usually upon the hypopleura, and frequently varying amounts of pile, never bristles, upon the meso- and sternopleura. The scutellum may be wholly bare, with bristles on the posterior margin, wholly pilose, or with both pile and bristles. The ground color of the thorax, as is often that of the abdomen, is more or less obscured by the presence of a bloom which plays an important part in descriptive work.

*Abdomen.*—The abdomen is composed of eight segments and is firmly united to the metathorax by its full width; it presents many variations in form, being usually long and slender (*Deromyia* and *Microstylum*), sometimes much shorter and broader (*Pycnopogon* and *Laphystia*), in most cases slightly tapering toward the tip, but in the male of *Nicocles* distinctly expanding from the base of the third segment to the tip of the fifth, and distinctly flattened dorso-ventrally distally. The eight segments are easily discernible in most cases; the seventh and eighth in the male *Nicocles* not apparent from above, but from the side are seen partially retracted within the sixth; in *Laphystia* and *Psilocurus* the terminal segments are apt to be retracted and are seen with difficulty. The second segment, near its base, bears a distinct groove bordered by two rows of punctate spots which at first glance appear to divide the segment. The male *hypopygium* is of little value at present in the separation of genera; in most genera the several parts are closely applied to each other, but in *Ceraturgus*, *Ceraturgopsis* and *Sphageus*, they do not meet, but are so separated as to give the end of the abdomen a "broken-off" appearance. The female ovipositor is usually armed with a terminal circlet of spines; in *Laphystia*, *Tricles* and *Psilocurus* these are not apparent. The abdomen is variously clothed with pile and bristles; the pile may be microscopic, leaving the surface apparently bare to the unaided eye, or it may be

very dense and sometimes in tufts as in some *Cyrtopogon* species; the bristles when present are usually confined to a small area on the sides of the first, or first and second segments, though sometimes present on the posterior margin of the first segment, but in the *Laphystia* and *Psilocurus* bristles may be found on the sides of the following segments as well, although such bristles are usually less prominent and shorter.

*Wings*.—The wings are quite large, usually strong, and while usually rather narrow are sometimes much broader, as in *Holcoccephala* species; in length they usually equal that of the abdomen, though in many species of *Stenopogon* are considerably shorter. In color they vary from pure hyaline to deep black, sometimes spotted, and again wholly or in part milky white.

The Schiner system of vein and cell nomenclature has been adopted. For the distribution of the veins and cells see Pl. II, Fig. 1, and compare with wings shown on the half-tone plates following. Five posterior cells are usually present, but in *Townsendia*, the anterior intercalary vein is lacking, thus reducing the number to four. The marginal cell is always open, but in *Laphystia* and *Tricilis* is so nearly closed that question has arisen in the past whether these genera do not more properly belong to the Laphrinæ. Dr. Fr. Hermann,\* by a series of careful drawings, has shown that this cell is open to considerable variation and has clearly demonstrated the intermediate position of these genera between Dasyopogoninæ and Laphrinæ. This view has been held by Dr. Williston. The submarginal cells are always open, as also are the posterior cells with the exception of the first and fourth, which may be open or closed; the anal cell may be either closed or narrowly open. The closure of the first posterior, and often the fourth also, is a matter of considerable variation, even within the same species, or even the same specimen. The fourth posterior seems more stable in this respect, but in such a genus as *Saropogon*, is found to vary to a considerable extent. Sometimes the upper surface of the wings, especially in *Deromyia*, bears areas of microscopic pubes which have been used occasionally in the separation of species. The alula is comparatively small.

\* Beitrag zur Keuntris der Asiliden, Ber. Ent. Zeit., Band L. '05; p. 31.

*Legs.*—The legs are comparatively long and stout, but show variation in robustness in different genera. As a rule they are well armed with bristles and pile; too variously so to receive attention in this regard here. In some of the more delicate species the legs are clothed with hair-like bristles, but in all of the larger, strong flying species, the bristles are stout and strong. The coxæ are always well developed and their basal articulations with the body are close together; the fore pair are ordinarily heavily clothed with bristles or hair on the anterior side, the posterior pairs less so on the outer and lower sides. The trochanters are easily distinguished but very small. The three pairs of legs vary little from each other in general size and shape; the posterior femora are often slightly more robust, and in some species of *Leptogaster* often extremely attenuated proximally and distally prominently swollen, characteristics not possessed by the anterior pairs or by the usual Asilid femur. The tibiæ are of nearly equal length with the femora, for the most part slender but stout; but the hind pair may be characteristically swollen as in species of *Holopogon* and *Holcocephala*, and the fore pair in such genera as *Deromyia*, armed on the inner side with a terminal claw-like spur (Pl. II, fig. 3; Pl. VI, fig. 3). The tips of the middle tibiæ are usually armed with bristles directed downward (Pl. II, fig. 4). In *Chrysoceria* and *Callinicus* they possess two prominent bristles not only directed downward, but distinctly inward as well (Pl. II, fig. 5; Pl. VI, fig. 6).

There are five tarsal segments, the first noticeably longer than the fifth, and called the metatarsus. In species of *Holopogon* and *Holcocephala*, the hind metatarsus is unusually enlarged. The fore tarsi are sometimes noticeably elongate as in several species of *Cyrtopogon*, the last tarsal segment bears two strong curved claws, between which there is a well developed bristles-like spine, the empodium, except in two species of *Leptogaster* where it is vestigial. The two pulvilli, leaf-like appendages beneath each claw, are well developed, about three-fourths as long as the claws, and usually of a pale color; they are vestigial in the species of *Ablautus* and *Leptogaster*.

## SECONDARY SEXUAL CHARACTERS.

Striking examples of secondary sexual characters in the form of beautifying pile and bristles appear in male of the genera *Ablautus*, *Cyrtopogon*, and *Heteropogon*. So far as is known, the fore tarsi of all the males belonging to *Ablautus* are clothed above with short appressed white pile and on the sides with longer black bristles. The males of several species of *Cyrtopogon* and *Heteropogon*, in addition to similar pile upon their fore tarsi, possess brushes on their middle legs. In *Cyrtopogon*, this brush (Pl. VIII, fig. 1) is formed of black bristles arranged on the last two tarsal segments; in *Heteropogon*, of black and white bristles on the anterior side of the tibiæ above the middle (Pl. X, fig. 5). The same males of *Heteropogon* are still further distinguished by a patch of black bristles in the anterior side of the middle femora.

## SEXUAL COLORATION.

Difference in coloration between the sexes is not very general among species included in this paper. In *Saropogon* where the male is black, the female shows a decided tendency toward reddish. In the cases of *Saropogon combustus* Loew, and *abbreviatus* Johnson, this difference leads to the creation of new species for the female. The females of *Dizonias* are strikingly different in coloration from their males, in that they are reddish with golden abdominal bands, while the males, varying from black to black and red, have white pruinose abdominal bands. The male of *Deromyia discolor* Loew is black, the female reddish yellow. In some species in which the male has spotted wings as *Cyrtopogon bimacula* Walker, the female does not possess these spots, or at the most, only traces of them. Females, whose males possess wings tinged with milky whiteness, either throughout, as *Microsylum galactodes* Loew, or in the anal angle, as *Stenopogon californiæ* Walker and *Dioctria albius* Walker, have wings showing no trace of this color.

TABLE OF SUBFAMILIES.

Palpi with one segment; antennæ with a slender terminal style.....	2.
Palpi with two segments; antennæ with or without a thickened terminal style, very rarely with a terminal arista.....	3.
Marginal cell of wing open; very slender species.....	LEPTOGASTRINÆ.
Marginal cell of wing closed, less slender or robust species.....	ASILINÆ.
Marginal cell of wing open or rarely closed at extreme tip.	
	DASYPOGONINÆ.
Marginal cell of wing closed.....	LAPHRINÆ.

**LEPTOGASTRINÆ and DASYPOGONINÆ.**

TABLE OF GENERA.

1. Fore tibiæ with a terminal claw-like spur (Pl. II, fig. 3).....	32.
Fore tibiæ without a terminal claw-like spur.....	2.
2. Four posterior cells present, front very broad above; very small species.....	<b>Townsendia.</b>
Five posterior cells present (Pl. II, fig. 1).....	3.
3. Pulvilli vestigial or wanting.....	4.
Pulvilli normal.....	5.
4. Third segment of antennæ with an arista or aristiform style; abdomen unusually long and slender (Pl. VI, fig. 1).	
	<b>Leptogaster.</b>
Third segment of antennæ with a short thickened style; abdomen not unusually long or slender (Pl. XII, fig. 4).....	<b>Ablautus.</b>
5. Head narrow, about as high as broad (Pl. V, fig. 3); face narrow above, broader and swollen below, in large part covered with hair; medium to large elongate species.....	6.
Head very obviously broader than high (Pl. V, fig. 1).....	7.
6. Antennæ with a terminal style (Pl. III, figs. 2, 3 and 4).	
	<b>Stenopogon.</b>
Antennæ without a style*; third segment long; fourth posterior cell closed before the border of the wing; black species, with or without red or yellow on the abdomen (Pl. VII, fig. 5; Pl. III, fig. 7).....	<b>Ospriocerus.</b>
7. Fourth posterior cell closed before the borders of the wing (Pl. II, fig. 1).....	8.
Fourth posterior cell open, rarely nearly closed (Pl. X, fig. 5).....	15.
8. Antennæ much elongate, apparently of five segments (Pl. IV, figs. 2 and 3).....	16.
Antennæ not elongate, composed of three segments, without a terminal style.....	9.
9. Face bare except on oral margin.....	10.
Face pilose or hairy, more convex.....	11.

(\*)*Ospriocerus diversus* Williston (Mexican) has a small style.

10. Anterior intercalary vein continuous or nearly so with the fourth vein, the last section of the latter oblique, closing or much narrowing the broad first posterior cell (Pl. VI, fig. 4).

**Microstylum.**

Last section of the fourth vein continuous with the preceding section, the first posterior cell not closed or narrowed (Central and South America).....**Archilestris.**

11. Abdomen cylindrical, elongate, male genitalia never meeting to close the anal opening; third antennal segment elongate..12.

Abdomen less elongate, more flattened with five or six white pruinose (interrupted or entire) cross bands..... 13.

12. Fore and middle femora on the underside with a patch of short, very stout bristles; third antennal segment without an excision on the inner distal half (Cuban) .....**Sphageus.**

Femora without such patches of bristles; third antennal segment with an excision on the inner half; near the proximal margin of the second and third abdominal segments with a white or yellowish pruinose emarginate cross band (Pl. VII, fig. 2; Pl. VIII, fig. 3).....**Dizonias.**

13. Scutellum with two or four stout bristles; veins at the outer ends of the discal and fourth posterior cells parallel or nearly so (Pl. IX, fig. 4).....**Psiloenus.**

Scutellum without stout bristles; sometimes densely pilose or with weaker hair-like bristles forming a fringe on the posterior margin, or with both..... 14.

14. First posterior cell wide open, scarcely narrowed; face broad (Pl. V, fig. 6), vertex deeply excavated; style of antennæ thick, distinctly two-jointed (Pl. IV, fig. 1).....**Laphystia.**

First posterior cell closed or nearly so; face narrower, more protuberant below; scutellum with a fringe of weak bristles (Pl. IX, fig. 3).....**Tricilis.**

15. Antennæ elongate, composed of 5 segments; nearly bare species...16.  
Antennæ less elongate or short, composed of three segments with or without a short or slender style.....18.

16. First segment of antennæ about three times the length of the second, third elongate, the fourth and fifth of nearly equal length; third and fourth segments at tip with two lobes or processes, reaching to about the middle of the following segment (Pl. X, fig. 3) .....**Myelaphus.**

First and second segments of nearly equal length, the third elongate, fourth short, the third and fourth segment not lobed at tip (Pl. IV, figs. 2 and 3)..... 17.

17. Terminal segment of antennæ short, rounded, naked, on the outer side with a projection bearing a short, forward directed bristle (Pl. VII, fig. 6) .....**Ceraturgopsis.**



- Terminal segment of antennæ elongate, and densely microscopically pubescent (Pl. VII, fig. 1)..... **Ceraturgus.**
18. Style of antennæ short, thick, obtuse, not easily distinguishable from the third segment, or if so forming apparent joints; antennæ more or less elongate..... 19.  
Style of antennæ small, more slender than the third segment, apparent; antennæ usually shorter..... 21.
19. Nearly bare species; face flattened, bare, except below, small or rather small species, polished or metallic black, with narrow or cylindrical abdomen and large wings..... 20.  
Thickly or rather pilose species, the bristles few and hair-like; antennæ inserted on a convexity, the facial profile thence receding to the tubercle which is situated upon the lower part of the face; abdomen moderately stout; head narrow (Pl. IX, fig. 2)..... **Dicolonus.**
20. All the tibiæ and hind femora with short strong bristles (Pl. VIII, fig. 6)..... **Echthodopa.**  
Hind femore without such bristles (Pl. IX, fig. 8)..... **Dioctria.**
21. Face distinctly swollen in profile, usually gibbose..... 22.  
Face flattened, or gently convex..... 23.
22. Usually thickly pilose species (\*); the gibbosity of the face reaches to the base of the antennæ; anal cell usually open (Pl. VIII, fig. 1; IX, 1, 7; X, 6)..... **Cyrtopogon.**  
Thinly pilose, more pruinose species, the convexity of the face confined to the lower part; anal cell usually closed (Pl. IX, fig. 6)..... **Lasiopogon.**
23. Bristles of mesonotum arranged in distinct rows, see **Metapogon.**  
Bristles not so arranged..... 24.
24. Abdomen elongate; front broad anteriorly, narrowed behind (Pl. VI, fig. 5)..... **Plesiomma.**  
Front not narrowed behind..... 25.
25. Hind tibiæ toward the tip and their metatarsi much thickened, 26.  
Hind tibiæ not, or but slightly, thickened toward the tip; their metatarsi not thickened..... 27.
26. Head much broader than high, transverse "goggle-like" (Pl. V, fig. 4); abdomen short, wings large (Pl. XI, fig. 6).  
**Holocephala.**  
Head only moderately broader than high, not at all spectacle-like in appearance (Pl. V, figs. 5) (Pl. XI, figs. 1, 2).  
**Holopogon.**
27. Style of antennæ long and slender, at least one-half as long as the slender, tapering, third segment; quite stout species... 28.  
Style of antennæ not one-half as long as the third segment and stouter than above..... 29.

(\*) For exceptions, note Pl. IX, fig. 1, and Pl. X, fig. 6.

28. Abdomen with thick recumbent pile above; very thickly pilose species, in typical species the pile forming dense tufts on the sides of the abdominal segments (not so in *P. cirrhatus*) (Pl. X, fig. 8) ..... **Pycnopogon.**  
 Less pilose species (Pl. X, figs. 4 and 5)..... **Heteropogon.**
29. Front noticeably more widened above (Pl. V, fig. 7); middle tibiæ without two terminal inwardly directed spines (Pl. II, fig. 4).....30.  
 Front not widened above; middle tibiæ with two terminal inwardly directed spines (Pl. II, fig. 5)..... 31.
30. Front unusually widened above and much excavated; bristles of thoracic dorsum when well developed two or three on each side, one before the transverse suture, the other one or two on the posterior callosity; third antennal segment rather elongate (Pl. X, fig. 7)..... **Stichopogon.**  
 Front not unusually widened above; bristles on the lateral margins and posterior callosities of thoracic dorsum and on the scutellar margin numerous and well developed; third antennal segment short and broad; species much resembling *Stenopogon* in general appearance (Pl. VII, fig. 3).  
**Willistonina.**
31. Large elongate reddish species, with deep brown wings (Pl. VI, fig. 2)..... **Callinicus.**  
 Smaller species with cylindrical abdomen; black, with bright golden opaque pruinose markings on thorax and abdomen, legs mostly yellow, wings nearly hyaline (Pl. VI, fig. 6).  
**Chrysoceria.**
32. Face bare with bristles on the oral margin, in profile straight or concave, the oral margin most prominent..... 33.  
 Face convex below, the oral margin not prominent, more or less covered with hair.....34.
33. Fourth posterior cell closed a considerable distance before the margin of the wing (Pl. IX, fig. 5).....**Deromyia.**  
 Fourth posterior cell open or closed in the margin (Pl. VII, fig. 4).  
**Saropogon.**
34. Third segment of antennæ more or less dilated, the style very short, the thoracic dorsum when viewed from before with four longitudinal rows of long bristles, one each on either side of the median stripe and on the lateral margins (Pl. X, fig. 1) ..... **Lestomyia.**  
 Third segment of antennæ slender, elongate..... 35.
35. Abdomen finely punctate; the third segment of antennæ quite elongate, notched on the upper side near the middle and there bearing a forward directed spine (Pl. III, fig. 6).  
**Taracticus.**  
 Abdomen smooth, not finely punctate ..... 36.

36. Abdomen flattened, in the female a little broader beyond the middle; in the male very flat, much broader near tip (Pl. II, fig. 8), seventh and eighth retracted within the sixth and not visible from above; the fifth and sixth segments above conspicuously silvery and bearing on each side five distinct punctures (Pl. X, fig. 2) ..... **Nicoles.**  
 Abdomen not at all expanded as above (Pl. XI, figs. 3, 4; VIII, 5).  
**Cophura.**

## LEPTOGASTRINÆ.

The Leptogastrinæ in America, north of Mexico, is represented by the single genus *Leptogaster*.

## LEPTOGASTER.

(Pl. VI, Fig. 1.)

*Leptogaster* Meigen, Illig. Mag., II, 269, 1803.

"*Asiles tipuloides*," Latreille, Hist. Nat. Crust. et Ins., IV, 1802.

*Gonypes* Latreille, id, XIV, 309, 1804.

*Gonypes* Latreille, Dictionaire d' Histoire naturelle de Deterville, ed. I, 1804.

*Leptogaster* Meigen, Syst. Besch., II, 258, 1820.

*Gonypes* Macquart, Hist. Nat. Dipt. I, 315, 1834.

*Leptogaster* Zetterstedt, Dipt. Scand., 1, 186, 1842.

*Leptogaster* Schiner, Fauna Austr. I, 117, 1862.

*Leptogaster* Williston, Biologia, Dipt., 298, 1901. (Partial table of Mexican species.)

Very slender, abdomen very elongate, almost bare species of from small to medium size. Marginal cell of wing open; five posterior cells present, all open; third segment of the antennæ with a bristle-like style. Legs without pulvilli, the empodia in form of a stout bristle, or, rarely, absent; tibiæ without terminal claw-like spear.

The large eyes occupy nearly the entire head, leaving only a very narrow face without gibbosity and with mystax thin and confined to the oral margin; proboscis short. Front and vertex well depressed, ocellar tubercle distinctly elevated. Antennæ approximate, the first and second segments subequal in length, but the second more robust than the first; the third segment more or less elliptical, sometimes more elongate, usually somewhat compressed; style bristle-like, longer or shorter than the third segment, often composed of two parts, and, together with the third segment, pubescent in

varying degrees. Thorax with a high arch, the anterior part of the mesonotum usually projecting over the pronotum; the scutellum very small. Dorsum with two well developed bristles on either side, one presutural, the other post-alar, upon the callosity. Abdomen long and very slender, at least from four to six times the length of the thorax, usually with a distinct bend at the union of the first and second segments; at the tip, sometimes broader in the male, in the female occasionally very prominently swollen; without bristles except on the posterior margins of the first segment. Legs rather slender, the front tibiæ without a terminal claw-like spur; the hind legs much longer than the anterior pairs, their femora usually very slender on basal portion, on the distal portion usually gradually or suddenly incrassate, but sometimes scarcely thickened; hind tibiæ sometimes very long and slender. Femora without bristles except at tip above; the tibiæ with few, the tarsi with more, bristles; tarsi usually bent back upon themselves. Claws strong, pulvilli wanting; the single empodium of each foot bristle-like, of varying length, but sometimes absent. Wings shorter than abdomen; sometimes considerably attenuated on basal portion; marginal cell open; five posterior cells present; all open; the fourth petiolate, subsessile or sessile; anal cell open.

*Type.*—*Asilus tipuloides* Fabricius.

Prof. M. Bezzi states in *Wien. Ent. Zeit.*, Vol. 26, page 55, that *Gonypes* should take priority over *Leptogaster*. Latreille, in the fourth volume of his *Histoire*, divides the Asilidæ into four groups of which the last is "*Asiles tipul oides*" with *Asiles tipul oides* F. as an example. But Latreille did not give to this group the generic name *Gonypes* until the year 1804, when the fourteenth volume of his *Historie* appeared. Meanwhile Meigen published and described *Leptogaster* in 1803 in Illiger's *Magazin*, and gave as the type *Asilus tipul oides*. According to the Law of Priority of the International Code of Nomenclature, page 35, article 25, *Leptogaster* must still hold the priority.

## SYNOPSIS OF SPECIES\*.

1. Empodia absent.....2.
- Empodia present.....3.
2. Hind femora with one large yellow band on its swollen portion: hind tibiæ five-banded; second posterior cell hardly longer than the third .....**annulatus.**
- Hind femora with two distinct yellow bands on its swollen portion; hind tibiæ four-banded; second posterior cell considerably longer than the third.....**schæfferi.**
3. Anterior intercalary vein forming a distinct angle with that portion of the posterior cross-vein that closes behind the second posterior cell (Pl. 2, fig. 6).....4.
- Anterior intercalary vein not forming a distinct angle, but appears more or less continuous with that portion of the posterior cross-vein that closes behind the second posterior cell (Pl. II, fig. 7).....11.
4. Dorsum of thorax polished black; hind femora with a large median yellow ring on its swollen portion.....**atrirdorsalis.**
- Dorsum of thorax not wholly polished black.....5.
5. Dorsum of thorax with median and two lateral stripes polished black†; ground color of thorax elsewhere pinkish but covered thinly with a white bloom .....**virgatus.**
- Dorsum of thorax not so.....6.
6. Color of body nearly wholly yellowish-red .....**testaceous.**
- Color of body not as above.....7.
7. Penultimate fifth of the hind femora below with a conspicuous patch of white pile.....**hirtipes.**
- Hind femora without such a patch of pile.....8.
8. Fourth posterior cell petiolate at base‡‡.....9.
- Fourth posterior cell sessile or subsessile; very small species with white pruinose bands on abdomen; proximal portion of swollen part of hind femora dark brown; distal portion, yellow; extreme apex, dark.....**pictipes.**

\* This key has been made from a limited supply of specimens of the species included. I have omitted *ochraceus* and *scapularis*, which I have never identified with certainty. All of the type material of Loew, Coquillett and myself, run very well, as does the rest of the material in my possession. I have never seen but one specimen of *brevicornis*. The greatest difficulty will be found at couplet 3; in some species the venation mentioned is inclined to be variable in different or even in the same specimen, and it may be necessary to try both 4 and 11 before placing the specimen in question.

† Sometimes these vittæ are reddish; see note under description of species.

‡‡ The fourth posterior cell of *pictipes* is sometimes appreciably petiolate.

9. Thoracic dorsum polished reddish-brown with a polished black\* spot on each side behind the transverse suture. Species of good size. Hind femora with a narrow dark ring on the middle of the distal portion..... **badius**.  
 Thorax not as above.....10.
10. Abdomen yellow; the posterior margins of the segments narrowly black or blackish..... **incisularis**.  
 Abdomen grayish with yellowish markings, sometimes very faint, on segments 2-4..... **flavipes**.
11. Fourth posterior cell sessile or subsessile; antennæ wholly yellow, the third segment oval, short..... **brevicornis**.  
 Fourth posterior cell petiolate.....12.
12. Dorsum of thorax with a median and two lateral stripes polished black; † ground color of thorax elsewhere pinkish, but covered thinly with a white bloom..... **virgatus**.  
 Dorsum of thorax not as above.....13.
13. Dorsum of thorax grayish pruinose, with three brown stripes; antennæ yellowish, the hind femora on the penultimate fifth below with a conspicuous patch of white pile. **hirtipes**.  
 Hind femora without such a patch of pile.....14.
14. Dorsum of thorax very dark brown pruinose, in sharp contrast to the white bloom of pleuræ†, antennæ and occipital bristles black; hind tibiæ very stout and blackish on distal half. **murinus**.  
 Dorsum of thorax not so.....15.
15. Hind femora and tibiæ proportionally very slender.....16.  
 Hind femora and tibiæ normal.....17.
16. Reddish-brown species with polished dorsum, lateral margins, posterior portion, pleuræ, and scutellum grayish pruinose; wings wholly brownish..... **obscuripennis**.  
 Wings hyaline; sometimes clouded at base..... **tenuipes**.
17. Antennæ and legs pale yellow; abdomen grayish with distinct or faint traces of yellow markings..... **flavipes**.  
 Antennæ rufous; third segment black on distal portion; abdomen nearly uniformly brownish-black, grayish on sides, not ringed; legs with blackish markings..... **eudicranus**.  
 Basal segments of antennæ, the legs, and abdomen yellowish, the posterior margins of the segments of the latter black or blackish..... **incisularis**.

\* Sometimes of the same color as rest of thoracic dorsum.

† This striking contrast is not brought out in poorly preserved specimens.

**Leptogaster annulatus.**

*Leptogaster annulatus* Say, Jour. Acad. Sci. Phil., III, 75, 1823;  
Comp. Works, II, 68.

*Leptogaster histrio* Wiedemann, Auss. Zw., I, 535, 1828.

*Leptogaster histrio* Wiedemann, Schiner, Verh. Zool.-Bot. Ges.,  
XVII, 356, 1867.

♂ ♀.—Length 8-11 mm.—Face and mystax white, thorax pinkish, thinly whitish pruinose; abdomen blackish with white bands. *Empodia wanting*.

Head black; face and occiput white pruinose, mystax white, proboscis black, at base yellow. Antennæ pale straw colored, third segment elongate oval, shorter than the style, sometimes dark. Thorax pinkish, with three dilated pale brown stripes on the dorsum. Abdomen dark, from almost quite black on the distal segments to pale on the proximal ones; distally, in the female, strikingly dilated: segments 2-6 with a distinct yellowish white fascia about the posterior margin. Legs pale straw; the tarsi, excepting their tips, almost white; front and middle femora tipped with black; the hind pair incrassate, the slender portion sordid white, the incrassate portion dark brown with a wide yellowish-red band. Hind tibiæ five-banded as follows:—bands one, three, and five, dark brown, the proximal one bordering on red; band two, white; band four, yellowish. Claws black, *empodia wanting*. Wings pure hyaline, violaceous; the second posterior cell not elongated, and the fourth sessile or subsessile.

*Type*.—Lost.

*Habitat*.—Mass.; N. Y.; Pa. (type); N. J. (July 25, Aug. 23; E. Daecke); D. C. (Aug. 23); N. C.; Southern Ga. (Morrison); Ark.; Yucatan (G. F. Gaumer).

This species is recognized at once by its pinkish thorax and the distinct and striking color markings of the legs and the absence of empodia. These latter are present in all other species of *Leptogaster* except *schafferi*, known to me from America, north of Mexico. Described from fourteen specimens. The specimen from Yucatan is in the collection of the University of Kansas and compares perfectly with our northern specimens. There are four specimens at the M. C. Z.

**Leptogaster atridorsalis** n. sp.

♂ ♀.—Length 8-9 mm.—Thorax black, anterior two-thirds of dorsum bare, highly polished; posterior third, lateral margins, pleura and coxæ, white pruinose.

Head black; face, mystax and occiput, white; proboscis polished dark brown. Antennæ short, segments 1-2 pale straw; segment 3

equal in length to the first two taken together, oval, dark brown, a trifle shorter than the long slender black style. Thorax black, anterior two-thirds of dorsum bare, highly polished; posterior third, lateral margins, pleuræ and coxæ, white pruinose; bristles of thorax, white. Abdomen polished black, posterior margin of segments 2-6 yellowish, and white pruinose; fine pile of abdomen white. Legs deep testaceous, front and middle tibiæ with a dark line down the sides; hind femora gradually incrassate on the distal half with dark brown subapical testaceous ring; the brown coloring of the incrassate portion extends as a dark line along the anterior side of the whitish basal half. Hind tibiæ dark brown with a wide pale yellowish band on the proximal half; the tarsal segments more or less pale straw with darker apices, the hind tarsi, however, wholly brown. Wings pure hyaline, the second and third posterior cells subequal, the fourth with a long peduncle. Empodia present, claws black.

*Type*.—Collection of Prof. C. W. Johnson, Curator of the Boston Society of Natural History. Two female and one male co-types.

*Habitat*.—Philadelphia, Pa., July 14, 1891; Folsom, Delaware Co., Pa., July 23, 1893.

This species is easily recognized from other Leptogasters by its polished black mesonotum.

**Leptogaster badius** (Pl. VI, fig. 1).

*Leptogaster badius* Loew, Cent., II, 6; 1862.

♂ ♀.—*Length* 12-15 mm.—Dorsum reddish-brown, polished, usually with two rounded, more or less prominent polished black spots, one on each side, behind the transverse suture; hind femora yellowish-brown with a subapical brown ring.

Brown, polished; antennæ yellow, the third segment linear, tapering gradually, not less than twice the first two segments taken together, style black. Face white pruinose, pile of mystax white, occiput grayish pruinose with pale bristles; palpi and proboscis testaceous. Dorsum reddish-brown, highly polished, with two rounded polished black spots (sometimes missing), one on each side behind the transverse suture; dorsum behind these spots and on the lateral margins, and the pleuræ, coxæ and scutellum thinly grayish-white pruinose. Halteres pale. Abdomen obscurely brown, subfuscous, the median bands of the several segments more or less obsolete; the anterior and posterior margins of each segment are lighter, giving in fresh specimens the appearance of a definite ring or band, and in some lights show a thin white bloom. Bristles of the thorax brown; pile of pleuræ and abdomen, white. Legs polished yellowish-brown, the hind femora gradually incrassate and bear a subapical brown band or ring; the



front and middle femora and their tibiae, together with the hind tibiae, with a dark brown stripe or line along their anterior surfaces which is variable in extent, and, in some cases, lacking; tarsi brown, the first segment, except its apex and the bases of the following segments below, pale straw. Wings hyaline, basal third pale fuscous; second submarginal cell short, narrower toward the apex, the second posterior but little longer than the third, the fourth posterior with a long peduncle; the anterior intercalary forms a sharp angle at its junctions with the posterior cross-vein.

*Type*.—M. C. Z. A single male and female, each in a poorly preserved condition.

*Habitat*.—Ill. (type); White Mts., N. H.; North Saugus (July 12, 1906), Amherst (July 2–25), and Woods Hole (Aug. 4), Mass.; N. Y.; Jamesburg (July 4), Dunnfield, Delaware Water Gap (July 8, 15), Pa.; Riverton (July 30), C. W. Johnson, N. J.; Douglas Co., Ks.; Neb.; Ind.; Milwaukee (June 23), Wis.; Montreal, Canada.

Readily distinguished by its clear glistening chestnut dorsum, the two polished black spots behind the transverse suture, and by the white bloom of the lateral margins and pleuræ. The polished spots behind the transverse suture are sometimes of the same color as the rest of the dorsum. Described from twelve specimens.

### ***Leptogaster brevicornis*.**

*Leptogaster brevicornis* Loew, Cent., X, 23; 1872.

♀.—*Length about 10 mm.*—Dark brown species: the third segment of the yellow antennæ ovate and a little shorter than the corresponding segment in other species, and shorter than its style. Hind femora with a conspicuous dark brown ring.

Face and mystax whitish; thorax brownish, the dorsal stripes, however, more obscure and covered with a light gray bloom. Abdomen subpolished, toward the basal portion opaque, and covered with a grayish bloom; segments 2–4 each with a subapical yellow ring, besides more obsolete interrupted dull yellow rings on the bases of segments 3–5 above; vestiges of a median ring may be seen also on the second segment. Legs yellowish, the hind femora before the apex with a very prominent dark brown ring; the other femora with a less distinct and perfect one. Hind tibiae brownish; the yellow basal third on both sides with a dark line; the distal two-thirds brown with a reddish tinge, and bearing a median yellow ring. Wings subhyaline, slightly tinged with yellow; veins dark brown; the second submarginal and

second posterior cells greatly elongated but do not exceed three times the length of the peduncle as Loew says. Fourth posterior cell sessile or subsessile.

*Type*.—M. C. Z. Single female type in good condition.

*Habitat*.—Texas (type); Washington, D. C. (?).

Loew furnishes us with the following note: "*L. brevicornis* in color and markings of the body and the arrangement of the veins of the wings approach nearest to *L. favillaceus*, but the third segment of the antennæ of the former is ovate and a little shorter than the style, but of the latter, indeed, is quite long, and longer than the style; besides the second submarginal and the second posterior cells in the former also are longer."

### ***Leptogaster eudicranus*.**

*Leptogaster eudicranus* Berl. Ent. Zeit., XVIII, 353, 1874.

♀ *Length* 8-9 mm.—*Translation*.—Of a dull, darker brown color; the thoracic dorsum toward the lateral borders, the lateral margins of the abdomen and the venter more ashy gray. Face densely snow-white pruinose, the white mystax is made up of a single row of hairs. Proboscis black, the same color appears to be on the everywhere dark colored palpi. The first and third antennal segments black, the second red. Front deep brown, the occiput white pruinose, the latter with a transverse row of black bristles behind the vertex. The ground color of the thorax appears on the humeri as far as the lateral margins and extends to the posterior edge as a smutty reddish-brown, which, however, the bloom does not render very perceptible. Pleuræ with denser whiter bloom, but after this is rubbed off, the same smutty reddish-brown is seen. Abdomen dull brownish-black, hardly anywhere polished, and when so indeed only through the rubbing off of the bloom; on the lateral margins and on the vertex more gray. In a superficial examination of the abdomen, no lighter ground color is hardly to be noted, but by a close scrutiny one rightly notices that the outer lateral borders of the second segment and a little spot on the anterior margin of the third segment have a leather-yellowish color much concealed by the grayish bloom present there. Front coxæ reddish-yellow with a thicker white bloom; hind coxæ reddish-yellow with a thinner whiter bloom. Front femora brownish-yellow, on the underside black, and on the upper side as far as the end, very much darker; on the likewise colored intermediate femora the black color appears no darker than the hinder side and a small, hardly apparent, ring on the free apex; the front tibiæ and tarsi lemon yellow, the former on the anterior side and the last segment of the latter at tip, black. Color of the hind femora at the base is of the same pale yellowish color,

and becomes red at the end of the same; it is very much obliterated by a prominent black picture; this stands out as a longitudinal fascia lying on the anterior side and a second on the posterior side, which begins very small at the base of the femur, but soon broadens very much, reaches around to the underside of the femur and there not very far from the end is gradually abbreviated. The robust hind tibiæ are black, on the upper side red, which color extends to the yellowish of the base itself, and so becomes somewhat spread out on the underside; their tarsi muddy yellow, the several segments somewhat black on the apex. Knob of the halteres black. Wings proportionately small, shining, with blacker, more truly-grayish obscurity, and, without exception, black veins; the two submarginal cells proportionately small and extraordinarily long, their peduncle only a little longer than the sixth part of the cell itself; the second posterior cell likewise very long with its base lying close to the lower half of the base of the second submarginal cell; the fourth posterior cell with a tolerably short peduncle; the anal cell smaller than in most other species.

*Type*.—M. C. Z. A single female specimen.

*Habitat*.—Texas (type); Alamogordo, N. M. (Apr. 16, and May 1, 1892).

I have two specimens, belonging to the Am. Ent. Soc., which agree almost perfectly with the above description except that the occipital bristles are white and the first and second segments of antennæ are both reddish.

### **Leptogaster flavipes.**

*Leptogaster flavipes* Loew, Cent., II, 15, 1862.

*Leptogaster flavipes* Van der Wulp, Tijdschr. v. Ent., XXVII, (sep.) I, male described.

*Leptogaster favillaceus* Loew, Cent., II, 12, 1862.

*Leptogaster flavicornis* Van der Wulp, Tijdschr. v. Ent., X, 136, 1867.

*Leptogaster flavicornis* Loew, Zeitsch. f. Ges. Naturwiss., XXXVI, 120 (says probably is a synonym of *flavipes*).

♂ ♀.—Length 8–12.5 mm.—Small grayish species with yellow legs and antennæ.

Face and mystax white; antennæ yellow, the third segment ovate, shorter than its black style; occiput grayish pruinose, with pale bristles. Proboscis black. Dorsum cinereous, humeri yellowish; the median stripe geminate, abbreviated behind; pleuræ and coxæ white pruinose. Abdomen grayish, slightly polished, the lateral margins of segments 2–4 and two incomplete bands on each, yellow. In some specimens this yellow is found only as a ring about the posterior mar-

gins of these segments. Pile of abdomen moderately abundant and white. Legs clear yellow; often very much faded; hind femora incrassate and sometimes with a darker distal portion; hind tibiae fuscous at tip. Empodia present. Wings hyaline, costa yellowish; second posterior cell but little longer than the third; the fourth with a short but variable peduncle.

*Type*.—M. C. Z. *flavipes* and *favillaceus*. There are five specimens of *flavipes*, one of which bears a label in Loew's handwriting; *favillaceus* is represented by a single female specimen.

*Habitat*.—Atlantic States, not rare; Neb. (type); Beverly (June 18; July 7 and 10), Amherst (June 14, 15, 23; July 8, 15; Aug. 5) and Williamstown (June 27, Scudder), Mass.; Mosholn (June 20) and Forest Park, L. I. (June 14), N. Y.; Newark (June 16) and Dunnfield (July 15), N. J.; Champaign Co., Ill.; Mich.; Minn.

I believe that *favillaceus* is none other than a large *flavipes*. Loew described *favillaceus* from a single female which shows traces of indistinct yellowish bands on the same segments of the abdomen that they appear on in *flavipes*. Loew had at most but two specimens from which to make his description of *flavipes*. I have studied about twenty specimens of *flavipes*, and they show such a variation in size and distinctness of coloration that I believe that these two species should be united. The type of *favillaceus* is somewhat larger than most specimens of *flavipes*, but some of the latter are as large.

### **Leptogaster hirtipes.**

*Leptogaster hirtipes* Coquillett, Pro. Ent. Soc. Wash., VI, 178, 1904.

♂ ♀.—*Length* 11–14 mm.—Hind femora whitish at base, yellowish-brown on swollen portion, the proximal half of the latter beneath with a conspicuous patch of snow-white pile. Antennae yellowish, occiput above with black bristles, abdomen not distinctly ringed, the second posterior cell of the hyaline wings much longer than the third.

Face silvery white pruinose with a rather dense pure white mystax; the front and occiput more grayish pruinose. Bristles of the upper occiput rather stout, black, the remaining bristles along the outer orbits and the scant beard white; proboscis polished black. Antennae yellowish, the third segment considerably shorter than the bristle-like style, oval, tapering slightly at each end and often darker than the basal segments. Thorax black, the humeri and posterior callosities

only being yellowish; wholly light gray pruinose, a trifle darker upon the dorsum where there are one median and two lateral brown pruinose stripes which are very distinct in good specimens. Of the two strong bristles on either side of the dorsum, the one before the base of the wing is white, the one further back, black. Halteres dark, with paler peduncle. Abdomen black, brownish pruinose, the first segment and both ends of the others grayish pruinose; the posterior margin of the first with a row of stout black bristles.

In a greased specimen the posterior margin of segment 3 and both ends of segments 4-5, and the extreme base of segment 6, all yellowish-red; the genitalia of all the specimens in part reddish. Legs yellowish; the tips of the front and middle femora above black, their tibiæ with a black line down their anterior side; hind femora whitish on the slender basal portion, yellowish-brown on the swollen portion, the brown color of the latter extends in a narrowing line nearly to the trochanter along the anterior and posterior sides of the white slender basal half; hind tibiæ whitish above and before, but very dark brown on the inner and outer sides, especially so upon the distal half; apices of all the tarsal segments blackish, the last segment almost wholly black. Claws black, empodia present, about one-half as long as the claws. Wings hyaline, veins strong, black, paler at base of wing, the second posterior cell much longer than the third and with its base nearer the base of the wing than that of the second submarginal; the fourth posterior with a short peduncle.

*Type*.—U. S. N. M.; Cat. No. 7946. Type series consists of two males and two female specimens.

*Habitat*.—Colo. (Morrison); Rio Rindoso, White Mts., N. M., alt. about 7,600 ft. (Aug. 2, C. H. T. Townsend); Cloudcroft, N. M. (June 18, 19, Am. Ent. Soc. Phil.).

### **Leptogaster incisuralis.**

*Leptogaster incisuralis* Loew, Cent., II, 1862.

♂ ♀.—*Length* 10-12.3 mm.—Small yellowish species. Thorax reddish, white pruinose, on the thoracic dorsum with a very large black spot placed with the stripes; abdomen yellowish, with polished black rings, legs pale straw colored, the obsolete rings of the hind femora a little darker; wings hyaline, fourth posterior cell with a short peduncle.

Face white pruinose, mystax of same color; antennæ reddish, the third segment elongate oval with a darker style of about the same length; occiput sordid yellow pruinose with yellowish bristles; proboscis deep brown. Thorax reddish, thinly white pruinose; the stripes of the dorsum very broad, running together into a very large black spot, the whole dorsum being more brownish pruinose than the pleuræ which are reddish above, black below, but wholly whitish pruinose.

Scutellum black, white pruinose. The black of the mesonotum, scutellum and the lower portion of the pleurae is variable and the black spot on the dorsum of the type specimen is not at all clearly defined. Abdomen yellowish, the first segment and the posterior margins of the several following segments polished black; the median vittae of the last three segments black; pile of all the segments white. Legs dull yellow, the obsolete subapical ring of the third hind femora and the apex of the hind tibiae brownish; the apex of the distal segments of the tarsi black. Claws black; empodia present. Wings hyaline, tinged with yellow, violaceous, the second submarginal cell equal twice the length of the peduncle, second posterior cell moderately elongate, the fourth pedunculate.

*Type*.—M. C. Z. Single male type.

*Habitat*.—Ill. (type); N. Y.; Riverton (July 30; Aug. 11, 13, C. W. Johnson), and Atco, N. J.; Phila. (June 11), Pa.; Milwaukee (June 24), Wis.

This species is closely allied to *flavipes* in general appearance and is sometimes mistaken for it. The above description was made from eight specimens, including the type male.

### **Leptogaster murinus.**

*Leptogaster murinus* Loew, Cent., II, 9, 1862.

*Leptogaster murinus* Jones, Trans. Am. Ent. Soc. Phila., XXXIII, 273, 1907 (locality note).

♂ ♀.—Length 12–14.5 mm.—Rather larger grayish-brown species, the thoracic dorsum deep brown pruinose, in sharp contrast to the white pruinose pleurae. Antennae and bristles of upper occiput black; abdomen not ringed; legs clear yellow, the posterior femora on distal portion and the distal half of their tibiae reddish-brown or blackish.

Face and mystax white; the front and occiput brownish pruinose; bristles of the occiput black, extending along the orbits, but stoutest on the upper part. Proboscis black. Antennae polished black, sometimes tinged with reddish; second segment rounded; the third elongate oval, shaped somewhat like an Indian club, the bristle-like style attached to its handle, and about one-half as long. Thorax black, well arched; the dorsum with a dark brownish bloom almost obscuring the geminate stripe, and paler on the posterior part before the scutellum; the pleurae and coxae white pruinose and stands out in sharp contrast to the brownish dorsum. Halteres with blackish knob and whitish peduncle. Abdomen ringed, brownish pruinose, subopaque, more grayish toward its lateral margins. Legs clear yellow, polished; hind femora only gradually thickened distally, upon distal portion with a short reddish-brown or blackish stripe before and behind; the distal half of the hind tibiae likewise reddish-brown; the metatarsi

yellowish except at tip, the remaining segments darker, the distal three nearly black. Claws stout, black; the empodia about one-half their length. Wings subhyaline, a little darker along the basal half of the costa; veins dark brown, the anterior intercalary not forming a distinct angle with that portion of the posterior cross-vein which closes behind the second posterior cell; the second submarginal cell not very long, the second posterior quite long, the fourth posterior with a short peduncle.

*Type*.—M. C. Z. A single female specimen.

*Habitat*.—Nebraska (type); Springview Bridge, Brown Co., Nebr. (June 10, 1902); Chicago, Ill.; Columbia, O.

Easily separated from other Leptogaster by the striking contrast between dorsum and pleuræ of thorax. The above description was made from the type and specimens at the American Museum.

### **Leptogaster obscuripennis.**

*Leptogaster obscuripennis* Johnson, Proc. Acad. Nat. Sci., 1895, 304, 323.

♂ ♀.—*Length* 13–14 mm.—Head brown, face, front inferior orbits and occiput covered with a dense grayish pubescence; proboscis black, yellow at base; antennæ yellow, the third segment and style black, the former very small, suboval, much shorter than the long style. Thorax brown, dorsum polished; lateral margins, pleuræ, posterior angles, and scutellum covered with a grayish pubescence. Abdomen: first segment blackish with a prominent row of bristles on the posterior margin, the second and third segments brown, the remaining segments blackish with more or less brown at the anterior and posterior margins, and covered with a grayish pubescence. Venter brownish. Legs reddish, thickly covered with minute yellow hairs, and dark brown spine-like bristles on the tarsi; claws black, bristles on the tibiae yellow; wings of a uniform dark brown; veins black.

*Type*.—Collection of Prof. C. W. Johnson, Curator of the Boston Society of Natural History. One male and one female specimen.

*Habitat*.—St. Augustine and Orlando (May 18), Fla.

The above is Prof. Johnson's description. At the American Museum there is a single specimen, 10 mm. long, from Gotha, Florida, collected in March by Dr. W. M. Wheeler, which very closely resembles the type, but the greased dorsum shows three black stripes, the second and third abdominal segments are yellowish below, blackish above, and the rest of the

abdomen is uniformly brownish-black. The hind femora and tibiæ seem some longer; all the tibiæ bear black bristles, except at tip, and the hind tarsi are black. The front and middle tarsi and the third antennal segment are gone. The wings are darkened only on the basal half, the outer half is pure hyaline; as in the type, the second posterior cell is considerably longer than the third, and the fourth with a long peduncle. More material may prove this a new species.

**Leptogaster ochraceus.**

*Leptogaster ochraceus* Schiner, Verh. Zool.-Bot. Ges., XVII, 359; 1867.

*Length about 12 mm.*—Translation.—Entirely light ochre-yellow; the dorsum with a light brownish bloom, dull, with traces of four duller longitudinal stripes; pleuræ shining white pruinose. Abdomen somewhat glistening, the first segment in the middle with a brown spot, the following notched (ein chositten) with brown. Lower part of face shining white; mystax white, outstanding; proboscis brown, at base lighter. Antennæ yellow; the third segment brown, short elliptical, moderately pointed distally; the bristles short and thick. Legs yellow, the femora at base nearly white, on the metatarsi in particular noticeably so, the metatarsi being short. Claws black, empodia half as long as the claws. Wings tinged with yellow, veins yellow; the cubital cell (second submarginal) very long, more than twice as long as its peduncle, the anterior branch of the third longitudinal vein, closing the cell before, curved upward (bauchig erhoben); the second posterior cell longer than the third posterior, its peduncle shorter than that of the second submarginal; the fourth posterior cell with a very short peduncle.

*Type.*—Collection of Winthem. Two specimens without sex designated.

*Habitat.*—Penn. (type).

As far as I know this species has not been recognized by American students. I have sometimes thought that *testaceus* and *ochraceus* must be closely related.

**Leptogaster pictipes.**

*Leptogaster pictipes* Loew, Cent., II, 7, 1862.

*Leptogaster varipes* Loew, Cent., II, 81, 862.

*Leptogaster varipes* Townsend, Annals and Mag. Nat. Hist., XX, 23.

♂ ♀.—*Length 5-7 mm.*—Polished black; face whitish pruinose, thorax everywhere thinly white pruinose except the dorsum, which is



covered with a light brown bloom. Abdomen dark brown, first segment and posterior margins of the following segments whitish pruinose; empodia present.

Face white pruinose with mystax of same color: occiput and vertex thinly grayish pruinose; proboscis black. Antennæ (Pl. IV, fig. 10), yellowish, darker toward tips; third segment short, about equaling the style; both the third segment and the style clothed with sparse but distinct outstanding microscopic hair. Thorax polished black, everywhere thinly white pruinose except on the mesonotum, where the bloom is light brown; the median stripe geminate, and the more obscure lateral stripes very broad. Abdomen polished, dark brown; the first segment and the posterior margins of the following segments whitish pruinose; venter whitish pruinose. The female abdomen is strikingly swollen distally as in *annulatus*. Legs whitish; front femora somewhat yellow toward tip, the apical third of hind femora greatly incrassate, dark brown, with fulvous subapical ring which in some cases extends to the apex. Hind tibiæ gradually incrassate, basal third whitish like base of the femora, apical two-thirds dark brown with a more or less prominent testaceous median ring. Tarsal segments whitish, their apices brown. Halteres polished black, peduncle whitish. Empodia present, claws black. Wings pure hyaline, violaceous, veins polished black; second posterior cell not elongate, the base obliquely truncate with the base of the second submarginal cell opposite; fourth posterior cell sessile or subsessile, occasionally with a pronounced peduncle.

*Type*.—M. C. Z. One male type of *pictipes*, and one female type of *varipes*.

*Habitat*.—Ill. (type); L. I. (Aug. 2), N. Y.; Clementon (May 30), Atco (June 4 and 18), Dunnfield (July 12) and Riverton (July 7), C. W. Johnson, N. J.; Pa. (June 17, July 5, Sept. 8, E. Daecke); Md.; D. C.; Va.; N. C.; Ga.; Ala.; Huachuca Mts., Ariz. (H. Skinner); Vera Cruz, Mexico.

Described from twelve specimens including the type. Many specimens have antennæ very dark and a yellowish cast to the pruinose bands of the abdomen, and the legs are often yellowish. It is readily distinguished from *annulatus*, which it closely resembles, by the bands of the legs and the presence of empodia.

### **Leptogaster scapularis.**

*Leptogaster scapularis* Bigot, Annales, 1878., 444.

*Length* 14 mm.—Nigro fusco, pleuris scapulisque late rubidis; antennis nigris, base fulvis; facie et mystace albidis; halteribus fuscis;

abdomine, segmentis 2-3 utrinque, apice, obscure fulvis; pedibus fulvis, femoribus anterioribus et intermediis, intus et apice, tibiis intus, tarsibus obscure castaneis; posticis, femoribus apice, nigro annulatis, geniculis, tibiis et tarsibus apice, nigro castaneo; alis pallide fuscis, intus et apice, late, fere, hyalinis.

Translation.—Fuscous black, the pleuræ and scapulæ broadly reddish; antennæ black, fulvous at base; face and mystax whitish; halteres fuscous; abdominal segments 2-3 on base and apex obscurely fulvous; legs fulvous, the front and middle femora before and at the apex and the tarsi obscurely chestnut-brown; the posterior femora at apex black ringed; the knees, tibiæ and tarsi at tip brownish-black; wings pale fuscous, within and at the apex broadly hyaline.

Of a brownish-black color; humeri, sides, flanks and haunches largely reddish; antennæ and proboscis black, the first segment of former reddish; face and beard white. Halteres brown. Abdomen with some grayish reflections on the sides, the posterior lateral portions of segments 2-3 obscurely reddish. Legs reddish-yellow, the front and middle femora before and above their tips blackish, their tibiæ with a blackish band along their interior side; the posterior femora with a large dark ring towards the tip, their knees and tips of tibiæ blackish; tarsi blackish, with black bristles, the metatarsi yellow. The hind tibiæ bear at their tips a few white bristles. Wings brownish, principally so towards the middle of the disc; base hyaline, as well as the interior borders, the posterior borders and the tip.

*Habitat*.—California (type).

There are at the American Museum two specimens collected in Monterey County, Cal., July 1, 1896, by Dr. W. M. Wheeler, which may be this species. The wings are uniformly hyaline; the second posterior cell is rather long and the fourth is pedunculate. The head, thorax and abdomen agree very well with the description, but both basal segments of the antennæ are yellowish and the legs are without distinct coloration. The third segment of the antennæ is a very short oval with a longer style.

***Leptogaster schæfferi* n. sp.**

♀.—*Length* about 12 mm.—Similar to *annulatus* in regard to the absence of empodia, but larger. All the femora are banded: the hind pair gradually but distinctly swollen; the slender basal portion white below, blackish above, the swollen distal portion brownish-black with two distinct reddish-yellow bands; the hind tibiæ four-banded as follows:—band 1, white; bands 2 and 4 almost black; band 3, reddish-yellow.

Face sordid white; mystax very sparse, white; front and occiput in certain lights almost brownish-gray, bristles of occiput very fine, whitish; the ocellar tubercle polished black. Proboscis black, at extreme base yellowish. Antennæ reddish, the third segment rather oval, darker than the basal segments and considerably shorter than the bristle-like style. Thorax dark testaceous; the dorsum light brownish pruinose with an indistinct median line of lighter bloom extending from the pronotum to the base of the scutellum; lateral margins, posterior callosities, pleuræ and scutellum with a moderately dense light brownish-gray bloom which before the halteres is more white; bristles of dorsum fuscous. Halteres with sordid yellow peduncle and darker knobs. Abdomen brown, the lateral margins rather broadly, and the posterior margins of the segments more narrowly, grayish pruinose; the scant pile of the abdomen whitish. Front and middle legs when viewed from below appear whitish, the tibiæ and tarsal segments tipped with red; when viewed from above, the tibiæ, especially the middle pair, are more brownish-yellow; the femora are whitish toward the base, but more reddish-yellow on the distal two-thirds and bear on the outer part an ill-defined dark ring, which on the front pair scarcely meets below, but is more distinct on the middle pair. The hind femora slender at base but gradually incrassate distally; the slender basal portion whitish below, above and without brownish-black; the swollen portion brownish-black with two distinct and prominent yellow rings. Hind tibiæ moderately thickened with white terminal bristles, and, not counting the extreme base, black; four-banded as follows:—band 1, whitish; bands 2 and 4, dark brownish; band 3, reddish-yellow; the dark color of the second band extends upward in a narrowing line on the inner and outer sides of the first band. Hind metatarsi white with white bristles, the following segments and their bristles blackish. Claws stout, wholly black; empodia *wanting*. Wings hyaline, slightly tinged with a darker color; the second submarginal cell about three times the length of its peduncle, the second posterior much longer than the third posterior, with its base slightly nearer the base of the wing than that of the second submarginal, the fourth posterior cell with a short peduncle. The anterior intercalary vein does not form a distinct angle with that portion of the posterior cross-vein which closes the second posterior cell behind.

*Type*.—Brooklyn Institute. A single female.

*Habitat*.—Brownsville, Texas, May (type).

Another specimen from the same locality, but collected in April, agrees with the type specimen except that the bloom of the pleuræ appears lighter in color and the posterior portion of segments 2-4 of the abdomen is noticeably yellowish,

while in the type specimen this yellow is practically obsolete; the fourth posterior cell of one of the wings (the other is wanting) is sessile.

### **Leptogaster tenuipes.**

*Leptogaster tenuipes* Loew, Cent., II, 14, 1862.

♂ ♀.—Length 9.2–10 mm.—Brown, subpolished; hind femora and tibiæ unusually slender; antennæ blackish; thorax reddish, dorsum with a large dead-black spot; wings hyaline, sometimes darker on the basal portion, the second submarginal cell equal in length to its peduncle.

Face white pruinose, mystax of same color. Antennæ black, the basal segments fuscous; the third segment rounded at base, gradually tapering toward tip, shorter than the black bristle-like style. Occiput without stout bristles but with white pile below. Thorax reddish, but covered by a thin whitish bloom; the three dorsal stripes run together to form a large dead-black spot covering the larger part of the dorsum. Bristles on the posterior callosities black, as also is the fine hair of the dorsum; the anterior portion of the meso- and sternopleuræ with prominent white pile. Halteres yellowish, the knobs darker. Abdomen brown, towards the apex blackish, not ringed; the very fine hair on the sides white. Legs slender, very slightly testaceous, the anterior sides of the femora and tibiæ darker; the metatarsi at tip, and the larger part of the other tarsal segments darker. The hind legs are unusually slender; the femora have a very long, slender basal portion which distally becomes only gradually incrassate, without distinct markings; their tibiæ likewise very slender and terminated on the inner side with two or three white bristles; rest of bristles of legs, black. Wings hyaline, in the female and sometimes in the male, the basal third is perceptibly darkened; veins blackish; the second submarginal cell equal in length to its peduncle, the second posterior not much elongated, the fourth pedunculate. The anterior intercalary forms a rather indistinct angle with that portion of the posterior cross-vein which closes the second posterior cell behind.

*Type*.—M. C. Z. One male specimen. The female mentioned in the note of the original description is also there.

*Habitat*.—D. C. (type); Del.; S. Ga.; Tex. The Delaware specimen is at the Am. Ent. Soc. of Phila; those from Georgia and Texas are at the National Museum.

### **Leptogaster testaceus.**

*Leptogaster testaceus* Loew, Cent., II, 10, 1862.

? *Leptogaster rubidus* Wiedemann, Auss. Zwei., I, 533, 1828.

? *Leptogaster rubida* Williston, Biologia, Dipt., I, 299, 1901,  
(thinks *rubida* and *testaceus* may be the same).

♂ ♀.—Length 12–14.5 mm.—Testaceous, polished. Face whitish pruinose, mystax flavous; occiput with a golden bloom and pale bristles. Antennæ yellow, style slender, black; the third segment linear,—gradually tapering, not less than two times the length of the first two taken together. Dorsum of a somewhat deeper color than the rest of the body, and highly polished; the posterior third, lateral margins, pleuræ, coxæ and scutellum, yellowish pruinose. Abdomen pale testaceous, verging on the tergum, especially on the distal segments, into a dark brown, sometimes almost black. In one specimen the tergum is darker brown and mottled with black. Legs paler than body; aside from a subapical brown ring, often obsolete, on the hind femora, there are no darker markings; claws black; empodia present. Bristles are of the same color as the body except those on the tarsi which, for the most part, are black. Wings hyaline, tinged with yellow; second submarginal cell longer than twice the peduncle, the first posterior moderately long, the fourth posterior with a short peduncle, the anal cell toward the margin narrowest.

*Type*.—M. C. Z. A single female specimen in Loew's collection. There are two other females in Osten Sacken's collection.

*Habitat*.—N. Y.; Westville and Caldwell, N. J.; Pa.; Southern Ga.; Montreal (Chagnon), Canada; ? Yucatan, (Williston).

This species is easily recognized by its uniform yellowish-red color. Described from four females and one male, including the type material.

Dr. Williston, in the *Biologia*, described, under *Leptogaster rubida*, a female from Yucatan. He is in doubt whether *rubidus* of Wiedemann from South America is the same as Loew's *testaceus*. From the description of this Yucatan specimen, I think it might properly be identified as *testaceus*. As I have seen and know Loew's *testaceus*, I prefer to hold to it rather than place it a doubtful synonym under *rubidus*.

### **Leptogaster virgatus.**

*Leptogaster virgatus* Coquillett, Proc. Ent. Soc. Wash., VI, 177; 1904.

? *Gonypes nitidus* Macquart, Dipt. Exot., I, 2, 155, 1838.

? *Leptogaster carolinensis* Schiner, Verh. Zool.-Bot. Ges., XVI, 696, 1866.

♂ ♀.—Length 9–13 mm.—Easily recognized by the three polished stripes on the thoracic dorsum.

Head black, face, front and occiput white, the mystax and fine hair

of the occiput of the same color. Antennæ yellow; style black. Thorax reddish-brown, light grayish pruinose except a wide median and two lateral stripes which are polished and range from deep testaceous to black. Abdomen black, brownish pruinose; the first segment and both ends of the following segments grayish pruinose. Legs ranging from pale yellow to deep testaceous, front and middle pairs with a dark line along the anterior side of the femora and tibiæ. Hind femora somewhat incrassate, a broad band before the apex and the apical half of the hind tibiæ brown; apices of all the tarsal segments yellowish-brown; empodia about half as long as the claws. Wings hyaline, at apex narrowly gray; fourth posterior cell with a long peduncle.

*Type*.—U. S. N. M., Cat. No. 7,945. Type series consists of three female specimens.

*Habitat*.—Delaware Co., Pa. (C. W. Johnson); D. C. (June 22); Carolina (Macquart); Tex. (Belfrage). The type material is from Washington, D. C., and Texas.

Prof. C. W. Johnson has in his collection two females and a male and female in coitu—all from Delaware Co., Pa.—and there is one female without label in the collection of the Am. Ent. Soc. of Phila. They show a variation from a nearly testaceous mesonotum to one with a single large black vitta, up to those with three stripes on the mesonotum; the stripes ranging from deep testaceous to black.

#### DASYPOGONINÆ.

##### TOWNSENDIA.

*Townsendia* Williston, Kans. Univ. Quart., iv, 107, 1895.

*Townsendia* Williston, Biologia, Dipt., i, 307, 1901.

“Very small species. Head broad, much broader than high. Front very broad above, about three-fourths the width of the head; narrow below, the sides gently convex, only moderately excavated, nearly bare, with some bristles at the vertex and on the ocellar tubercle. Faces narrow, with parallel sides, flat, much receding, not at all visible in profile; with a thin row of bristles on the oral margin, otherwise wholly bare. Antennæ not as long as the head, situated near middle of head in profile; segment 1 shorter than segment 2, the latter about as broad as long, segment 3 longer than the first two taken together, gently tapering from near its base; style

slender, divaricate, about one-half the length of the segment. Proboscis short. Thorax moderately convex above, with bristles on the posterior part. Scutellum with a row of thin bristles on its margin. Abdomen elongate, its sides nearly parallel; moderately flattened, bare. Legs moderately stout; the first two segments of all the tarsi a little incrassate. Wings long, narrow toward the base; auxiliary cell narrow, the anal angle wholly wanting as are also the alulæ; discal cell long and narrow, the penultimate section of the fourth vein a little shorter than the ultimate section; the third vein from the discal cell, separating the third and fourth posterior cells, wholly wanting."

*Type*.—*Townsendia minuta* Williston.

This genus is remarkable for the size of its typical species. The very broad front, receding face and the narrowness of the wings at the base are considered by its founder the most essential characters. The confluence of the third and fourth posterior cells makes the separation of the species easy.

Named in honor of Prof. C. H. S. Townsend.

#### **Townsendia niger** n. sp.

♀.—*Length about 4.5 mm.*—Body wholly black, the abdomen polished blue-black; legs dark yellowish-red; wings brownish hyaline, entirely covered with microscopic pubes and beautifully violet; the vein separating the third and fourth posterior cells wholly wanting; anal cell closed and petiolate.

Face narrow, with parallel sides, somewhat receding, without gibbosity, and not visible in profile, whitish pruinose; mystax thin, white, confined to the oral margin which is some little distance above the short proboscis. Front greatly widened above, as described in the generic description, whitish pruinose on the sides, more brownish on the middle; ocellar tubercle but little elevated and bearing several black bristles, the anterior ocellus red. Occiput grayish-white pruinose, with sparse black bristles above. Antennæ distinctly separated at base, situated a little above the middle of the head, black; basal segments subequal in length, with black bristles above and below, the second segment being much more robust and nearly as broad as long; the third segment longer than the basal segments taken together, gradually tapering from base, with a fine whitish pubescence; style distinct, rather stout, about half as long as the third segment, pubescent, and bearing at its tip a short bristle. Thorax well arched; the dorsum subpolished, only faintly obscured by a dull bloom which, on the

middle before and on the humeri, appears golden, and over the base of the wings when viewed from before, shining white; pleurae brownish pruinose; the fine pile and few bristles of dorsum and on the posterior margin of scutellum black. Halteres dull yellowish-red. Abdomen polished, blue-black, slightly whitish pruinose on sides and at base and with whitish pile along sides. Legs dark yellowish-red, coxae black with a whitish bloom; the femora darker than the tibiae, the latter not banded with black, although in some cases with indications of such; tarsi reddish, terminal segment blackish. The arrangement of the most prominent bristles of the tibiae and tarsal segments is peculiar; when viewed from above, each of the first four tarsal segments bears a prominent bristle on the middle of each side, those on the fourth segment being quite short; there are on each side of the tibiae three or four bristles similarly placed and about as distant from each other as are the bristles of the several tarsal segments. There are other smaller bristles upon the legs, but the above mentioned are most prominent. Pulvilli present. Wings dark brownish hyaline, attenuated at base, allulae absent; but four posterior cells present, the vein separating the third and fourth being gone; anal cell closed and petiolate; the auxiliary cell narrow.

*Type*.—American Museum. A single female.

*Habitat*.—South Amboy, N. J.

One will notice that in general the above description agrees quite closely with that of *minuta*. As the habitat of the two species is so widely different (though not a real barrier to their identity), together with the fact that the description of *minuta* is very meager, and my specimen does not have the black thoracic stripes and has a different coloration of the legs, I have described it rather minutely as new. As the type is at the American Museum it will be easily accessible. I have not seen the type of *minuta*.

#### **Townsendia minuta.**

*Townsendia minuta* Williston, Kans. Univ. Quart., IV, 107, 1895.

*Townsendia minuta* Williston, Biologia, Dipt., I, 307, Pl. V, fig. 19, 1895.

“♂.—Length 3.5 mm.—Black, front and face thickly white pruinose, mystax white. Antennae black. Mesonotum opaque yellowish-white with a broad median stripe and a spot on each side, brown. Pleurae thinly whitish pruinose. Abdomen polished black, the first segment whitish pruinose, the pile along the sides of the anterior segments white. Legs yellowish-red, the fore and middle femora above, the



hind femora, except the base and tip, a broad ring on all tibiæ, and the tarsi, for the most part black. Wings grayish hyaline."

*Type*.—Dr. F. H. Snow states that the type is not at the University of Kansas, although Williston's material is there.

*Habitat*.—Teapa in Tabasco, Mexico (H. H. Smith); N. M.

**Townsendia pulcherrima** n. sp.

♀.—*Length* 3.5 mm.—Head and thorax black; abdomen, except at tip, and the legs, reddish; wings attenuated at base, without alluæ, and with but four posterior cells; halteres creamy white.

Head black, face narrow, flat, without gibbosity, pale golden pruinose; the mystax white, confined to a thin row of bristles on the oral margin; front as in the typical species, narrow below, extraordinarily widened above, shaped as that of *minuta* is described to be, brownish pruinose, a spot on either side above the insertion of the antennæ and confluent with the margin of the eye, and a much larger patch along the orbits upon the vertex and extending over slightly onto the occiput, silvery white pruinose; ocellar tubercle rather broad, flattened on top and bearing two bristles; on either side of the front above the lower pair of white spots are two black bristles, one situated above the other. Antennæ situated a trifle below the center of the head, some longer than the head is high; the basal segments subequal, the first a trifle longer, the second more robust; the third nearly one and one-half times as long as the basal segments taken together, constricted a little toward the base, enlarged beyond, rather obliquely truncated distally; style very short, distinct, equalling in width the third segment, a trifle more than half as long, and bearing upon its outer distally portion, a small forward directed spine which is nearly concealed by the dense microscopic pubescence which covers both the style and the third segment. Proboscis short, polished black. Thorax slightly gibbose in front, thence gradually receding to the scutellum; dorsum and pleuræ thinly golden pruinose, on the dorsum showing an indistinct median stripe, and when viewed from above, four shining white spots, one on each humerus, and one on either side above the insertion of the wings; on either side of the dorsum there are two well developed black bristles, one presutural, the other postsutural, and before the former there is a patch of sparse black hair. Scutellum quite large, thick, thinly golden pruinose and fringed with short black bristles. Halteres creamy white; the trichostical bristles sparse and black. Abdomen polished reddish, except the extreme base, last two segments, and the extreme lateral margins of the fifth and sixth segments, which are black; venter reddish, towards the tip, black; the very fine sparse pile of abdomen yellowish; circler of spines of ovipositor black. Legs, including the coxæ, yellowish-red; all the tibiæ darkened, almost black in the middle; the hind pair slightly incrassate at tip; hind tarsi

blackish. Entire legs, including coxæ, whitish pruinose; the coxæ most densely so, the femora and hind tibiæ the least; the tibiæ with short sparse pile and, together with the tarsi, with longer white out-standing bristles, arranged somewhat as in *Townsendia niger*, but on the tarsal segments situated nearer the tip. Claws reddish at base; pulvilli normal, pale. Wings hyaline, violescent, slightly darkened by the omnipresent microscopic pubes; attenuated at base, allulæ wanting; but four posterior cells present, the vein separating the third and fourth posterior cells being gone; anal cell closed and petiolate; the anterior cross-vein much nearer the base than the apex of the discal cell.

*Type*.—American Museum. A single female.

*Habitat*.—Montopolis, Travis Co., Texas, May 1, 1903 (W. M. Wheeler).

I have called this species *pulcherrima* because of the white pruinose spots of the dorsum and vertex which in certain lights appear most beautiful under the compound microscope. It is out of place in this genus because of its antennæ, but at present I know of no better place to put it. Aside from the antennæ, it agrees very well with the generic description of *Townsendia*.

#### ABLAUTUS.

*Ablautus* Loew, Cent., VII, 63, 1866.

*Ablautatus* Loew, Berl. Ent. Zeit., 1874, 377.

*Ablautus* Schiner, Verh. Zool.-Bot. Ges., XVI, 847, 1866; quotes orig. desc.

*Ablautatus* Osten Sacken, West. Dipt., 289, 1877.

*Ablautus* Williston, Manual 1896, 54; adopts orig. form.

Small to rather medium-sized species easily recognized by the large claws and entire absence of pulvilli, peculiar arrangement of bristles on dorsum of thorax and legs, and the brushes on the last three segments of the front tarsi of the male.

Face and front comparatively narrow; face almost flat, without gibbosity, with a dense mystax reaching nearly or quite to the antennæ; front very little broader above; vertex but little depressed, the ocellar tubercle large and bearing a conspicuous tuft of hair and bristles; occiput with numerous bristles. Antennæ short; basal segments short, subequal, below clothed with conspicuous bristles, some of which often are half as long as the antennæ, on the upper side with shorter

hair; third segment one and one-half times longer than the basal segments taken together, elongate, with a constriction a little before the middle, with a slight incrassation just beyond; style short, less than one-fifth the length of the third segment, cylindrical and bearing a terminal microscopic bristle. Eyes with the facets of the middle region very much enlarged. Thorax well arched, scutellum large; besides the usual clothing of hair and bristles, with conspicuous hair and bristles on the anterior part on either side of the median stripe; the median stripe divided by a row of fine bristles; the hair of the anterior part of dorsum and above base of wings sometimes nearly scale-like. Scutellum with a row of long erect bristles on the posterior margin. Pleuræ nearly devoid of pile; trichostical hair long. Abdomen rather narrow, moderately convex, flatter in the female than in the male, gently tapering toward the tip; male hypopygium rather small; ovipositer with the usual circle of spines; sides of the first segment with a few bristles and longer pile; remainder of abdomen, especially on the sides and the venter, with rather sparse short pile. Legs of moderate length and stoutness, covered with much hair, which is characteristically depressed and beset with numerous erect bristles, not only on the tibiæ and tarsi, but also on the upper and posterior sides of the fore and the upper and anterior sides of the middle and hind femora. Claws remarkably long; pulvilli entirely wanting. Wings as in *Cyrtopogon*; all the five posterior cells wide open; the anal cell narrowly so; the small cross-vein little beyond the middle of the discal cell.

*Type*.—*Ablautus trifarius* Loew.

SYNOPSIS OF SPECIES.

- |  |                      |
|--|----------------------|
| 1. Abdomen wholly black.....           | 2.                   |
| Abdomen reddish or yellow.....         | 4.                   |
| 2. Femora brownish; length 6-7 mm..... | <b>trifarius.</b>    |
| Femora black.....                      | 3.                   |
| 3. Tibiæ black.....                    | <b>minus.</b>        |
| Tibiæ reddish-yellow.....              | <b>rufotibialis.</b> |
| 4. Pleuræ for most part polished.....  | <b>rubens.</b>       |
| Pleuræ wholly pruinose.....            | <b>flavipes.</b>     |

**Ablautus flavipes.**

*Ablautus flavipes* Coquillett, Proc. Ent. Soc. Wash., VI, 178, 1904.

"♂ ♀.—Length 5–5.6 mm.—Black; abdomen except at base, halteres and legs, yellow; dorsum and thorax with distinguishable stripes, abdomen yellowish-gray pruinose, with three rows of black spots.

"Black; abdomen except at base, the halteres and legs, yellow; apices of the femora, of the tibiæ, and of the tarsi, also a vitta on the upper side of the front femora, brown; hairs of head white, bristles of lower side of first two segments of the antennæ and on the upper part of occiput, yellowish-white; hairs of the body white, bristles of thorax pale yellow. Abdomen densely yellowish-gray pruinose, usually marked with a median and lateral row of brown spots; hairs and bristles of legs white, the sides of the last three segments of the front tarsi of the male with cluster of black hairs, giving these segments the appearance of being dilated, the bristles of these segments are black; wings hyaline, veins chiefly yellow."

*Type*.—U. S. N. M., Cat. No. 7947. Three males and two females.

*Habitat*.—Los Angeles and San Diego Counties, Cal. (May, D. W. Coquillett); Alamogordo, N. M. (May 10, Am. Ent. Soc. Phil.).

The American Entomological Society Philadelphia possesses over twenty specimens collected at Alamogordo, N. M., May 10, 1902, which agree with the type material except that their legs are wholly yellowish, with only a trace in a few instances of a dark vitta on the front femora; as the legs of the type material are nearly wholly yellow, I consider these specimens only as a slight variation. I will append the following notes:

Front, occiput, dorsum of thorax, scutellum and mesopleuræ, yellowish-brown pruinose; the rest of the pleuræ and the occipital orbits grayish. Abdomen paler pruinose than the dorsum of thorax, in certain lights almost whitish pruinose; each segment of the male, and all except the last in the female, with a distinct blackish spot in the middle near the anterior margin; there are smaller dark spots on the sides of the same segments, but these in nature are not seen from above, at least not so in dried specimens, for the sides of the abdomen are curved under over the venter. The last segment of the female is polished black. The stripes of the thoracic dorsum are obsolete and the hairs on the anterior part and over the base of the wing seem almost scale-like.

**Ablautus minus.**

*Ablautus minus* Osten Sacken, West. Dipt., 290, 1877.

♂ ♀.—Length 7–8 mm.—General coloring brownish-gray pruinose; abdomen with three rows of black spots; bristles on under side of the basal segments of antennæ, the thoracic dorsum and scutellum, brownish-yellow; legs black, densely beset with long recumbent white hair and long white erect bristles.

General coloring brownish-gray pruinose, the occiput densely whitish pruinose; mystax white with a few black hairs over the oral margin; occiput with white pile. Antennæ black. Thorax grayish pruinose, with the usual three darker stripes on the dorsum; bristles on the underside of the basal segments of antennæ, dorsum and scutellum, all brownish-yellow. Halteres honey-yellow, trichostical pile white. Abdomen grayish pruinose, with a series of rounded blackish spots along the middle of the abdomen, one at the base of each segment; larger black spots on the anterior corners of each of the same segments form two lateral series; the seventh and eighth segment in the male polished black, with white pile; the seventh segment in the female polished black. Legs black, densely beset with rather long, recumbent white hairs, and long, white erect bristles; claws black. The last two segments of the fore tarsi of the male appear incrassate, because they are densely beset with black and yellow recumbent and closely packed short bristles, forming a kind of a brush, the end of which reaches considerably beyond the claws; the under side of this brush is black, on its upper side it is mixed of black and yellow; the ends of the first three segments of the front tarsi are armed with strong bristles or spines, which are black, with a yellowish root; a couple of such spines in the middle of the first segment. In the female the front tarsi are simple, and all the spines upon them are white, like all the other spines on the legs. Wings very hyaline; veins black.

*Type*.—M. C. Z. One male and two females.

*Habitat*.—Crafton, near San Bernardino, Southern California, in March. (Osten Sacken); Ariz. (National Museum).

Osten Sacken states that he captured this species on sandy soil in company with *Lestomyia sabulonum*, which it seems to mimic, as its body is almost exactly of the same color.

**Ablautus rubens.**

*Ablautus rubens* Coquillett, Proc. Ent. Soc. Wash., VI, 178, 1904 (Pl. XII, fig. 4).

“♀.—Length 6 mm.—Reddish-yellow, the hair and bristles whitish, several on the tarsi black, most numerous on the hind ones; head, thorax and scutellum opaque, yellowish-gray pruinose, the pleuræ, except the anterior portion, the under side of the scutellum, and middle

of the metanotum polished; abdomen polished, a pair of small gray pruinose spots on the second and third segments; sides of abdomen and the venter yellowish-gray pruinose; wings hyaline."

*Type*.—U. S. N. M., Cat. No. 7948. A single female specimen.

*Habitat*.—Wash. (Prof. O. B. Johnson).

***Ablautus rufotibialis* n. sp.**

Black, brownish-gray pruinose; on the front, occiput, sides of thoracic dorsum, on the pleuræ and metathorax, more grayish-white, and in some lights, almost silvery white pruinose; mystax without any black hair on the oral margins; tibiæ and hind tarsi reddish, not black; abdomen with three rows of black spots.

I have three females from Ysleta, Texas, which are quite closely related to *mimus*, but differ in being some larger, and all the tibiæ are yellowish-red, except at the extreme base and tip, as also, in part, are the hind tarsi and, in some cases, the other tarsi as well. The pile and bristles of the entire body is characteristic of the genus, wholly white, with the exception of a few yellowish bristles on the occiput and thoracic dorsum. In one specimen nearly all the bristles of the dorsum are yellowish. The mystax is wholly white, with no black hairs on the oral margin; there are no black hairs on the basal segments of the antennæ above as in *mimus*. The eyes are bronze, mottled and streaked with black; there is a faint trace of this streaking of the eye in one of Osten Sacken's type specimens of *mimus*, and it may prove that this coloration has been intensified by the rather poor condition of my specimens. The thoracic dorsum is more brownish pruinose than the rest of the body, with a dark median, but no distinguishable lateral stripes; the median stripe does not appear to be divided by a pale stripe or line, but is bisected by a line of short white bristles. The patches of white hair and bristles on the anterior part of the dorsum on either side of the geminate stripe appear more dense than in *mimus*. Halteres reddish; the trichostical hair white. Abdomen as in *mimus*, the lateral spots are considerably larger; the median spots are small in comparison with the lateral spots and located more near the center of the segment. In all the specimens the last two segments of the abdomen are greased. On the basal segment there is a black median spot, but none on the sides as on the following segments. Legs, including the coxæ, black; the tibiæ, except at extreme base and tip, yellowish-red; the hind tarsi are likewise reddish, the terminal segments being nearly black; the other tarsi show more or less traces of reddish, but on the whole are more blackish; claws wholly black; hair and bristles of legs characteristic, wholly pure white. Wings hyaline, in certain lights milky, with deep greenish and purplish reflections; veins black, the axillary and first longitudinal and the others at base of wing, yellowish.

*Type*.—Am. Ent. Soc. Phil. Three female specimens.

*Habitat*.—Ysleta, Texas (April 2, 1902).

**Ablautus trifarius.**

*Ablautus trifarius* Loew, Cent., VII, 63, 1866.

*Ablautus trifarius* Osten Sacken, Biologia, Dipt., I, 168, 1887.\*

♀.—Length 6–7 mm.—Grayish pruinose, on the dorsum more brownish; abdomen with three rows of black spots; legs wholly brownish yellow.

Grayish pruinose, head of the same color; bristles of the basal segments of the antennæ, vertex, occiput, and thoracic dorsum, scutellum, sides of first abdominal segments and of the legs, wholly yellowish. Face densely clothed with white pile reaching to the antennæ, black only on the oral margin; beard white, dense, and extending well upwards; the basal segment of the black antennæ with rather short black pile. Dorsum with the characteristic pile and bristles, the stripes nearly obsolete, dark, the geminate stripe divided by a grayish line and much abbreviated behind, the lateral stripes hardly noticeable, interrupted. Scutellum densely clothed with a grayish bloom which, when viewed from behind or in certain lights, appears shining white, its margin armed with the closely set yellowish bristles mentioned above. Abdomen black, grayish pruinose, opaque, each segment beginning with the second with a median and two lateral rather small black spots on the anterior margin, one median, and one on each side; the eighth segment is wholly black; pile short, white, backward directed, chiefly on the sides of the segments. Legs brownish, tibiæ and tarsi much lighter; closely covered with long recumbent white hair and long erect yellowish bristles; on the tarsi the bristles are part black. Claws wholly black. Wings pure hyaline, veins black.

*Type*.—M. C. Z. A single female in rather poor condition.

*Habitat*.—California (type).

**OSPRIOCERUS.**

*Ospriocerus* Loew, Cent., VII, 51, 1866.

*Ospriocerus* Schiner, Verh. Zool.-Bot. Ges., 1866, 846; quotes orig. desc.

*Ospriocerus* Coquillett, Ent. News, IX, 37, 1898; synopsis of species.

*Ospriocerus* Williston, Biologia, Dipt., I, 303, 1901; notes.

Large elongate black species, with or without red on the abdomen. Head narrower than the thorax, almost as high as broad, with the vertex but slightly depressed. Antennæ elongate, the first segment not less than three times the length of the small cup-shaped second, the third, more than the

\* A specimen from N. Sonora, Mex., which he doubtfully refers to this species.

length of the first two segments taken together and bearing on the inner distal half a linear depression; terminal style obsolete. Face narrower above, broader and evenly swollen on the lower half; mystax composed almost entirely of long rigid bristles extending over the swollen portion of the face, vibrissæ composed of short hairs confined to the middle of the face and reaching nearly to the antennæ. Ocellar tubercle not prominent, with short bristles; frontal orbits with long, forward-directed bristles, and the occiput with numerous bristles, not confined to the occipito-orbital margins. Prothorax well clothed with bristles. Dorsum of mesothorax with short bristly hair, and with bristles on the humeri, posterior callosities and lateral margins,—these last forming an irregular band extending from before the base of the wings upwards and backwards to above the posterior callosities; scutellum with a fringe of bristles on its posterior margin. Pleuræ nearly bare; trichostical bristles present. Abdomen elongate, everywhere with short sparse microscopic hair; segments 1 and 2 with a lateral patch of bristles. Male genitalia small, not at all club-shaped. Legs robust, everywhere with short hair and longer sparse bristles which are much more abundant on the front and middle tibiæ; front tibiæ without a terminal claw-like spur; coxæ clothed with stout bristles. Wings proportionately broad, the first posterior cell wide open, the fourth closed a short distance before the margin, the anal closed in the margin.

*Type*.—*Dasyopogon acacus* Wiedemann.

*Ospricerus* is very closely related to *Stenopogon*, but differs from it chiefly in the third segment of the antennæ being longer, linear and destitute of a terminal style.\* Aside from *Stenopogon acidinus* Williston, its species are secondarily characterized by their general black color usually relieved by red or yellowish-red upon the abdomen.

#### SYNOPSIS OF SPECIES.

- |  |               |
|--|---------------|
| 1. Abdomen largely yellowish-red ..... | 2.            |
| Abdomen wholly black .....             | <b>minos.</b> |

\* *O. diversus* Williston, has a minute style.



2. Venter of abdomen wholly black..... 3.  
 Venter of abdomen largely yellow..... **ventralis.**
3. Abdomen with white pruinose spots..... 4.  
 Abdomen without pruinose spots..... **abdominalis.**
4. Females\*: thorax and legs chocolate colored, last two segments of  
 abdomen black..... **cutrophus.**  
 Males: thorax black, usually yellowish above... **rhadamantus.**

**Ospriocerus abdominalis** (Pl. VII, fig. 5).

*Asilus abdominalis* Say, Long's Exped., App., 375; 1824, Comp. Works, 1, 255.

*Dasyopogon æacus* Wiedemann, Auss. Zw., I, 390, 1828.

*Dasyopogon spathulatus* Bellardi, Saggio, 11, 82, pl. I, fig. 9, 1861.

*Ospriocerus æacides* Loew, Cent., VII, 51, 1866.

*Ospriocerus æacus* Osten Sacken, West. Dipt., 290, 1877.

*Ospriocerus abdominalis* Coquillett, Ent. News, IX, 37, 1898.

*Ospriocerus abdominalis* Jones, Trans. Am. Ent. Soc. XXXIII, 275, 1907 (locality note).

*Ospriocerus abdominalis* Howard, Insect Book, 1902, Pl. XIX, fig. 5.

♂ ♀.—Length 13.5–19 mm.—Black, subpolished; abdomen orange-red above, without white pruinose lateral spots; wings blackish.

Face and occiput silvery white pruinose; mystax sparse, composed of long rigid bristles covering the swollen lower half of the face; vibrissæ confined to the middle of the upper portion of the same, composed of the short, downward directed bristly hair. Antennæ black, the depression in the inner distal half of segment three very distinct. Bristles of the vertex of good size, forward directed; occiput, prothorax and coxæ very bristly. Dorsum subpolished, often covered with a thin hoary bloom. Segment 1 of the abdomen, base of segment 2, lateral margins of the following segments, genitalia and venter, black; posterior margin of the second and the following segments above, yellowish-red or red. The female differs from the male in that the last two segments of the abdomen are polished black. Legs wholly black, with many but short bristles; claws black, red at base. Wings blackish, subopaque, with steel-blue reflections; fourth posterior cell closed and petiolate. Clothing of the entire body deep black, the fine hair upon the red portion of the abdomen alone being yellowish-red.

*Type*.—Lost.

\* This does not include the *cutrophus* female from Kansas, or the two males with the reddish thoracic dorsum at the National Museum mentioned below.

*Habitat*.—Squaw Creek, Wash.; Lombard, Mont. (June 26, elev. 4,000 ft., R. A. Cooley); Snake Co., Idaho; Sioux Co. (P. R. Jones), Nebr.; Ft. Collins (July 17, 29), Colorado Springs and Spanish Peaks, Col.; Garden City, Ks. (July); N. M.; Round Mts., Tex.; Car Canyon, Huachuca Mts., Cochise Co., Ariz. (Aug., H. Skinner); Cal.

Judging from its presence in many collections, this seems to be a common species throughout our western and southwestern States. In both sexes the red of the second segment of the abdomen is variable in extent and often extends over the anterior portion of the sixth segment in the female. One male has no red on the second segment and only a little on the anterior margin of the seventh. Several specimens from Prof. R. A. Cooley, of Bozeman, Montana, have the tergum much deeper red than most of the specimens which I have seen.

#### ***Ospriocerus eutrophus*.**

*Ospriocerus eutrophus* Loew, Berl. Ent. Zeit., 1874, 355.

*Ospriocerus eutrophus* Howard, Insect Book, 1902; Pl. XIX, fig. 9.

*Ospriocerus eutrophus* West. Dipt., 1877, 290.

♀.—Length 21.5–22 mm.—Black, thorax usually of a dark chocolate color. Face, excepting the gibbosity and a triangular area above with its apex at the base of the antennæ, wholly white pruinose. Posterior portion of the second abdominal segment, and the three following segments, excepting their lateral margins, red or yellowish-red; the remainder of the abdomen black; posterior lateral margins of the second, third and fourth segments white pruinose. Legs black, the front tibiæ, together with the first segment of their tarsi, with compact glistening pile. Wings black. All the bristles of the body and legs black.

*Type*.—M. C. Z. Three female specimens.

*Habitat*.—Texas; Kansas.

This species resembles *abdominalis* but the larger size proportionately smaller, and at its end, slender, abdomen and the white pruinose lateral margins of the second, third and fourth abdominal segments of *eutrophus* readily separate them. Of the three females in Loew's collection, one specimen has the thorax dead black, and so accords with the original description. The thorax of the other two, and also of other specimens which I have seen, is a dark brown, which gives to these

specimens a much richer appearance. The white pruinose spots do not appear to cross the posterior borders of the segments as Loew says, but are recognizable only on the posterior lateral margins. There is one female in Osten Sacken's collection from Kansas labeled "*eutrophus*" which agrees with the type specimens except that the thoracic dorsum is yellowish-red with a trace of dark median line.

Osten Sacken in his "Western Diptera," page 291, suggests that *rhadamanthus* may prove the male of *eutrophus*, and indeed this has seemed probable, inasmuch as hitherto they have been represented in collections by males and females respectively. But there are now at the National Museum two males which are of the same size as the females of *eutrophus*, and agree with the type material except that they have a reddish thoracic dorsum. In this last respect they agree with *rhadamanthus*, but their larger size and general appearance make it easy to separate them. I am inclined to think that *eutrophus* is distinct from *rhadamanthus*. This will be a question for discussion until more collecting has been done. At present *rhadamanthus* is represented only by three males at the M. C. Z. *Eutrophus* is found, aside from the type material, in small numbers in the collections of the National Museum, the American Entomological Society, the University of Kansas and that of Prof. C. W. Johnson.

### **Ospriocerus minos.**

*Ospriocerus minos* Osten Sacken, West. Dipt., 291, 1877.

♂.—Length 17–18 mm.—Altogether black; wings blackish. The face is slightly grayish pruinose; the abdomen is more cylindrical, less flattened than in the male of *abdominalis*, and the last antennal segment seems a trifle longer. In other respects this species is like *abdominalis*.

*Type*.—M. C. Z. A single male specimen.

*Habitat*.—Golden City (July 3, A. S. Packard), Col.

There is nothing to add to the above description. I have referred two females from Colorado belonging to the American Entomological Society to this species.

### **Ospriocerus rhadamanthus.**

*Ospriocerus rhadamanthus* Loew, Cent., VII, 52, 1866.

*Ospriocerus rhadamanthus* Osten Sacken, West. Dipt., 290.

♂.—*Length 20 mm.*—Black, wings of the same color; face, front and occiput wholly white pruinose; the thoracic dorsum in most specimens reddish-yellow, with a large central area black, in others wholly pitchy black or black; pleuræ, pectus and scutellum always black. Abdomen reddish-yellow; the first and second segments, except the posterior margin of the latter, the "semi-ovate lateral spots" of the following segments, the entire venter and hypopygium black; the posterior lateral margins of segments 2-5 white pruinose. Clothing of entire body black, except the yellowish-red hair on the reddish portion of the tergum of the abdomen. Legs black; tibiæ and tarsi pitchy black, almost a dark testaceous. Wings black, larger and broader than in *abdominalis*.

*Type*.—M. C. Z. Three male specimens without locality label and in rather poor condition.

*Habitat*.—Pecos River; Western Tex.; N. M.

The conclusion from Loew's description that there are black spots on the sides of the abdominal segments is in a sense misleading. Separate spots, there are none. The black on the sides of the segments, as I find by examining the type material, is only an encroachment of the black of the venter upon the sides of the segment. The same is found in *eutrophus*, only there the black encroaches evenly, while in *rhadamanthus* the black extends upward to a greater extent in the middle than elsewhere—hence Loew's "maculis lateralibus singulorum semiovatis nigris, angulos posticos non attingentibus." For some unaccountable reason, Loew did not embody a description of the white pruinose spots on the posterior lateral angles of segments.

### ***Ospriocerus ventralis*.**

*Ospriocerus ventralis* Coquillett, Ent. News, IX, 37, 1898.

*Ospriocerus ventralis* Howard, Insect Book, 1902, Pl. XIX, fig. 14.

♂ ♀.—*Length 20-23 mm.*—Venter largely yellow, the entire abdomen yellow, except the first segment, base of the second, and the genitalia, which are black; in the female the apex and sometimes the under side of the last segment is black. Pulvilli and bases of the tarsal claws, yellowish; all the hairs and bristles black, except the short hairs of the abdomen, which are chiefly yellow. Wings blackish, with steel-blue reflections.

*Type*.—U. S. N. M. Cat. No. 4253. The type consists of three males and two females.

*Habitat*.—Arizona (type); Car Canyon, Huachuca Mts., Cochise Co. (Aug., H. Skinner), Ariz.

This species differs from *abdominalis* in no respect except that the venter is largely yellow and there is no black upon the lateral margins. Mr. Coquillett writes that the venter is sometimes wholly yellow, while in other specimens the last two segments, except the base of the penultimate, are black. There are six specimens of this species in the collection of the Am. Ent. Soc. which Dr. Skinner told me were collected, so far as he could remember, at the same time and under the same conditions as were specimens of *abdominalis*. This, together with the fact that the Brooklyn Institute possesses a specimen which has the venter black except the base of each segment, leads me to wonder whether *ventralis* may not some day be proved to a variety of *abdominalis*.

Prof. J. M. Aldrich writes that the species of *Ospricerus*, *Stenopogon*, *Deromyia* and *Saropogon* bite most viciously when caught and held between the fingers, jabbing in a most effective manner with their sharp proboscis, the resulting sensation being like that of a bee sting, only does not last so long. The writer has had the same experience with *Deromyia* in Florida. Prof. Aldrich says that he has had no other Asilids or other flies to bite under similar circumstances.

In speaking of the distribution of *Ospricerus* and *Stenopogon*, Prof. Aldrich states that they do not occur in eastern South Dakota, but are, in going westward in the State, first met with in the center of the State, at the beginning of the more arid regions, and that in northern Idaho specimens of these species are rare except in the low altitudes of Lewiston and vicinity, where more arid conditions exist than at Moscow.

### STENOPOGON.

*Stenopogon* Loew, Linnæa Ent., II, 453, 1847.

*Stenopogon* Schiner, Fauna Austr., I, 127, 1862.

*Scleropogon* Loew, Cent., VII, 45, 1866.

*Scleropogon* Schiner, Verh. Zool.-Bot. Ges., 1866, 846; quotes orig. desc.

*Stenopogon* Coquillett, Pr. Ent. Soc. Wash., VI, 179, 1904.

Usually species of medium to large size. Front tibiæ without terminal claw-like spur, body elongate. Head narrow,

rather higher than broad; face very small, narrow above, broader and swollen below, in large part covered with long thick hair or bristles; front small, of about equal width throughout, vertex little depressed, ocellar tubercle not prominent; eyes very high in proportion to width. Antennæ approximate, segment 1 cylindrical, twice or nearly twice as long as the second, third as long or longer than the first two together, if elongate and of equal width or elongate oval, with a bristle-like style; or if, as in most typical species, elongate with an excision on the distal half, thus in certain positions causing the segment to appear distinctly narrowed toward the tip from about the middle, with a short thick distinct style. Thorax moderately arched, variously clothed above with hair or bristles, always with bristles on the prothorax, on the lateral margins and posterior portions and scutellum; hypopleura with or without pile or bristles. Abdomen elongate, cylindrical, moderately bare, the male genitalia proportionately small. Legs long and moderately slender, hind tibiæ not thickened at tip, the femora more or less thickened, the underside more or less bristly, especially the fore pair. Five posterior cells present, the first and fourth open or closed, often varying in this respect in specimens of the same species; anal cell narrowly open or closed.

*Type*.—*Stenopogon sabaudus* Loew and *Scleropogon picticornis* Loew.

The genus *Stenopogon* was established in 1847. In 1866, Loew established *Scleropogon* for the California species, *picticornis* of which he had but a single specimen if I may judge from the type material at the Museum of Comparative Zoology. In establishing *Scleropogon*, he states that Scleropogons, especially in their markings, are like Stenopogons, but they differ from them in having the face and front much narrower, the third segment of the antennæ shorter, the style longer, the first posterior cell closed before the margin of the wing, and the third extraordinarily dilated. As Mr. D. W. Coquillett states (loc. cit.) all of these are "relative characters which are seldom alike in any two species, and many of the char-

acters mentioned are found to vary considerably in the different specimens of the same species." If an attempt is made to separate these two genera by strict adherence to the stated characters confusions result. Among the species listed under *Stenopogon* in Aldrich's Catalogue three different kinds of antennæ are found. The most typical is that possessed by *latipennis* and *consanguineus*, of which the third segment is elongate, somewhat wider at the middle, and bearing a distinct excision on the inner side from near the middle to the tip (not shown in Pl. III, fig. 1), and with a comparatively short, thick, but distinct style, itself terminated by a fine, scarcely perceptible bristle. A second kind is that possessed by *inquinatus*, *modestus* and *morosus*, of which the third segment is elongate, of equal width throughout, does not bear an excision, and is terminated by a bristle-like style fully half as long as the segment itself. A third kind is that possessed by *alibasis* and *nigritulus* of which the third segment is more nearly oval and bears a bristle-like style about one-half as long as itself. This last style of antennæ is that which Loew ascribes to the genus *Scleropogon* and is possessed by *helvolus*, *picticornis* and *cinerascens*. The last two groups are very closely related from a structural standpoint. The first and fourth posterior cells of these last three species are more frequently closed, although specimens are found in which they are narrowly open. Among the more typical *Stenopogons* these same cells are more frequently open, though often narrowed, closed, and even petiolate.

It is, therefore, evident that *Stenopogon* and *Scleropogon* cannot be separated by the antennæ or the wing venation. The question arises by what character can they be separated? It has been stated\* that a comparison of specimens of *picticornis*, with Italian specimens of *sabaudus* resulted in the firm conviction that the most pronounced difference existing between the two genera is to be found in the nature of the hypopleura, which is bare in *sabaudus*, but nearly covered with bristles and hairs in *picticornis*. My observations lead

\* Coquillett, Pr. Ent. Soc. Wash., VI, 179.

me to believe that this is a character as little to be relied upon as those of the antennæ and wings, for from the perfectly bare hypopleura of *breviusculus*, *jubatus*, *nigritulus*, etc., can be found gradations from a hypopleura with a very slight amount of pile to one with well-developed bristles such as that of *picticornis*. It is significant that a number of species, such as *longulus* and *consanguineus*, good *Stenopogons* in other respects, have a small amount of pile on the hypopleuræ. Consequently, having failed to find any character or set of characters, by which the genera can be satisfactorily separated, I have made *Scleropogon* a synonym of *Stenopogon*. I am confident, however, that generic subdivisions can well be made when carefully collected material is brought together.

This genus is abundantly represented in our western plains and in California.

#### SYNOPSIS OF SPECIES.\*

1. Hypopleura bare..... 2.  
Hypopleura with hair or bristles ..... 7.
2. Sternopleura with a tuft of long fine pile.....3.  
Sternopleura without such a tuft, though usually with some pile...6.
3. Pile and bristles of thoracic dorsum wholly dull yellowish, the posterior portion of the dorsum unusually bristly.  
**breviusculus.**  
Pile and bristles of thoracic dorsum, especially along the middle line, black ..... 4.
4. Black; wings black, white at base ..... **jubatus.**  
Not as above..... 5.
5. Abdomen above with a reddish-yellow vitta, sometimes variable in extent..... **gratus.**  
Abdomen without such a vitta. **californiæ, obscuriventris.**
6. Length 10-13 mm.; third segment of antennæ more oval.  
**albibasis, nigritus.**  
Length over 16 mm.; third segment of antennæ elongate.  
**inquinatus, morosus, modestus.**
7. Third segment of antennæ elongate, style short, thick, sometimes longer and more slender; first posterior cell more frequently open..... 8.  
Third segment of antennæ more oval, style bristle-like; first posterior cell more frequently closed..... 12.

\* This key does not include *ochraceus* or *similis*, which I have never seen.



8. Decidedly black species, with or without red on abdomen; the latter not obscured by grayish bloom..... 9.  
 More reddish species, or if black, with ground color of abdomen obscured by a bloom.....10.
9. Abdomen reddish-yellow, the base, venter, last two segments of female and genitalia of male, black..... **aeacidinus**.  
 Wholly black, abdomen polished black ..... **nitens**.
10. Southeastern species; reddish-yellow, abdomen quite slender, sub-polished; wings broad, uniformly brownish or blackish.  
**subulatus**.
- Western species..... 11.
11. Abdomen unusually slender, wings longer and narrower.  
**longulus**.  
 Abdomen less elongate, wings shorter and usually broader.  
**consanguineus, latipennis, pumilus, tenebrosus**.
12. Length about 15 mm.; black, but wholly and densely grayish-white pruinose; wings hyaline..... **cinerascens**.  
 Length 20-23 mm.; species not grayish-white in appearance.....13.
13. Chamois-leather yellow species; abdomen proportionately long and slender, without black fasciæ..... **helveticus**.  
 Abdomen less elongate, yellowish-gray pruinose, in greased specimens the segments showing black with posterior margins and venter brick-red..... **picticornis**.

### **Stenopogon gratus.**

*Stenopogon gratus* Loew, Cent., X, 31, 1872.

*Stenopogon univittatus* Loew, Berl. Ent. Zeit., 1874, 358.

♂ ♀.—Length 20 mm.—Black; bloom of thorax dull yellowish-brown; mystax, pile and bristles of whole body pale, except on the front, along the median line of the thoracic dorsum, and on the hypopygium where the clothing is black; abdomen polished, slightly grayish pruinose on the sides, and along the median line marked with more or less broad reddish-yellow vitta extending from the second segment to the tip; legs yellowish, the front and hind femora, except their apices, a spot on the middle femora and the apical half of the hind tibiae black; wings slightly tinged with black, the basal third, excepting the edge of the costa, in the male, milky white; mesopleuræ and hypopleuræ wholly bare, the sternopleuræ with a tuft of long fine hair.

Black; head grayish pruinose, clothed everywhere with sordid white bristles and pile, the beard very fine and dense; hair along frontal orbits, on ocellar tubercle, and on basal segments of antennæ black; on the latter sometimes yellow. Palpi black with pale hair. Antennæ black, base of third segment sometimes slightly yellowish; the style about one-half as long as the third segment. Thorax dull yellowish-brown pruinose, the three usual stripes showing only very faintly; the pile and bristles on the lateral margins, posterior callosities, scutel-

lum and pleuræ entirely pale except the hair on the obscure lateral stripes, and the denser hair and bristles extending from the pronotum to the base of the scutellum along the median stripe, which are wholly black; the hair along the median stripe forming a crest. The sternopleuræ with a tuft of long soft pile, the trichostical pile or bristles wholly wanting, thus leaving the hypopleuræ bare. Abdomen black, subshining through a very thin covering of gray bloom; all the segments above, beginning with the second, adorned with a reddish-yellow longitudinal vitta; venter reddish; the last two segments of the female polished black, each with a single reddish spot above; hypopygium black, with black pile. The legs wholly pale pilose, the black fasciæ of the middle femora are on the proximal two-thirds. The wings tinged with black or fuscous, the basal third, excepting the costa, in the male, milky white, in the female as usual; the fourth posterior cell closed or open; the first often considerably narrowed.

*Type*.—M. C. Z. A male specimen. There is a female homotype in the collection of the University of Kansas.

*Habitat*.—California.

The female homotype agrees perfectly with the male as regards the extent of the reddish-yellow vitta of the abdomen. I believe, however, that this vitta will be found to be variable. I have seen two other specimens from California which I believe to be this species, in which the vitta broadened out so as to cover nearly the entire tergum.

### **Stenopogon californiæ.**

*Dasyopogon californiæ* Walker, List, II, 322, 1849.

? *Stenopogon obscuriventris* Loew, Cent., X, 30, 1872.

♂ ♀.—*Length* 16–21 mm.—Polished black of body more or less obscured on thorax and female abdomen; pile and bristles of face, occiput, posterior callosities, scutellum and legs varying from deep fulvous to pale straw. Wings tinged with brown except the posterior angles, which are milky white; female wings without, or with but slight trace of milky white color. Basal two-thirds of the front and middle, and the basal three-fourths of the hind femora black; rest of legs wholly yellow.

Face thinly clothed with very fine depressed golden pile, which in certain lights has a silvery reflection; front and occiput yellowish pruinose. Proboscis, palpi and antennæ black. Third segment of antennæ slender, about one and one-quarter times the length of the first two taken together; style prominent and one-third the length of the third segment. The first two segments of the antennæ, the palpi, the facial gibbosity and the occiput densely clothed with pile and bristles, varying from deep fulvous to pale yellow. Weak bristles of

the frontal orbits and the ocellar tubercle black. Thorax thinly brownish pruinose; the prothorax clothed with dense light pile; the dorsum of the mesothorax with a median geminate dark stripe, not pronounced in all specimens; the pleuræ bare, except for a tuft of fine yellow pile on the sternopleuræ. There is no pile or bristles in front of the pale halteres. Bristles on the anterior two-thirds of the thorax short and chiefly black; those on the posterior third longer, and about equally divided between black and fulvous, except for a row of stout bristles in front of the origin of the transverse suture and extending backwards over the posterior callosity, which are wholly fulvous. Bristles of scutellum fulvous. Abdomen polished black, often obscured somewhat in the male, and quite perceptibly in the female, except on the last two segments, by a grayish bloom, but in the male never losing the polished black color. The anterior and posterior margins of the segments 1-5 with lighter pruinose cross-bands not at all prominent; entire male abdomen with fulvous pile, which is quite long in the proximal portion, but becoming shorter and depressed distally. The pile of the female abdomen is not as pronounced. Male genitalia red, in two specimens black; the last, and often the last two segments of the female abdomen are red, as are also the spines of the ovipositor. Legs deep yellow except the basal thirds of the front and middle and basal three-fourths of the hind femora, which are black; pile and bristles wholly yellow; pulvilli yellow; claws black, yellow at base. Wings with a dark tinge except the proximal portion of the anal cell and the squama in the male, which are milky white; first posterior cell slightly narrowed at the margin, fourth posterior cell wide open; anal cell open.

*Type*.—British Museum. Type of *obscuriventris* is at the M. C. Z.

*Habitat*.—Lake Tahoe and Webber Lake, Cal., July 19 (Osten Sacken); Summit Sierra Nevada, Sisco, Cal., 6,000 ft.; Beaver Creek Hills, Beaver Co., Utah.

Described from thirteen males and twelve females, seventeen of which were collected by Baron Osten Sacken and are at the M. C. Z., three at the Am. Ent. Soc. of Phila., three at the Brooklyn Institute, and two at the Massachusetts Agricultural College.

### ***Stenopogon jubatus*.**

*Scleropogon jubatus* Coquillett, *Invertebrata Pacifica*, I.

♂ *Length* 20 mm.—Black; the abdomen polished, clothed with comparatively long and fine hair; thoracic dorsum with sordid white hair and bristles on the sides, but from the pronotum to the scutellum with

a broad median crest of black hair and bristles; legs marked with yellow; wings blackish, in the male the basal portion milky white.

Face silvery white pruinose with long black bristles; bristles of front and a patch on the occiput directly behind the vertex black; the remaining bristles and pile of the occiput and the pile of the beard, proboscis and palpi pale. Proboscis and palpi polished black. Pronotum wholly clothed with comparatively fine hair. Mesonotum with a broad median crest of black hair and bristles extending from the pronotum to the scutellum, short in front, longer behind; the lateral margins, including the humeri and posterior callosities, with sordid white hair and bristles; scutellum with a fringe of black bristles; the sternopleurae with a tuft of long pale pile; the hypopleurae entirely bare. Abdomen, including the genitalia, polished black, with comparatively long, fine, sordid white or yellowish pile, longer on the basal segments and venter. Legs polished black; the tips of the front and middle femora, the basal half of their tibiae, the basal fourth of the hind tibiae and the front and middle tarsi, except the bases of their several segments, yellowish; the entire legs, including the coxae, with sordid yellowish white hair and bristles; pulvilli pale, claws black, yellowish at base. Halteres yellowish-red. Wings uniformly blackish, the basal, anal and axillary cells, except distally, milky white in the male; the first and fourth posterior cells narrowed but open.

*Type*.—National Museum.

*Habitat*.—Claremont, Cal.

I have not the original description; the above was drawn from a partially greased specimen, with the antennae missing, kindly loaned me by Mr. Coquillett. It is such a unique species it will be readily recognized.

***Stenopogon brevisculus*** (Pl. XII, fig. 3).

*Stenopogon brevisculus* Loew, Cent., X, 28, 1872.

♂ ♀.—*Length* 15–19 mm.—Quite readily separated from those species in which the hypopleura is bare and the sternopleura has a tuft of fine hair, by the unusually bristly appearance of the lateral margins and posterior callosities of the thoracic dorsum, by the three brown dorsal thoracic stripes, separated by very pale, almost grayish-white bloom, which also narrowly divides the median stripe, and, when viewed from above, appears along the lateral margin above the dorso-pleural suture.

The first segment of the antennae, often the first two, reddish; the third segment about one and three-fourths times as long as the basal segments, black, of nearly equal width, not excised within distally; style about one-third as long as the third segment. Legs reddish; the femora above, except at apex, black; the black of the hind femora

often covers the entire anterior as well as the upper surface; tibiæ and tarsi wholly reddish-yellow; the legs wholly clothed with, and the ground color partially concealed by, closely appressed dull yellow hair; the bristles entirely sordid white. Face and occiput light yellow pruinose; the palpi and proboscis black; bristles of face, palpi, proboscis, lower occiput and coxæ pale straw-colored, those of the antennæ, vertex, upper occiput and dorsum more yellowish. Entire prothorax with thick bristles, pale straw below, more golden above. Mesonotum blackish, the humeri reddish; the hairs on the anterior portion short, pale; dorsum otherwise as above described. Scutellum with pale bristles. Abdomen of male blackish, the genitalia and the posterior lateral margins of the segments obscurely reddish, venter reddish; the color of the abdomen partially obscured by the bloom and close lying dull yellowish pile. Wings hyaline, veins brownish, the costa and veins at base yellowish; the first and fourth posterior cells open.

*Type*.—M. C. Z.

*Habitat*.—Cal. (type); Pasadena Cal. (J. M. Aldrich).

### ***Stenopogon nigrutilus*.**

*Stenopogon nigrutilus* Coquillett, Proc. Ent. Soc. Wash., VI, 179, 1904.

♂ ♀.—*Length* 10-13 mm.—Black; the head and thorax rather densely, the abdomen more thinly, grayish-white pruinose; the bloom of the thoracic dorsum more brownish, with traces of a median geminate stripe. The first two segments of the antennæ, halteres, genitalia and legs, except the coxæ, and a vitta on each femur, reddish-yellow; the hairs and bristles of entire body and legs whitish. The third segment of the antennæ comparatively short, more oval and hardly three times as long as the bristle-like style. Mesopleura and hypopleura bare, the mesopleura without a tuft of long soft pile, but with a very small amount of inconspicuous pile. Wings hyaline, veins brown, the first and fourth posterior cells broadly open.

*Type*.—U. S. N. M., Cat. No. 7949. Three male and four female specimens collected by Mr. D. W. Coquillett.

*Habitat*.—Los Angeles and Kern Counties, Cal. (July, type); S. B. Mts., Cal. (July 28, W. M. Wheeler).

### ***Stenopogon albibasis*.**

*Stenopogon albibasis* Bigot, Annales, 1878, 422.

♂.—*Length* 12 mm.—Translation.—Fulvous, third segment of the antennæ black, face black; palpi black with whitish pile; mystax and beard whitish. Thoracic stripe geminate, abbreviated posteriorly and on both sides with a large black oblong spot; pectus black, halteres

pale testaceous; coxæ with whitish pile, pulvilli testaceous; wings pale cinereous, at the base broadly whitish.

Third segment of antennæ rather short, elongate oval, style less than half as long. Fourth posterior cell sessile, the anal open within (entr' ouvertes). Wholly tawny; the tips of the second and third segment of antennæ and the palpi black, the latter with whitish pile; face black, front black, with light-brown pile; occiput with some yellowish bristles, mystax and beard whitish. Thoracic dorsum with two contiguous longitudinal stripes, attenuated behind and abbreviated above the insertion of the wings, and on either side with a large oblong black spot. Base of femora and pectus blackish, a little whitish pile on each side, also on the abdominal segments, especially on the last; hairs of the femora whitish; tarsi with some short whitish hairs, pulvilli testaceous; halteres whitish. Wings of a very pale gray, the basal half whitish, the costal and second longitudinal veins tawny.

*Type*.—Bigot collection.

*Habitat*.—California (type), Los Angeles Co., Cal. (Coquillett).

The material of this species in the National Museum is in very poor condition, so I have used the original description. The hypopleura is bare and the sternopleura has only a very small amount of pile, not arranged in a tuft. The wings are very small, hardly reaching beyond the tip of the fourth segment.

This species is very close to *nigritulus*, also from California, both as regards general build, shape of wing and pile of pleuræ.

### **Stenopogon inquinatus** (Pl. III, fig. 2).

*Stenopogon inquinatus* Loew, Cent., VII, 47, 1866.

*Stenopogon inquinatus* Jones, Trans. Am. Ent. Soc., XXXIII, 274, 1907 (locality note).

*Stenopogon inquinatus* Howard, Insect Book, 1902; Pl. XIX, fig. 7.

♂ ♀.—*Length* 23–25 mm.—Third segment of antennæ elongate, as long, or longer, than the first two segments together, not excised within on the distal half; style bristle-like, fully half as long as the third segment. Head and thorax, except the humeri, black, very thinly clothed with grayish bloom; abdomen except on sides, and legs except femora above, yellowish-red. Hypopleuræ bare, meso- and sternopleuræ with a very limited amount of fine short hair.

Face and lower occiput densely grayish-white pruinose; front less so; bloom of thorax, coxæ and sides of abdomen very thin, not obscuring the subpolished ground color. Palpi, basal segments of an-

tennæ, and often the third segment and style in varying degree, reddish. Abdomen brick-red, polished, lateral margins of all the segments broadly black, but usually not showing from above in dried specimens; posterior lateral margins whitish pruinose; genitalia of male red. Bristles of body pale straw-colored, except those of basal segments of antennæ, humeri, abdomen and legs, which are more reddish; hair of thoracic dorsum very short throughout and black. Legs yellowish-red, the femora above, except at apices, black; claws black, yellow at base, pulvilli pale. Wings throughout tinged with fuscous; the first and fourth posterior cells open or closed, showing considerable variation in this respect.

*Type*.—M. C. Z.

*Habitat*.—Nebr. (type); Glen, Sioux Co., Springview Bridge. Brown Co., West Point, Nebr.; Vernon, B. C. (July 24).

### **Stenopogon morosus.**

*Stenopogon morosus* Loew, Berl. Ent. Zeit., 1874, 356.

♂ ♀.—*Length* 21.5–37 mm.—*Translation*.—Black, lightly sprinkled with grayish bloom; apex of the femora, the tibiæ and the tarsi piceus, rarely nigro-piceus, of the front tarsi sometimes reddish; the first two segments of the antennæ and the front with black hair, nearly all the bristles of the femora black; the wings wholly blackish-gray. Male abdomen black, the last two segments and the hypopleuræ for the most part reddish. Female abdomen ornamented with a very broad red vitta, or sometimes wholly black.

A very variable species, of which I have had the opportunity of examining three males and four females; so much like *modestus* that I was at first inclined to consider it as a variety of that species, but all the specimens are somewhat smaller and of less robust body structure; the whitish bloom is also much thinner everywhere, so that the black ground color of the body is very little modified when seen through the bloom. The four females are distinguished from the females of *modestus* in the following respects:—(1) The first two antennal segments are conspicuously, or at least quite noticeably, covered with black hair, whereas in *modestus* they are conspicuously clothed with white hair; (2) the hair of the whole front is black, while in *modestus* it is black only on the ocellar tubercle, but otherwise white; (3) the abdomen in all four females has a broad red longitudinal stripe, while that of *modestus* has only a small trace of reddish color; the bristles of the femora are, practically without exception, black, although on the anterior side of the middle femora of one specimen there are a large number of pale yellowish ones intermixed, while in *modestus* the bristles on the femora are pale yellowish or yellowish-white, with only here and there a black one.

The antennæ of *morosus* are black, but in the male the third segment is red to some extent on the end; the antennal style is proportionately long. Mystax whitish-yellow, in its upper portion usually, and sometimes in its outer border, with a few black hairs. Bristles of occiput on the upper half more yellowish-white, on the lower half purer white. The humeral callosities red or reddish-brown with black bristles; of the bristles of the posterior third of the thoracic dorsum, the anterior ones are black, the posterior ones yellowish-white; of the bristles located on the lateral margins of the thorax, sometimes the black, sometimes the lighter ones prevail. The abdomen of one male is without perceptible black; in two the hypopygium and last abdominal segment are red, and in the third the red color is spread clear over the last segment. The very bright red fascia on the abdomen of the female sometimes appears as a dark spot. The wings in both sexes are entirely uniformly blackish-gray. The fourth posterior cell is often comparatively wide.

*Type*).—M. C. Z.

*Habitat*.—Red River of the North, Minn.

There are twenty-five specimens of a *Stenopogon* at the M. C. Z. taken at Yakima R., Washington, June 30—July 8, which I believe are *morosus*. They are all large, generally black; the polished ground color showing through the extremely thin coating of grayish bloom, which along the sutures of the thoracic dorsum and on the pleuræ is denser. In some the abdomen is wholly black, in others there is only a faint suggestion of reddish color along the posterior margins of the segments, while in still others the upper side of the whole abdomen is reddish in varying degrees, and in six specimens the entire abdomen is yellowish-red except on the lateral margins of the segments. The venter may be reddish or black. The hypopleuræ is wholly bare; the sternopleura bears a small amount of rather long pile, but not such a pronounced tuft as in *breviusculus*, *jubatus* or *gratus*.

I suspect that *modestus* and *morosus* are the same. Carefully collected and labeled material, however, is necessary to determine this point.

***Stenopogon modestus*** (Pl. III, fig. 4).

*Stenopogon modestus* Loew, Cent., VII, 46, 1866.

♀.—*Length* 26–28.5 mm.—*Translation*.—Grayish; mystax, beard and thoracic bristles straw-colored; legs grayish-black; knees and tarsi brown; wings equally fuscous.



*Length of body 13-14 lin., of wing 9 lin.*—Grayish, opaque. Mystax and pile of entire head straw-colored. Antennæ black. Thoracic dorsum with vittæ hardly obsolete, clothed with very short nigro-fuscous pile and straw-colored setæ; humeri brown, whitish pruinose. Abdomen blackish-gray, toward the apex black and polished, clothed with short straw-colored or whitish pile, resupinate on the last two segments. Legs grayish-black, knees and tarsi brown, with many bristles; the bristles of the tibiæ and tarsi for the most part black. Wings equally fuscous, veins dark brown, fourth posterior cell open.

*Type.*—M. C. Z.

*Habitat.*—Red River of the North, Minn.

The above description means very little, but lack of material forces me to use it.

### **Stenopogon æacidinus.**

*Stenopogon æacidinus* Williston, Trans. Am. Ent. Soc., XIII, 289, 1886.

*Stenopogon æacidinus* Jones, Trans. Am. Ent. Soc., XXXIII, 274, 1907 (note).

♂ ♀.—*Length 14-20 mm.*—Black; abdomen, except base, hypopygium of male, and the last two segments of female, yellowish-red; wings black; mystax white. Hypopleuræ with fine short hair.

"Like species of *Ospriocerus*, but the antennæ with a distinct terminal style. Face wholly densely grayish-white pruinose, the bristles of the mystax white; frontal and occipito-orbital bristles black; beard and long hair of the anterior coxæ white. Dorsum of thorax moderately polished, brownish-black, on the sides grayish or brownish-yellow pruinose, behind and on the scutellum less thickly so, in the middle with not very noticeable stripes. Abdomen slender, yellowish-red, the first, second and anterior angles of the third segment and the hypopygium black. Legs black, the fore femora more or less, the fore and middle tibiæ and tarsi, pitchy or reddish. Wings black."

*Type.*—University of Kansas. Three male specimens.

*Habitat.*—Kansas Plains, in grassy ravine, Aug. 20 (type); Garden City, Ks. (Aug., H. W. Menke); Bear Cr. Cañon (July 5-8) and Denver (Osten Sacken), Col.; Lincoln Nebr. (July).

I have seen about twenty specimens of this species, and they all agree very well with the above description. The female is like the male except that the last two, and sometimes the last three, segments of the abdomen, are polished black. The frontal bristles appear to be uniformly black, but the occipito-orbital ones are as frequently black as they are

whitish; the red of the fore femora is quite variable in extent, sometimes covering the whole lower half, and again found only toward the tip. In all the specimens examined the second segment of the abdomen above is wholly reddish except for a black spot in the middle on the basal half which may be large or hardly noticeable; all the segments laterally are narrowly margined with black, and the posterior angles of segments 2-5 are narrowly covered with a whitish bloom, which in some specimens is hardly perceptible. Venter wholly black. The fourth posterior and anal cell closed at the margin, the others wide open.

This species is very closely related to the species of *Ospricerus*, but the short terminal style of the antennæ prevents its location in that genus. It seems to be an intermediate form.

#### **Stenopogon nitens.**

*Stenopogon nitens* Coquillett, Jour. N. Y. Ent. Soc., XII, 34, 1904.

♂.—“Length 16 mm.—Distinguished by the polished black abdomen. Black; the halteres whitish; pulvilli yellow, with two brown vittæ; tarsal claws reddish at base; hairs and bristles whitish, those on the antennæ, front, middle of mesonotum, abdomen except the first two segments and on the legs except the coxæ black; pubescence on inner side of the fore tibiæ golden yellow, hairs on lower side of fore femora chiefly whitish; mesopleura bare, hypopleura hairy; third segment of antennæ rather slender and elongate, about sixteen times as long as the style; head and thorax grayish pruinose, the mesonotum, except along the sides and posterior end, somewhat polished; abdomen polished, a transverse white pruinose streak in hind angles of segments 2-5; wings blackish, tinged with yellowish in the costo-basal portion, veins black, first posterior cell considerably narrowed at the apex, the fourth closed at the margin.”

*Type*.—Brooklyn Institute. A single male specimen.

*Habitat*.—Southern Texas (May).

#### **Stenopogon subulatus.**

*Dasyopogon subulatus* Wiedemann, Auss. Zw., I, 375, 1828.

♂ ♀.—Length 20-22 mm.—Wings broad, uniformly brownish or blackish, abdomen and legs reddish-yellow, the fore and middle femora, and sometimes the hind femora, with black vitta above.

Reddish-yellow; face, front and occiput yellowish-gray pruinose;

the first two segments of the antennæ, the palpi and more or less of the proboscis reddish. The third segment of the antennæ black, thin, not twice as long as the basal segments, beyond the middle, when viewed at certain angle, clearly narrowed to the tip, this effect being caused by a depression on the inner side of the distal half of the segment, style about one-fifth as long as the third segment. Bloom of the thoracic dorsum more yellowish-brown, showing a median narrowly divided stripe and two broad lateral darker stripes much abbreviated posteriorly. Bristles of the face, basal segments of the antennæ, occiput, prothorax, coxæ, sides of the basal abdominal segment and many along the lateral margins of the thoracic dorsum deep yellow; those of the front, a few on the pronotum and on the lateral and posterior portions of the mesonotum black, many with pale tips. Bristles of the scutellum black or reddish-yellow, the black ones usually becoming yellowish toward the tip. Mesopleuræ bare, sternopleuræ with scarcely perceptible yellowish pile; hypopleuræ with short hair of the same color; the entire pleuræ more grayish pruinose. Abdomen long, quite slender, subpolished, reddish-yellow, with very short appressed hairs of the same color, the lateral margins of the segments narrowly grayish pruinose; genitalia of male reddish, the terminal segment of the male often with a black spot above, the last two segments of the female blackish above. Legs reddish, the fore and middle femora with a short black fasciæ above, the hind pair sometimes with black markings varying in extent, in some cases almost wholly black; hair of legs wholly reddish, the bristles mostly black, a row on the outside of the fore and middle tibiæ reddish. Basal half of claws reddish, pulvilli pale. Wings deep brownish or blackish, all or several of the cells with paler centers; the first posterior cell wide open, the fourth closed and petiolate, the anal narrowly open.

*Habitat*.—Ga. (type); Ga. (Morrison), Tifton, Ga. (Sept. 9, C. W. Johnson); Lumberton, N. C. (Sept. 6, F. Sherman); Col. (?).

There are very good specimens of this species in the collection of the Am. Ent. Soc. Phila.

**Stenopogon longulus** (Pl. XII, fig. 2).

*Stenopogon longulus* Loew, Cent., VII, 50, 1866.

♂ ♀.—*Length* 17–20 mm.,; *of wing* 12–12.4 mm.—Head and thorax, excepting the humeri, the base of the first and lateral margins of all the abdominal segments, and the vittæ on the femora above, black; remainder of abdomen and legs reddish-yellow; head, thorax, base and sides of abdomen grayish or yellowish-gray pruinose; hypopleura with weak trichostical hair, sternopleuræ with mere traces of fine hair; third antennal segment black, much longer than the two basal

segments, at the middle rather suddenly tapering toward tip due to a depression or a flattening of the distal half, about twice as long as the short, thick style. Wings subopaque, of a dull yellowish-gray color; veins yellowish, the first posterior cell wide open, the fourth usually closed at the margin or slightly petiolate.

*Type*.—M. C. Z. Homotype, University of Kansas.

*Habitat*.—Dallas, Tex.; Mesilla Park (May 8), Mesilla Valley, and Alamogordo, N. M.; Ariz. (June 9).

Very closely resembling *consanguineus*, but a little larger, more graceful, the thorax narrower, and the abdomen both narrower and longer; the wings are longer and less broad and of a deeper fuscous tinge. On the whole *consanguineus* appears less bristly. The contrast between the black thorax and reddish abdomen is best brought out in greased specimens. The black vittæ of the front and middle femora are very limited, those on the latter often being wholly lacking; the vittæ of the posterior femora usually very narrow, but sometimes broadening out to cover the entire anterior and upper surfaces. The thoracic dorsum in darker specimens show a faintly divided median and two lateral, very obscure, brownish stripes. Bristles of entire body white or sordid white; those on vertex and legs more yellow.

### **Stenopogon consanguineus.**

*Stenopogon consanguineus* Loew, Cent., VII, 48, 1866.

*Stenopogon consanguineus* Jones, Trans. Am. Ent. Soc. Phila., XXXIII, 274, 1907 (locality note).

♂ ♀.—Length of body 14–15 mm.; of ♂ wing 9.5 mm.; of ♀ wing 11.3 mm.—Ochraceus; thorax, except the humeri, black, bloom dense, luteus, opaque; lateral vittæ of the abdominal segments and of the femora black; wings subfuscous, costa and veins on proximal portion of wing ochraceus, second submarginal cell rather shorter, fourth posterior cell closed before the margin of the wing.

Ochraceus; head black, but with dense very pale flavous bloom. Antennæ black. Mystax and pile of the entire head sordid yellowish-white. Thorax, except the humeri, black, but covered with a dense luteus bloom, opaque, dorsum covered with short pile and sordid yellowish-white or whitish bristles. Abdomen ochraceus, the sides of the segments black, the posterior margins for the most part excepted. Legs ochraceus, femora with black vittæ above, all the bristles yellowish-white; hind tibiæ occasionally brownish beneath. Wings subfuscous, the centers of the posterior cells paler; the fourth posterior

cell closed before the margin of the wing. The wings of the male are shorter than those of the female, and with shorter submarginal cells.

*Type*.—M. C. Z.

*Habitat*.—Nebr. (type), Pierre, S. D. (J. M. Aldrich); Rocky Ford, Col. (July 4); Sioux Co., Nebr., (P. R. Jones).

The antennæ of both *consanguineus* and *latipennis* are similar; the third segment is much longer than the two basal ones, about two times as long as the rather thick short style, and flattened on the distal half, thus from certain positions appearing tapering toward the tip from about the middle.

Both species have a small amount of hair on the hypopleuræ before the halteres. The thorax of *consanguineus* is more grayish pruinose and the bristles of the occiput and thorax more nearly white.

Mr. Jones states that this species is common in northwestern Nebraska in the fall.

***Stenopogon latipennis*** (Pl. III, fig. 1).

*Stenopogon latipennis* Loew, Cent., VII, 49, 1866.

♀.—*Length of body* 18–19 mm.; *of wing* about 12.5 mm.—Translation.—Ochraceous; head, prothorax, spots of pleuræ, the three dorsal stripes of the thorax and the metanotum black, but clothed with a luteus bloom, wings rather broad, subfuscous, costa and the proximal veins ochraceous, second submarginal cell rather shorter, fourth posterior cell closed before the margin of the wing.

Very much like *consanguineus*, but larger and more robust, front a little narrower, wings broader and femora stouter. Antennæ black, thorax ochraceous; prothorax, spots of pleuræ, metanotum and the three dorsal stripes black, opaque, clothed with dense luteus bloom. The entire abdomen ochraceous, the posterior margins of the last segments sometimes blackish. Posterior coxæ ochraceous with black spots. Legs wholly ochraceous, the pile and all the bristles luteus. Wings rather broader, subfuscous; costa and costal veins ochraceous, second submarginal cell rather shorter, fourth posterior cell closed before the margin of the wing.

*Type*.—M. C. Z.

*Habitat*.—Western Texas (type); Dallas, Tex.; N. M.; Denver, Col. (?).

There are at the M. C. Z. a single male and female, and at the National Museum a male, all from Texas, which I regard as typical of this species. The wings of these are broader,

more deeply tinged with yellow; the bristles of the body are more golden. There are other specimens in the collection of Prof. C. W. Johnson from Boulder Cañon, Col., which are doubtless *latipennis*. See note under *consanguineus*.

#### **Stenopogon pumilus.**

*Stenopogon pumilus* Coquillett, Jour. N. Y. Ent. Soc., XII, 1904.

♂ ♀.—Length 14 mm.—Near *consanguineus* but smaller, not reddish, but blackish and clothed quite uniformly with a grayish bloom.

Black, the upper side of the front and middle femora, their tibiae and tarsi reddish-yellow, all the claws yellowish at base, pulvilli pale. Head, thorax and abdomen clothed with a rather dense brownish-gray bloom; the thoracic dorsum with two narrow median dark-brown stripes abbreviated posteriorly. Proboscis, palpi and antennae black; the third antennal segment elongate, thin, about ten times as long as the very short style. Mesopleurae bare, sternopleurae with a patch of inconspicuous white short pile, hypopleurae with very inconspicuous pile, but without well-developed hair or bristles. Bristles of face and coxae white, those of the front, occiput, lateral margins of thoracic dorsum, scutellum and sides of the first abdominal segment more sordid yellowish-white; hair of the front in part black. Hair of all the legs sordid white, the bristles of the front and middle pairs largely white, the remainder and nearly all of those of the hind pair black. Halteres yellowish. The wings reach but little beyond the tip of the fifth abdominal segment, dark brown along the broad hind margin and apex, elsewhere largely tinged with yellowish; veins brown and yellowish, narrowly bordered with grayish; first posterior cell scarcely narrowed toward margin, the fourth closed at varying distances from the margin.

*Type*.—Two male specimens, at least one being at the Brooklyn Institute.

*Habitat*.—Brownsville, Tex. (Apr. and May, type); Clark Co., Ks. (June, elev. 1,962 ft., F. H. Snow).

The extreme base and tip of the abdominal segments are yellowish in greased specimens. One female has the sides of the prothorax, the front and middle coxae, and a narrow line on the hind femora reddish; the last two abdominal segments, as usual, are polished.

#### **Stenopogon tenebrosus.**

*Stenopogon tenebrosus* Coquillett, Jour. N. Y. Ent. Soc., XII, 33, 1904.

♂.—Length 22 mm.—Near *consanguineus*, but much darker, the wings brown and without any yellow coloring. Black; the halteres,

pulvilli and bases of tarsal claws yellow; a reddish yellow vitta on the upper side of the anterior femora; hairs and bristles yellowish-white, those on the hypopygium and in the middle of mesonotum chiefly black; third segment of antennæ narrow and elongate, about seven times as long as the style; body grayish pruinose, very thin in middle of mesonotum, the hypopygium polished; mesopleura bare, hypopleura hairy; wings, including the veins, brown, rather narrow, the first posterior cell slightly narrowed toward the apex, the fourth closed far from the wing margin."

*Type*.—U. S. N. M., Cal. No. A single male specimen.

*Habitat*.—Southern Texas.

### **Stenopogon ochraceus.**

*Stenopogon ochraceus* Van der Wulp, Tijdschr. v. Ent., XII, 212; Pl. IV, fig. 9; XXV, 96, notes; refers to *Scleropogon*.

*Scleropogon ochraceus* Osten Sacken, Cat., 1878, note 101.

♂.—*Length* 12 lines.—*Translation*.—This specimen is a male, 12 lines long and entirely ochre yellow; only on the thoracic dorsum appear dull blackish and chesnut-brown longitudinal stripes, and on the upper side of the fore femora is a dark brown longitudinal stripe. The face is small and not sunken; the antennæ are tawny yellow, the third segment is as long as the first two taken together, the style about half as long as the third segment. Bristles of the lower half of face stout, bright ochre-yellow, as also are those on the occiput, chin and cheeks. Hair and bristles of the thorax and legs also bright ochre-yellow. The wings are yellowish with brownish-yellow veins, the venation differs from all other species known to me, both wings are entirely alike and represented in fig. 6; the first and fourth posterior cells, together with the anal cell, are closed and the second posterior cell is divided by an extraordinary cross-vein. This venation agrees only with that of Algerian *Dasyopogon heteroneurus* Macq. (Dipt. Exot. I, 2, 41. 19, pl. 3, fig. 7), which was placed in the genus *Stenopogon* by Loew. I have, therefore, placed this North American species provisionally in this genus and wish, by means of this communication, to call the attention of more skillful dipterologists to consider the proper establishment of it.

*Habitat*.—North America.

I do not know this species.

In Note 101 of his 1878 Catalogue, Osten Sacken says, " \* \* \* if I understand Mr. v. d. Wulp's letterpress, the front tibiæ are armed with a spur. How can, in this case, the species be a *Stenopogon*?"

**Stenopogon (Scleropogon) cinerascens** n. sp.

♂.—Length about 15 mm.—Everywhere thinly whitish pruinose, with white bristles and hair; the hypopleuræ with a patch of short trichostical hair, the sternopleuræ with sparse short pile; the basal segment of the antennæ reddish, the second and the third black, the third comparatively short, elongated oval, and about one-third longer than the bristle-like style. Palpi and proboscis black. Wings short, not reaching but little beyond the tip of the fourth abdominal segment, hyaline, slightly darkened at tip; the first and fourth posterior cells closed and petiolate. Scutellum with but three bristles on each side of the posterior margin. Abdomen elongate, the hair throughout very short, appressed; genitalia black. Legs black, thinly white pruinose and clothed with white hair and numerous white bristles; claws black, slightly yellowish at base.

Type.—Brooklyn Institute. A single male in excellent condition.

Habitat.—Brownsville, Tex. (July 29).

There are suggestions of reddish markings in the ground color of the femora, base of the tibiæ, portions of the coxæ, pleuræ, face and genitalia, but these are almost wholly concealed beneath the whitish bloom of the perfect specimen of this unique species.

**Stenopogon (Scleropogon) helvolus** (Pl. III, fig. 3).

*Scleropogon helvolus* Loew, Berl. Ent. Zeit., 1874, 355.

*Scleropogon helvolus* Jones, Trans. Am. Ent. Soc. Phila., XXXIII, 273, 1907 (note).

*Scleropogon helvolus* Howard, Insect Book, 1902; Pl. XIX, fig. 16.

♂ ♀.—Length of body 20-23 mm.; of wing 12-13 mm.—A honey-yellow or flesh-colored species wholly clothed with a thin grayish-white bloom; basal segments of antennæ reddish-yellow, the third dark—usually black—elongate oval, with a terminal style more than one-half as long; hypopleuræ with distinct short trichostical bristles; sternopleuræ with patch of fine hair; first and fourth posterior cells in the five specimens examined closed and petiolate; all the femora above with obscure black markings. Mystax, beard and bristles of coxæ white; the bristles of the rest of the body more sordid.

“Chamois-leather yellow or cream-yellow, which in some specimens verges somewhat toward buckskin-brown, everywhere with a more whitish bloom, in special darker specimens more yellowish on the tibiæ.”—Loew. Some specimens appear almost wholly flesh-colored, in others the thorax is darker; the bloom of the face is very white, that of the rest of the body more grayish, but can hardly be said to obscure



the ground color. The third antennal segment little longer than the reddish-yellow basal segments, elongate oval, black, on the outer base sometimes yellowish; style likewise black or blackish, considerably longer than half the length of the third segment. Proboscis blackish; palpi of same color as rest of the body. The divided median stripe of the thoracic dorsum with a little light bloom, darker than the lateral stripes, noticeably only on the darker specimens; lateral stripes not very evident in unrubbed specimens. Abdomen long and slender, much as in *longulus*, with a patch of bristles on sides of the first three segments; hair on all the segments very short, appressed; genitalia and legs of the same color as the rest of the body. Legs thinly grayish pruinose, the femora on the upper side with more or less broad blackish longitudinal vittæ, which on the middle femora are apt to be darker, or sometimes wholly wanting; all these vittæ more or less obscure; apical half of claws black. Wing hardly reaching beyond the tip of the fifth abdominal segment, with darker yellowish-gray or light sand colored opaqueness; the veins light brown near the anterior border, brownish-black elsewhere; the first and fourth posterior cells usually closed and petiolate.

*Type*.—M. C. Z.

*Habitat*.—Texas (type), Dallas, Tex.; Segwick Co., Ks. (Aug., E. S. Tucker); Glen, Sioux Co., Nebr. (P. R. Jones).

### **Stenopogon (Scleropogon) similis.**

*Scleropogon similis* Jones, Trans. Am. Ent. Soc., XXXIII, 274, 1907.

“♀.—Near *S. helvolus*. Length of body 24 mm.; of wings 12 mm. When compared with *S. helvolus*, the antennæ are shorter, third joint broader and less than the length of the first two joints together. Style as long as the third joint, first two joints yellowish-red, apex of second darker, third joint and style black. The specimen is somewhat rubbed, but where the pollen can be seen it is similar to that of the preceding species. Wings hyaline, first posterior, fourth posterior and anal cell closed, the two former petiolate. Hypopleura with a patch of bristles.”

*Type*.—University of Nebraska. A single *rubbed* female.

*Habitat*.—Valentine, Nebr.

I have never seen this species.

### **Stenopogon (Scleropogon) picticornis.**

*Scleropogon picticornis* Loew, Cent., VII, 45, 1866.

♀.—Length of body 20 mm.; of wing 15 mm.—Translation.—Rufescens, clothed with very pale yellow or whitish pile and bristles; head, excepting the oral margin, the second segment of the antennæ, together

with the base of the third, the three dorsal thoracic stripes, the spots of the pleuræ, the thoracic stripes, the scutellum, the broad abdominal fasciæ, the vittæ of the fore femora, the anterior side of the posterior femora and the hind tibiæ nearly wholly black.

Rather rufous, subopaque, clothed with pale straw or somewhat whitish pile and rigid bristles, except the bristles of the vertex and front, and the short pile on the thoracic dorsum which are largely dark red or black. Head, excepting the oral margin, black, subochraceous pruinose, antennæ dark red, the second segment and the base of the third black, the extreme apex of the latter and the terminal style fuscous. Palpi black. Dorsal stripes of thorax black, all three equal, the lateral ones much abbreviated anteriorly. Scutellum black. Pleuræ with black spots. A very broad, black basal vitta on each of the first five abdominal segments, on the sixth segment three black vittæ are present, running together before the posterior margin, the seventh segment similarly marked to the sixth but with the middle vitta shortened into a fine line; the eighth segment short, except the basal spot, black. Venter rufous, posterior margin of the seventh segment and the eighth segment black or nigro-piceous. Pile of the abdomen quite short, that of the last segment supine. Legs rufous, the anterior and intermediate femora with black markings, the anterior spot broader; the anterior side of the posterior femora black; posterior tibiæ black, the inner side, except the apical third, reddish. Wings rather short, lightly infuscate, veins fuscous, transverse median vein spotted with fuscous; first and fourth posterior cells closed and petiolate, the third much dilated.

*Type*.—M. C. Z.

*Habitat*.—California (type).

The single type of *picticornis* is a very badly greased female. As it stands, it is most easily distinguished from any of the group, aside from *acidinus*, by its dark brick-red color; the three broad black thoracic stripes stand out distinctly on the dark red dorsum; on the pleuræ there is a large black spot covering the humeri, central portion and the mesopleuræ, and other less definable spots above the coxæ. The black fasciæ of the abdominal segments alternating with the red hind margins of the segments make the abdomen very uniquely colored. Bristles of whole body pale straw-colored. Trichostical bristles present; first and fourth posterior cells closed and petiolate.

There are two specimens from Lance Creek, Wyo. (Aug. 14, 1895), at the American Museum, two specimens from Custer

and Piedmont, S. D., in the collection of Prof. J. M. Aldrich, one female from Denver Highl. (Aug. 18), at the M. C. Z., and a pair from Cal. (July 30) in the collection of Prof. W. C. Johnson, which I think are *picticornis*. The ungreased specimens with the bloom largely concealing the reddish ground color appear very differently from the greased type. The whole body is covered with a yellowish-gray bloom, the dorsum of the thorax showing a dark narrowly divided median stripe and rather obscure ill-defined lateral ones; the posterior portion of the thoracic dorsum very bristly; segments 2-7 of the male, and segments 2-5 of the female, abdomen with bare polished spots. These spots are characteristic of the species (so far as my material goes); they are narrow and located on the anterior half of the lateral margins, nearly or quite touching the anterior margins of the segments. In the female the last two segments of the abdomen are polished black, but reddish above. Basal segments of antennæ black or reddish-yellow, the third segment black, sometimes reddish-yellow at base and tip, longer than the basal segments, and about twice as long as the style. The first and fourth posterior cells of all the specimens closed and petiolate. In the two specimens from South Dakota, which are greased, the thoracic dorsum is wholly black except two red stripes, broad anteriorly and embracing the humeri, and behind narrowing rapidly, which separate the median from the lateral stripes.

### SPHAGEUS.

*Sphageus* Loew, Cent., VII, 55, 1866.

*Spahageus* Schiner, Verh. Zool.-Bot. Ges., XVI, 847, 1866;  
quotes orig. desc.

Legs strong, under side of the front femora with a patch of short very stout bristles on the proximal half; middle femora with a similar patch on the middle of the underside and on the middle of the anterior side and extending over onto the upper side; hind femora with only scattering bristles; coxæ with strong bristles. Antennæ similar to that of *Dizonias*, but without the excision on the third segment; first segment cylindrical; second, shorter, swollen distally; third elongate.

not noticeably narrowed at tip, and without style, over two times the length of the first and second segments taken together; on close examination a minute spine will be seen situated a little to one side of the tip of the segment. Face swollen on the oral margin; from thence gradually receding until the antennæ are reached; mystax extending nearly to antennæ. Thorax normal. Abdomen as in *Dizonias*; not narrowed toward the tip in the male; somewhat so in the female; genitalia similar to *Dizonias*, *Ceraturgus* and *Ceraturgopsis*, leaving the end of the abdomen apparently open. Abdomen without bristles except on side of the first segment.

*Type*.—*Sphageus chalcoproctus* Loew.

The characteristic patches of short bristles on the femora make this a very unique genus.

#### **Sphageus chalcoproctus.**

*Sphageus chalcoproctus* Loew, Cent., VII, 55, 1866.

♂ ♀.—*Length* 19.5 mm.—Head and thorax black; antennæ, angles of thorax, scutellum, abdomen and legs yellowish-red. Face, front, occiput, all the coxæ before, spot over each coxæ, before base of wing, the pronotum, and a stripe running backward to the posterior callosities above the dorso-pleural suture, spot behind each humerus, two stripes in front of the scutellum attenuated anteriorly, the scutellum, except spot at middle of base and a spot above each halter, all golden pruinose. Mystax extending upward nearly to the antennæ; pile and bristles of head, thorax and abdomen wholly golden. Anterior angles of segments 2-4 of the abdomen with a white pruinose spot reaching backward to the posterior angle; all the segments with a narrow black posterior margin; fifth segment of the female with a brilliant metallic purplish luster; male genitalia reddish with golden hair. Legs reddish-yellow, bristles of the characteristic patches black; rest of bristles black and yellow; claws black, reddish at base. Wings yellowish; the discal, second submarginal, all the posterior, the anal and the axillary cell lighter in the center.

*Type*.—M. C. Z. A single male and female specimen.

*Habitat*.—Cuba.

#### **MICROSTYLUM.**

*Microstylum* Macquart, Dipt. Exot., I, pt. 2, 26, 1838.

*Microstylum* Loew, Dipterenfauna Sudafrica's, 74, 1860.

*Megapollyon* Walker.

*Megapollyon* Bigot, Annales, V, 548, 1857 (table of genera).

Large species. Proboscis longer than the height of the head; wings of ordinary length and narrowness, first posterior

cell narrowed, closed at the margin, or petiolate, the second projecting into the first, the third much broader than long, equaling in width the discal and the fourth posterior cells together, the fourth at the very extremity very oblique, and on the same line as the extremity of the discal cell, the latter long and narrow, the anal cell closed at the margin. Face broad, but slightly and evenly swollen, facial orbits parallel, frontal orbits emarginate and beset with short forward directed bristles. Mystax composed of fine hairs, strong bristles, or a mixture of both; when of the first the fine hair extending upward to the base of the antennæ. Segments 1 and 2 of the antennæ subequal, cylindrical, segment 2 more slender and slightly swollen distally; segment 3 attenuated at base, thence fusiform, style very short, hardly perceptible. Occipital bristles well developed. Thoracic dorsum with microscopic hair, bristles only on the lateral margins above the base of the wings, and on the posterior callosities; scutellum with two bristles. Trichostical bristles present. Abdomen elongate, slightly tapering, without bristles except on the lateral margins of the first segment, but with microscopic hair; hypopygium small, ovipositor with a circlet of spines. Fore tibiae without a terminal claw-like spur.

*Type*.—*Dasypogon venosus* Wiedemann.

*Microstylum* is represented in North America north of Mexico by two species, *galactodes* and *morosum*, the latter being our largest Asilid now known. As in both our species, the mystax is confined to the oral margin and is composed chiefly of stout bristles; they naturally fall under that division of the genus which Loew, in his *Dipterenfauna Sudafrika's* characterizes as "*Knebelbart armharrig, mit ausserst dicken Borsten durchmengt.*"

#### SYNOPSIS OF SPECIES.

- Wings more or less milky white; head and thoracic dorsum evenly whitish pruinose..... **galactodes.**  
 Wings blackish or yellowish-brown; bloom of thoracic dorsum prominent only on the lateral margins... **morosum.**

#### *Microstylum galactodes.*

*Microstylum galactodes* Loew, Cent., VII, 44, 1866.

♂ ♀.—Length 30-34 mm.—Dark reddish-brown species with thorax whitish pruinose and wings more or less milky-white.

Reddish-brown; face, front, occiput and pleuræ densely grayish-white pruinose, the dorsum more thinly, and the abdomen very faintly so; last four segments of the female abdomen and the entire venter in both sexes, except at the base, without bloom and polished. The four setæ of the mystax, bristles of the palpi, beard and upper occiput stout and black, as are they elsewhere on the almost bare body; bristles on the posterior callosities pale at tip. Halteres yellowish, stalk darker. Hypopygium more yellowish-red than the rest of the abdomen, with black, sometimes fulvous, hair; spines of the ovipositor crimson. Legs darker than the body, with short stout hair and longer black bristles. Claws black, red at base; pulvilli straw-colored. Wings whitish hyaline, excepting the apical half of the anterior margin, the apical third of the wing and a very broad border on the posterior margin, milky-white; veins yellowish. The milky color in the wings of the female is less widely diffused than in those of the male.

*Type*.—M. C. Z. Type series consists of three males and six females.

*Habitat*.—Pecos River, Texas; Kansas; N. M.

Easily separated from the blackish-winged *morosum* by the milky whiteness of its wings and the even whitish bloom of its head and thorax.

**Microstylum morosum** (Pl. VI, fig. 4 ♀); (Pl. VIII, fig. 4 ♂).

*Microstylum morosum* Loew, Cent., X, 27, 1872.

*Microstylum pollens* Osten Sacken, Aldrich Cat. of N. A. Dipt., 256; note.

*Microstylum morosum* Howard, Insect Book, 1902; Pl. XIX, fig. 17.

♂ ♀.—*Length* 35-37 min.—Black, legs and wings of the same color; head and thorax whitish pruinose, the bloom on the dorsum, however, extremely thin except on the margins; bristles of mystax, beard and coxæ white. Female abdomen reddish above.

Face and front densely whitish pruinose, occiput less densely so, except along the orbits, mystax white, composed of more bristles than in *galactodes*; the palpi, segments 1 and 2 of antennæ, the front and occiput with black bristles and hair; rest of the bristles of the occiput and the beard white. Segment 2 of the antennæ reddish. The white bloom of the dorsum, because of its thinness in the center, appears most clearly as a band extending along the sides back to and including the scutellum; pleuræ likewise whitish pruinose, but more densely so below the sternopleural suture. Prothorax above with black bristles, below on the sides with whitish pile. Dorsum rather bare, with very short black hair, but on the posterior callosities with dense short whitish pile. Bristles on the posterior callosities, the coxæ, before the

halteres, white; elsewhere on the dorsum and scutellum, black. Halteres yellowish. Abdomen wholly black, thinly whitish pruinose, at the base and on the sides more densely so; aside from the short white bristles on the lateral margins of segment 1, with microscopic black hairs above, and similar white ones on the sides. Hypopygium black, with black pile. Legs black with short black hair and longer, but proportionately short black bristles; the middle almost wholly, and the hind femora in part, with short white hair; claws wholly black, pulvilli blackish. Wings uniformly blackish with white veins; the first posterior cell closed before the margin and with a short peduncle.

♀.—The type female differs from the male, to which it is very similar, in the pale yellowish color of the bloom of the head, thorax and coxæ; in the reddish color of the tergum of the abdomen covering the third, fourth and fifth segments except on the sides, and the sixth segment toward the base; and in that the last four segments of the abdomen are not pruinose, but polished.

*Type*.—M. C. Z. Single male and female type.

*Habitat*.—Dallas (type) and Victoria (June 5), Texas.

In Note 100 of his "Catalogue of the Diptera of North America," Osten Sacken says, "The Mus. Comp. Zool. possesses a number of specimens of a *Microstylum* which are of the same size as *M. morosum*, but which Dr. Loew, to whom I communicated a specimen, considers a different species and calls *M. pollens*. It is less intensely black than *morosum*, antennæ and legs are often quite reddish-brown, the bristles of the sides of the thoracic dorsum are yellowish-white, etc. As I had no opportunity to make a thorough comparative study of both species, I merely draw the attention of collectors to it." On the strength of this note, Prof. Aldrich, in his recent catalogue, raises "*pollens*" to a specific rank with the note "Osten Sacken's reference was not intended as a description, but I think the data and the availability of the types make it valid."

The specimens thus referred to are five females collected at Dallas, Texas, the type locality for *morosum*. I do not consider *morosum* and these five specimens which Loew calls "*pollens*," *in litt.*, as distinct species, for the study of considerable material at the M. C. Z., the National Museum and the Am. Ent. Soc. shows that even the typical *morosum* is inclined to vary as to the color of antennæ, etc., and even

among these five "*pollens*" specimens we find that the color of the antennæ, legs and abdomen is not constant, and the yellowish color of the bloom is only such as we might expect, and often find, in the female of a dark male. The fact that these specimens and the specimens of *morosum* came from Dallas and that Loew made his description of *morosum* from a single male and female, has its weight in considering a species subject to variation.

These "*pollens*" specimens are of the same size as *morosum* with similar, though less intensely black, wings, and the antennæ and legs are reddish-brown. In one specimen the third antennal segment is black. The bloom follows the same pattern as in the typical *morosum*, but is yellowish, not white. In *morosum* the bristles of the palpi, antennæ, front, occiput, legs and many on the thorax are black; in "*pollens*" the bristles are everywhere pale yellow or sordid white except on the legs, where they are of the same reddish color. The abdomen is reddish-brown; in several specimens more reddish than in others, but in no case is the red color so sharply marked and defined as in the female type of *morosum*. One specimen has the tergum of the abdomen throughout yellowish-red.

#### ARCHILESTRIS.

*Archilestes* Schiner, Verh. Zool.-Bot. Ges., XVI, 672, 1866.

*Archilestris* Loew, Berl. Ent. Zeit., 1874, 377; change of name.

*Archilestris* Osten Sacken, Biologia, Dipt., I, 169, 1887; note.

*Archilestris* Williston, Psyche, V, 259, 1889.

Face broad, little swollen on oral margin and thence gradually receding to antennæ; bare, except a single row of bristles on oral margin; facial orbits parallel, front not widened above, but frontal orbits slightly emarginate, but not as much so as in *Microstylum* nor with as many short bristles. Segments 1 and 2 of the antennæ subequal, cylindrical, with short bristles above and below; segment 3 longer than segments 1 and 2 taken together, broad at base, gradually tapering to tip, style barely perceptible. The third segment on its upper side toward the tip bears a few short bristles. Proboscis as long as the height of the head. Thorax normal. Abdomen



elongate, rounded, slightly tapering. Bristles on the occiput, humeri, posterior portion of thoracic dorsum, sides of thorax, coxæ and two on scutellum well developed. Legs with stiff hairs and longer bristles; the bristles are very stout and numerous on the distal portions of all the tarsal segments; the front tibiæ without a terminal claw-like spur; pulvilli normal. Wings with first posterior cell wide open; the fourth closed before the margin.

*Type*.—*Dasygogon capnopterus* Wiedemann, and *Dasygogon magnificus* Walker.

### **Archilestris magnificus.**

*Dasygogon magnificus* Walker, List, VI, 427, 1854.

*Microstylum magnificus* Bellardi, Saggio, II, 79, 1861, Pl. I, fig. 2.

*Dasygogon magnificus* Schiner, Novara, 168, 1868.

*Archilestris magnificus* Os. Sacken, Biologia, Dipt. 1, 169, 1887.

♀.—*Length about 40 mm.*—Thorax a deep rich velvety reddish-brown; abdomen red throughout; wings deeply tinged with brown, but clear at base in the first and second basal and in the anal cell, except for a cloud in the distal part of each, and at the base of the axillary, the first, fourth and fifth posterior, discal and marginal cells.

Face densely covered with fine short appressed pile, appearing pruinose; the single row of bristles forming the mystax black. Front rich brown pruinose, with a few black bristles along the orbits and longer ones on the tubercle. Occiput brown pruinose with black bristles along and above the outer orbits, and black hair below. Palpi and antennæ reddish with black bristles and hair. Thorax everywhere of the same color, with black bristles forming a row over base of wings, on posterior callosities, two short rows on either side of where the geminate stripe would be if it were present, and two bristles on posterior margin of the otherwise bare scutellum black; thoracic dorsum and middle of pleuræ with short black hair. Abdomen red with short microscopic red hair above and black on the sides; the venter with black hair, short, except on the first segment. Lateral margins of the first segment with short black bristles. Legs almost black with bristles and hairs of the same color; claws wholly black, empodia longer and red; pulvilli whitish.

*Type*.—British Museum.

*Habitat*.—Mex. (type); near city (Craveri, Salle), Yantepec (Truqui), Hastec (de Saussure), Ventenas (Osten Sacken); S. Am., (Schiner).

There are specimens at the Nat. Museum from Guanajuato and Tepri, Mexico, and a female at the M. C. Z. from Panama.

**DIZONIAS.**

*Dizonias* Loew, Cent., VII, 53, 1866

*Dizonias* Schiner, Verh. Zool.-Bot. Ges., 1866, 846; quotes orig. description.

*Dizonias* Williston, Biologia, Diptera, I, 305, 1901.

Head obviously broader than high, quite thick; face and front moderately broad; the face scarcely narrowed above, the protuberance moderately convex and reaching nearly to the base of the antennæ and clothed throughout with stiff hairs. Front but little depressed, ocellar tubercle not prominent, but with bristles. Basal segments of antennæ short, cylindrical, the first about twice the length of the second, the second short, swollen distally; the third elongate, over twice the length of the first and second, without a style, on the inner distal half with a distinct excision. Thorax moderately convex above, with stout bristles upon the posterior callosities, in an irregular row extending from before the base of the wing backward and upward to above the callosities and upon the scutellum. Abdomen cylindrical, not attenuated toward the tip in the male, but slightly narrowed in the middle; in the female slightly tapering toward the tip. Male genitalia small, stout, not meeting to close the anal opening, thus giving the tip of the abdomen a broken appearance as in *Ceraturgus* and *Sphægeus*; the female ovipositor with a circlet of spines; empodia well developed. Wings quite broad; first posterior cell wide open, the third very broadly open, the fourth closed before the margin, the anal cell closed on the margin.

*Type*.—*Dizonias phœnicurus* Loew.

The males of *Dizonias*, thus far known, are conspicuous in that all have black wings, two whitish pruinose abdominal fasciæ, the posterior one emarginate, located near the bases of the second and third segments; thus they are recognized by their coloration as easily as by their structure. The female differs very much from the male, being usually yellowish-red with golden, instead of white, bands upon the abdomen; in *pilatei* there are pruinose bands on segments 1-5. Dr. Williston in the Biologia says, "the dissimilar coloration of the two sexes of the species of the genus and the uniformity of

the structural characters render it almost, if not quite, impossible to collate them. Observation in the field will be necessary for this purpose." I have found this true.

The males resemble somewhat those of *Ospriocerus* in that they are dark in general color, have broad blackish wings and an elongate third antennal segment without a terminal style. They differ chiefly, however, in the decidedly broader head, the cylindrical, not tapering, abdomen, and in the arrangement of the male genitalia, also in the possession, in good specimens, of the abdominal white bands.

**Dizonias tristis** (Pl. VIII, fig. 3.)

*Dasyopogon tristis* Walker, Dipt. Saund., 93, 1856.

*Dasyopogon quadrimaculatus* Bellardi, Saggio, II, 80, pl. I, f. 8, 1861.

? *Dizonias phænicurus* Loew, Cent., VII, 53, 1866.

*Dizonias bicinctus* Loew, Cent., VII, 54, 1866.

*Dizonias bicinctus* Osten Sacken, Cat., 230, note 103, 1878.

*Dizonias phænicurus* Van der Wulp, Tijdschr. V. Ent., XXV, 96; oc. in Argentina.

? *Dizonias phænicurus* Williston, Biologia, Dipt., I, 304, 1901.

*Dizonias tristis* Howard, Insect Book, 1902; Pl. XIX, fig. 6 ♂; fig. 13, ♀.

*Ospriocerus albifasciatus* Back, Can. Ent. XXXVI, 292, 1904.

♂ ♀.—Length 16–23 mm.—♂.—Wholly black, the second segment of the antennæ, the dorsum of the thorax occasionally, and the distal portion of the abdomen quite frequently reddish; the abdomen with two white pruinose fasciæ near the base; bristles of entire body black, hypopygium chiefly with white pile. ♀.—Quite different, see below.

♂.—Wholly black, legs and wings of the same color; abdomen with two white pruinose fasciæ; bristles of the entire body black; hypopygium chiefly with white pile. Head black; front, sides of face and occipital orbits whitish pruinose; bristles of the front and occiput, the mystax, beard and pile of palpi black. Antennæ black; the second segment and the base of the third slightly reddish, the second and third segments, each in certain lights, grayish-white pruinose. Dorsum of thorax black, lateral margins whitish pruinose, pile short and all the bristles black. Abdomen black, not polished; the basal cross-bands of the second and third segments whitish pruinose, very broad on the sides, narrowed above, sometimes interrupted. Pile of the abdomen short, black, the side of the first, and the anterior angles of the second, clothed with longer pile; the posterior margin of the last segment and the hypopygium with white pile. Venter black.

Legs and coxæ black, the articulations more reddish, the short pile and all the bristles black; claws black, reddish at base; pulvilli pale. Halteres yellowish, base of the peduncle blackish. Wings black, all the cells with a paler central area, the fourth posterior cell closed and slightly petiolate, the other posterior and submarginal cells open, the anal cell closed at the margin.

♀.—Osten Sacken's collection possesses two females, and that of Prof. C. W. Johnson several more. They differ considerably from the male, and might easily be taken for a different species; the head, antennæ, in varying degrees, and the thoracic dorsum, are reddish-brown and not black as in the typical male. The pruinose fasciæ on second and third segment of abdomen are bright golden instead of white, and sometimes the ground color of these segments, excepting the posterior margins, reddish. The legs are usually brownish-red, the femora being darker and more or less blackened on the femora; wings brown, the costal vein more yellowish.

*Type*.—The types are located as follows: *Dasypogon tristis*, British Museum; *Dasypogon quadrimaculatus*, University, Turin, Italy; *Dizonias phanicurus* and *bicinctus*, M. C. Z.; *Ospriocerus albifasciatus*, Am. Ent. Soc. Phila.

*Habitat*.—St. Augustine, Georgiana and Enterpise (C. W. Johnson, May 15), and Turkey Lake, (Orange Co., Aug. 29, E. A. Back), Fla.; Opelousas, La. (C. W. Johnson, June 3); N. M.; Dallas, Texas (Osten Sacken); Mexico and Central America (Biologia).

In determining this species one must allow for a large range of variation. The antennæ may be wholly black, or the distal part of the first segment, the whole of the second and the basal portion of the third may be red in varying degrees. The dorsum of thorax may be wholly black or reddish. The abdomen may be entirely black, with or without the white fasciæ (though I believe the absence of these is due to rubbing or greasing) or the posterior margin of the fourth and the following segment entire, may be red, and sometimes lines or small areas of red may be found on the second and third segments. A specimen may have the thoracic dorsum and the distal portion of the abdomen red, or the dorsum may be black and the abdomen still red. The bristles of the coxæ may be wholly black, almost wholly white, or an even mixture of the two colors.

I have seen material from Florida, Louisiana and Mexico, showing almost every gradation from the black form of *tristis* up to *phanicurus*, and believe that the latter is only an extreme variation of the former. I am, however, in some doubt as Dr. Williston has seen and described in *Biologia*, female specimens of *lucas*, *phanicurus*, and possibly *tristis*. Larger collections will bring out interesting facts.

**Dizonias pilatei** (Pl. VII, fig. 2.)

*Dizonias pilatei* Johnson, *Psyche*, X, 112, fig. 5, 1903.

♀.—*Length* 16 mm.—Yellowish-red, head, pleuræ, lateral margins of thoracic dorsum, scutellum and a broad band on the basal portion of abdominal segments 1-5, golden pruinose; legs wholly reddish-yellow with pale fine hair and short black bristles; all the rest of the clothing of the body yellowish. Wings brownish, the discal portion and the veins bordered with yellow.

Head, except ocellar tubercle, thickly golden pruinose; antennæ, palpi and the lower half of the proboscis reddish; the mystax, hair of proboscis, palpi, beard, frontal orbits and ocellar tubercle and the bristles of the occiput whitish. Thorax rather narrow, dorsum decidedly reddish, with a broad median and two lateral black stripes, the latter greatly abbreviated anteriorly and distinctly bisected by the transverse suture; the whole dorsum faintly obscured by a bloom, the lateral margins, especially when viewed from the side, rather densely golden pruinose. Pleuræ reddish, with suggestions of black in places; golden pruinose in varying degrees of intensity, being most prominently so on the mesopleuræ, a spot above each coxæ, and before and above the halteres; scutellum likewise golden pruinose. Halteres pale yellow. Abdomen yellowish-red; the extreme base of the first segment and the posterior margin of segments 1-4 almost velvety black, the larger part of the tergum on segments 2-3 blackish; segments 1-5 with a broad basal yellowish pruinose band, that on the second and third segments occupying the entire lateral margin and gradually narrowing above; segments 5-8 polished, reddish-yellow. Venter black or blackish, toward the tip of the abdomen reddish. Legs, including the coxæ, wholly reddish-yellow, the coxæ golden pruinose; hair of legs short, pale yellow, all the bristles short, black; pulvilli pale; claws black, reddish on basal half. Wings brownish, almost blackish on the costa; the center of the cells, the borders of the veins more yellowish.

*Type*.—Collection of Prof. W. C. Johnson, Curator of the Boston Society of Natural History. A single female in excellent condition.

*Habitat*.—Tifton, Ga. (Sept. 9, 1896). Collected by Mr. G. R. Pilate and sent to Prof. Johnson by Dr. Garry de N. Hough.

The type specimen is the only one of this species now known. Prof. Johnson says, that aside from the difference in coloration, "that this species is distinguished from *tristis* in having the thorax noticeably narrower and the third segment of antennæ shorter and proportionately broader and entirely red." He also calls attention to the "great difference between the two species in their time of appearing, which shows that they are in no way related, as all data pertaining to the Asilidæ indicate but one seasonal brood." In connection with this last statement, I would call attention to my capture of *tristis* on Aug. 29, 1908, at Turkey Lake, Fla.

### PSILOCURUS.

*Psilocurus* Loew, Berl. Ent. Zeit., XVIII, 373, 1874.

*Orthoncuromyia* Williston, Kans. Univ. Quart., II, 67, 1893.

Scutellum with two or four stout bristles; veins at outer ends of discal and fourth posterior cells parallel or nearly so.

Head twice as broad as high, face moderately narrow, nearly flat, on the oral margin slightly convex and more prominent; mystax composed of bristles confined to the oral region, the face as far as the antennæ with fine hair. Front somewhat broader than face, well depressed, and with a rather deep furrow on each side extending from the vertex to the antennæ. Ocellar tubercle prominent without well developed bristles. Antennæ short, first segment cylindrical, not swollen on the underside, above and below with short pile and beneath with a long bristle; second segment likewise cylindrical, more slender, subequal or shorter, with short pile; third segment oval, scarcely longer than the first two segments taken together; style entirely rudimentary. Occiput with pile and bristles. Dorsum of thorax and scutellum everywhere covered with short, down-like, dense pile; on each side of dorsum are three stout bristles located immediately before and behind the transverse suture and upon the posterior callosity respectively. Scutellum with two erect stout bristles upon the posterior margin; sometimes there is another pair, outside these, which

may be equally developed or very slight. Abdomen convex, broad, of nearly equal length throughout, very bare, notwithstanding the very short hair and short bristles; the latter located on the middle of the segments near the lateral margins, very evident on the proximal segments, more obscure on the successive ones. Male hypopygium apparently on the sixth segment, sometimes hidden, with a lateral slender, curved process, and a median, stouter, likewise curved organ. In the female only six abdominal segments are present intact; the seventh and eighth being short and withdrawn into the sixth. Legs rather stout, the femora with bristles near the apex on the upper side; all the metatarsi jagged on the middle of the underside. Marginal cell of wing widely open, the second vein terminates in the costa a considerable distance beyond the confluence of the first vein by a well marked curve; the veins at the outer ends of the discal and fourth posterior cell sometimes, more often not, parallel, though nearly so, and not in same straight line; first posterior cell side open, the fourth posterior closed some distance from the margin, the anal cell closed.

*Type*.—*Psilocurus nudiusculus* Loew.

*Psilocurus* is very closely related to *Laphystia*. The chief differences between them lie in the possession by the former of two or more stout bristles on the scutellar margin which are absent in *Laphystia*, and in the structure of the antennæ; in *Psilocurus* the third segment is rounded, oval, and the style is entirely rudimentary, while in *Laphystia* it is elongate conical and its style is very stout, but not at all rudimentary, and plainly two-jointed. The much broader protuberant face and broader front of *Laphystia* are other helps in separation.

#### SYNOPSIS OF SPECIES.

1. Legs and antennæ wholly black (S. Da.)..... **modestus**.  
 Legs and first segment of antennæ reddish-yellow; the femora with a broad black fasciæ above (Southwestern species).  
**nudiusculus**.

#### **Psilocurus modestus.**

*Orthonneuromyia modestus* Williston, Kans. Univ. Quart., II, 67, 1893.

♂.—Length 7–8 mm.—Black throughout, the pulvilli and halteres

yellow. Front a little polished in the middle, thinly grayish-brown pruinose. Face rather gray pruinose, somewhat polished in the middle; pile and mystax white. Dorsum of the thorax polished, but mostly concealed beneath golden pubescence. Pleuræ densely white pruinose, with two polished spots, the one on the mesopleuræ, the other in front of the halteres. First five segments of the abdomen with a small silvery spot on the hind angles; elsewhere polished; sixth segment a little longer than the fifth, gradually tapering."

*Type*.—University of Kansas. One male specimen.

*Habitat*.—Western South Dakota (type).

I have not seen this species.

***Psilocurus nudiusculus*** (Pl. IV, fig. 11; Pl. IX, fig. 4).

*Psilocurus nudiusculus* Loew, Berl. Ent. Zeit., XVIII, 370, 1874.

♂ ♀.—*Length* 8–10 mm.—Ground color of head and thorax black, but everywhere densely clothed with a grayish or brassy pubescence; the abdomen black above, merging into a brownish or reddish color on the anterior, posterior and lateral margins; sometimes almost wholly reddish-brown; the lateral margins covered with a white bloom which on the posterior margin of each segment, except the first, extends in a narrowing line up onto the tergum. Legs more or less reddish-yellow; all the femora above with a black fascia.

Face and front grayish-yellow pruinose; the occiput brownish, grayish along the orbits, above with a row of bristles, which immediately behind the vertex are black, but smaller and paler on the outer orbits. Mystax and the long bristle of the first antennal segment sordid yellow; the beard scant, white. Antennæ short, the first segment reddish, the others black; the third hardly as long as the first two taken together, roundish oval, and bearing on the upper distal portion a very small spine; the style rudimentary. Dorsum of thorax, scutellum and upper portion of pleuræ concealed beneath a dense clothing of fine appressed brassy-yellow pubescence; the rest of the pleuræ except a polished stripe, coxæ and the metanotum, grayish-white white, in certain lights silvery white, pruinose. The three bristles on either side of the dorsum and the (usually) four bristles of the scutellum, black. Halteres yellow; the trichostical hair pale. Abdomen as described above in synopsis, but subject to considerable individual variation, being sometimes nearly black, again more reddish, but always with the broad posterior lateral margins of the segments and the narrow line on the posterior margins, whitish pruinose. Abdomen apparently bare, but in truth clothed with very fine pubescence, black upon the dark areas, white upon the white pruinose areas; the characteristic bristles pale, three arranged in a transverse line on the first segment, two on the following two segments and one on the remaining



segments. Legs reddish-yellow; all the femora with a broad black fascia, the few bristles toward the tip of the femora above black; the distal portions of the tibiæ and the tarsi pitchy; their bristles pale; pulvilli whitish. Wings grayish hyaline; venation normal to genus.

*Type*.—M. C. Z. The single male and female type specimens are in very poor condition.

*Habitat*.—Tex. (type); Opelousas, La. (May, C. W. Johnson).

The male type is somewhat larger than specimens of this species in the collections of Prof. C. W. Johnson, Kansas University, or of the Massachusetts Agricultural College. The female type is much faded. The difference in the ground color mentioned as sexual by Loew is of little or no importance, as both male and female vary from a dark to a reddish abdomen as above noted. Neither are veins closing the discal cell and fourth posterior cell behind always parallel; in fact, they are more often not so.

### LAPHYSTIA.

*Laphystia* Loew, *Linnaea Ent.*, II, 538, 1847.

*Laphystia* Schiner, *Fauna Austr.*, I, 136, 1862.

*Laphystia* Bigot, *Annales*, 1879, 235.

*Laphystia* Hermann, *Berl. Ent. Zeit.*, L, 29, 1905.

*Asicyia* Arribalzaga, Hermann, *Berl. Ent. Zeit.*, LIII, 152, 1908.

Intermediate between the *Dasygogoninae* and the *Laphrinae*. The first marginal cell but slightly open, the first and second longitudinal veins running into the costa at very nearly the same place. Body broad, stout. Antennæ cylindrical, rather stout, first segment swollen below, bearing bristles; second segment shorter and more slender; third segment as long or nearly as long as the first two segments taken together, obtuse distally and bearing a clearly distinct, short, biarticulate style. The basal segment of the style is short and collar-shaped, the terminal segment more conical, and at its end with a microscopic style arising from a depression. Head very much broader than high, the face and front very broad; the latter somewhat wider above, depressed, almost saddle-shaped. Face rounded, convex, its outline in profile easily seen; everywhere except narrowly along the orbits clothed with fine hair; vertex much depressed, ocellar tubercle prominent, both with erect fine

hair; occiput more or less densely clothed with hair and bristles above, below with a dense beard. Proboscis very small, slender. Thorax only moderately well arched, usually clothed on dorsum with fine erect pile and, on the lateral margin and posterior callosities, with fine, sometimes stouter, bristles; pleuræ with long pile upon the mesopluræ and before the halteres; scutellum wholly clothed with long erect pile, only seldom long slender bristles on the posterior margin. Abdomen broad, stout, compressed, all the segments on the middle of the sides with more or less well developed short bristles, and upon the posterior margins with pruinose cross-bands, entire or interrupted. Genitalia of male small; the last two segments of the abdomen usually partially retracted. Legs moderately stout with weak bristles, very numerous on the tibiæ and tarsi; pulvilli normal; the anterior tibiæ without a terminal claw-like spur. First posterior cell of wing variable, open, closed, or narrowed; remaining posterior cells wide open; the anal cell closed and slightly petiolate; the anterior branch of the third longitudinal vein forming a long letter S.

In uniting *Laphystia* and *Laphysctis* I am following Bigot (*Dipteres nouv. on peu connus*, XVII, *Annales de la Soc. Ent. de France*, 1877), and Dr. Fr. Hermann (*Beitrag zur Kenntnis der Asiliden*, *Berl. Ent. Zeit.*, L, 33, 1905). Bigot writes that the reciprocal similarity between *Laphystia* and *Laphysctis* is such that, in his opinion, it renders wholly irrational the separation of the types which have served in their establishment. Dr. Hermann says that the difference to be found in the width and breadth of the head, wing venation, hairiness of the hind tibiæ and size of the genitalia are only relative, and not to be relied upon for generic distinction. That this genus is intermediate between the *Dasygogoninæ* and the *Laphrinæ* may easily be seen by referring to Dr. Hermann's above-mentioned paper, page 31. It will be noticed that the figures 15-18 of the wing of *Laphystia sabulicola* show a marked variation in the union of the first and second longitudinal vein. Dr. Hermann places *Asicyia* a synonym of *Laphystia* as he finds that intermediate stages are to be found between normal and vestigial pulvilli, and open and closed first posterior cells even in specimens of the species *Laphystia*.

In all the specimens which I have seen, a limited number, the submarginal cell has been closed at or a little before the margin of the wing. Mr. Jones (Trans. Am. Ent. Soc. Phila., XXXXIII, 274, 1907) has found a wide variation in connection with the first posterior cell, stating that ten specimens "vary in wing venation from having the first posterior cell slightly narrowed, through one closed in one wing and nearly closed in the other, to both closed." Dr. Williston has noticed this same variation. Mr. Jones finds that there is a great variation also in the color of the legs, stating that in the ten specimens above referred to that the color varied from nearly entire yellowish-red to specimens in which only the extreme base of the femora and apex of the tibiæ were reddish. The color of the legs of *sexfasciata* vary in less degree. With such variation in color in species which vary so little from each other structurally, new species should be erected only after study of ample material.

Osten Sacken, in his Catalogue, doubtfully refers *Dasygogon albiceps* Macquart (Dipt. Exot., Suppl., I, 69) from Texas to this genus. Of this species Macquart writes, "Head white. Thorax cinereus, with black stripes. Abdomen black, with white fascia. Legs black, knees reddish. Length 4 lines. A neighbor of *Laphystia sexfasciata*. Face, mystax, beard and front of a silvery white. Antennæ black, with light, white down, first segment with white pile; little yellow on the second. Abdomen; posterior half of each segment white. Legs with light pile and long white silky hair, knees yellow. Wings a little yellowish, veins normal."

SYNOPSIS OF SPECIES.

1. Abdomen wholly pruinose except a small spot in the middle of the anterior margin of segments 6-7..... **opaca.**  
 Abdomen with pruinose bands on the posterior margins of the segments..... 2.
2. Pruinose bands of the abdominal segments entire..... 3.  
 Pruinose bands of the abdominal segments interrupted..... **sexfasciata.**
3. Abdomen wholly black ..... **flavipes.**  
 Abdomen partly reddish, especially on the posterior margins under the bloom..... **limatula.**

**Laphystia sexfasciata.**

*Dasyopogon sexfasciata* Say, Jour. Acad. Sci. Phil., III, 50, 1822;  
Compl. Works, II, 64.

*Dasyopogon sexfasciata* Wiedemann, Auss. Zw., I, 408.

*Laphyctis sexfasciata* Schiner, Ver. Zool.-Bot. Ges., 1866, 693.

*Laphystia sexfasciata* Loew, Berl. Ent. Zeit., 1874, 373.

*Triclis notata* Bigot, Annales, 1878, 433: Bull. Soc. Ent. France,  
1879, 87.

*Laphystia subfasciata* Bigot, Annales, 1879, 236.

*Laphystia sexfasciata* Williston, Trans. Am. Ent. Soc. Phila., XI,  
9; XII, 53.

♂ ♀.—Length 8–11 mm.—Hind femora and all the tibiæ at base and the knees yellowish; head and thorax grayish-white pruinose with fine white pile; abdomen above polished black, the posterior margins of all the segments with a rather broad grayish pruinose band which is interrupted on all the segments except the first and second.

Pile of entire head and thorax snow-white; that on the face and lower occiput dense, that on the front, ocellar tubercle and upper occiput sparser and erect; the bristles of the occiput are fine and cannot be distinguished as such. Antennæ wholly black; the first segment with white bristles beneath, the second appreciably shorter than the first and more slender, the third segment a trifle longer than the first two segments taken together. Thoracic dorsum grayish-white pruinose, showing two indistinct median and two broader lateral stripes, the latter distinctly divided at the transverse suture by a line of whitish bloom. Pleuræ densely grayish-white pruinose, the pile of both dorsum and pleuræ fine and white; the bristles of the lateral margins of the dorsum not well developed, scutellum everywhere with moderately dense white pile. Abdomen as described above, the pruinose bands are slightly tinged with yellow, all the pile white, longest on the sides; the bristles on the middle of the lateral margins rather obscure, venter grayish pruinose. Legs black, the bases of the hind posterior femora and occasionally those of the middle pair and the bases of all the tibiæ yellowish or reddish; pile and bristles wholly white; pulvilli pale; the bases of the claws white. Wings hyaline, the veins toward the base yellowish.

*Type*.—Lost.

*Habitat*.—Avalon, N. J. (July 29, Aug. 2, 15, 27); N. Y. (Aug. 10); N. C.; Capon (Apr. 19) and St. Augustine (common along seashore, June, July, C. W. Johnson); Ga.; Tex.

Dr. Williston has taken specimens of this genus from Montana and the Southern States, and regarded some of them as varieties of *sexfasciata*. Since then Mr. Coquillett has described the three following species. Mr. Jones, in Trans. Am. Ent.

Soc., XXXIII, pages 274 and 275, describes two other species, without specific names, which he believes to be new, but which present considerable variation; these should be taken into consideration before other species are created.

**Laphista flavipes.**

*Laphystia flavipes* Coquillett, Proc. Ent. Soc. Wash., VI, 180, July, 1904.

*Laphystia flavipes* Hermann, Beitrag zur Kenntnis der Asiliden (IV), Dipt., Berl. Ent. Zeit., LIII, 152, 1908. Quotes orig. description.

♀.—“Length nearly 10 mm.—Black, the halteres and femora and tibiæ, except their apices, yellow, the hairs and bristles whitish; second segment of the antennæ about two-thirds as long as the first, the third as long as the first two taken together, rather slender, gradually tapering to the apex, the second segment of the style wider than the first, only slightly longer than wide; head and body densely gray pruinose, somewhat yellowish on the face, front and mesonotum, the broad front portion of the abdominal segments 2-6, except on the sides and the narrow hind margins of the first five segments, polished; wings hyaline, the axillary, first vein and bases of the others yellow, remainder of the latter brown.”

*Type*.—U. S. N. M., Cat. No. 7950. Two male specimens.

*Habitat*.—Montana and North Carolina (H. K. Morrison).

**Laphystia limatula.**

*Laphystia limatula* Coquillett, Proc. Ent. Soc. Wash., VI, 180, July, 1904.

*Laphystia limatula* Hermann, Berl. Ent. Zeit., LIII, 152, 1908. Quotes orig. descrip.

♂.—“Length nearly 10 mm.—Differs from *flavipes* as follows: Second segment of the antennæ nearly as long as the first, the third robust, of nearly an equal width; mesonotum not gray pruinose, except along the lateral and posterior margins, that on the abdomen very thin, broad posterior margins of the last five segments reddish-yellow.”

*Type*.—U. S. N. M., Cat. No. 7951.

*Habitat*.—La Luz, New Mexico (C. H. T. Townsend).

In appearance *linatula* and *flavipes* are very much alike.

**Laphystia opaca** (Pl. IV, fig. 1; Pl. V, fig. 6.)

*Laphystia opaca* Coquillett, Proc. Ent. Soc. Wash., VI, 180, July, 1904.

*Laphystia opaca* Hermann, Berl. Ent. Zeit., LIII, 152, 1908. Quotes orig. descrip.

♂.—“Length 8 mm.—Black, the halteres, bases of tibiæ and of the

hind femora yellow, the hairs and bristles whitish; second segment of the antennæ about half as long as the first, the third broad and only slightly tapering at the apex; head and body densely grayish pruinose, three broad stripes on the mesonotum and a subtriangular spot at middle of base of abdominal segments 2-6 polished; the median stripe of the mesonotum is on its anterior third; wings hyaline, axillary vein and the others yellow, remainder of the latter brown."

*Type*.—U. S. N. M., Cat. No. 7952. A single male.

*Habitat*.—Padre Island, Tex. (C. H. T. Townsend, June 29).

There are at the American Museum two male and one female specimens, collected by Prof. W. M. Wheeler at Galveston, Texas, June 5, which agree very well with the above description. They average about 10 mm. long. The bloom of the head is silvery white, that of the thoracic dorsum more grayish; as in *sexfasiata*, the scutellum is moderately clothed with erect white pile. This species differs from the other species, here included, in that the bloom of the abdomen covers the entire basal segment, and the lateral margins and a broad band on the posterior margin of the following segments, thus leaving only a subtriangular space at the base of segments 2-6 bare of bloom and polished. The stripes on the thoracic dorsum are not in these specimens as in the type male. The coloration of the legs is the same as in *sexfasiata*.

### TRICLIS.

*Triclis* Loew, *Bemerkungen Ueber Asiliden*, 17, 1851.

*Triclis* Schiner, *Fauna Austr.*, I, 132, 1862.

*Triclis* Schiner, *Novara*, 162, 1868; obs.

Loew, in establishing this genus in his *Bemerkungen ueber Asiliden*, gives only the following, which I have fully translated:

"A striking, most singular *Dasyogon* which has been sent to me with the remark that it comes from upper Italy, induces me to erect a singular genus, of which the most striking characteristic is the closing of the first posterior cell some distance from the margin of the wing—a characteristic which is often present in the *Asilinae*, and still oftener in the *Laphrinae*, but which, in the subfamily *Dasyogoninae*, has been called to my attention for the first time in connection with this specimen. I name this new subgenus, which comes next to *Cyrtogon*,

*Triclis*, in reference to the singular closing of the cells on the hind board of the wing."

Schiner in his *Novara* appends to his description of *Triclis ornatus* the following:—"a characteristic feature of the genus *Triclis* is also the shape of the cubital fork; the upper branch is always strongly "S" shaped, and so enters the foreborder of the wing as to leave a very wide opening between the two branches of the fork; in the form of the antennæ there appears a great variability in the different species, the third segment is often long and small, in other species much shorter, and in more contrasting species very short and broad. However, this antennal variability is not necessary for the erection of any genus-group, although it should not be overlooked."

More recent observations have proved that the first posterior cell of species of both *Laphystia* and *Triclis* is subject to considerable variation. Dr. Williston believes that *Triclis* should be a synonym of *Laphystia*, which it very closely resembles. I am not in a position to have a definite opinion, as I have but a single specimen of *Triclis tagax* before me, and while I believe that *Triclis* may be a synonym of *Laphystia*, the proportionately narrower face, with the gibbosity confined to the lower portion, and the narrower and more deeply excavated front of this specimen, together with its more slender structure, leads me to retain *Triclis* as a separate genus until more material is at hand.

***Triclis tagax*** (Pl. IX, fig. 3.)

*Triclis tagax* Williston, Trans. Am. Ent. Soc., XI, 9; pl. I, figs. 6, 6a; 1883.

♀.—Length 65. mm.—"Black, whitish pruinose; head wholly with light pollen and pile; segments of abdomen with a large semicircle in front and the anterior angles shining. Wings hyaline.

Face thickly white pruinose and with white hairs in the mystax, reaching nearly to the antennæ; straight on the sides, in profile gently swollen below. Antennæ black; first and second joints short, of nearly equal length, third small, short. Front faintly brownish; occiput thickly white pruinose on the sides; bear white. Thorax black, the dorsum thickly covered with a short yellowish-white recumbent pile, along the middle in front a shining stripe; bristles slender, black. Pleuræ thickly white pollinose, with a small shining black spot above

the middle coxæ; scutellum pilose, with a row of thin bristles along its edge. Abdomen short, moderately broad, not much narrowed posteriorly; shining black, the posterior margins of the segments narrowly red, but obscured by a thick white pollen which leaves the black to form a large semi-oval spot nearly reaching the hind margin in the middle and only narrowly separated from the small black spot on the anterior angles which extends to, or nearly to, the hind margin. A circle of long bristly hairs near the tip black; otherwise the short, not abundant, pile is yellowish, whitish or white. Legs black, rather thickly clothed with short fine white pile, along the under side of the hind femora and tibiæ a little longer and more thickly erect pilose, as in *Dioctria*; bristles mostly white. Wings pure hyaline, the first posterior cell closed a little before the tip or at the tip, the fourth at a considerable distance before the border."

*Type*.—University of Kansas. A single specimen.

*Habitat*.—Kern Co., Cal.

The Am. Ent. Soc. of Phila. possesses a single specimen from California.

### ***Triclis flavipilis*.**

*Triclis flavipes* Jones, Trans. Am. Ent. Soc. Phila., XXXIII, 275, 1907.

"♀.—*Length* 10 mm.—Black, shining with a bluish tint. Front wide, deeply excavated, ocelli on a prominence, yellowish-red pruinose; bristles on each side and those of the ocelli black. Face thickly yellowish-red pruinose, when viewed in profile no convexity can be seen beyond the margin of the eyes until half way below the antennæ, where the gibbosity is very pronounced. Mystax not extending above the gibbosity, black on upper part and yellowish-red on the lower part near the oral margin, a few reddish hairs immediately below the base of the antennæ. Antennæ black, first joint longer than the second, third not as long as the first two taken together, style a little more than a fifth of the third joint, second joint of style more than twice as long as the first, hollowed out on the upper side, from which a microscopic bristle arises; first two joints of antennæ with black and reddish pile and longer black bristle-like hairs on the underside of the first joint. Occiput with reddish pollen; occipito-orbital bristles black, pile of the occiput, oral margin and beard fine, grayish-white in color, that of the occiput having a reddish tint. Thorax black, shining, covered with short, dense, yellowish-red pile, longer on the posterior margin, a few bristles on the lateral margins black. Scutellum of similar color and covered with pile of similar color to that of the thorax, with a row of thin, light-colored bristles on the posterior margin. Pleura black, covered with dense yellowish-white pollen and sparse, light-colored pile, a shining spot on the mesopleura extending



obliquely downward toward the front coxæ. Halteres and a fan-like row of bristles in front yellowish-white. Abdomen shining black, with a bluish tint, and covered with fine, dense, yellow pile, not easily seen unless viewed from profile. Pile of first two segments and lateral margins of the rest longer. Posterior lateral margins of all the segments golden pruinose, less so on the posterior segments. Second segment of abdomen short, about as long as the first. Tip of abdomen with a circle of long bristle-like hairs. Legs black, coxæ grayish-white pruinose. Coxæ and femora with whitish pile, that of hind femora with a reddish tinge, tibiæ and tarsi with shorter pile of a more reddish tinge, bristles of tibiæ and tarsi a trifle lighter than those of the femora, a few on the tarsi black. Wings uniformly blackish."

*Type*.—University of Nebraska. A single female specimen.

*Habitat*.—Meadow, Nebr. (July, 1906, P. R. Jones).

Mr. Jones states that the wing venation of this species is identical with that of the figure of *T. tagax* Williston, Trans. Am. Ent. Soc., Vol. XI, Pl. I, fig. 6. That the gibbosity of the face on the lower part is similar to that of fig. 6a of the head, but the upper part and antennal prominence are barely visible when viewed from profile. The third segment of the antennæ is not as broad as that of *T. tagax*. Mr. Jones places this species in this genus with the reservation that he believes that *Triclis* should not stand unless separated from *Laphystia* by some other character than the closed posterior cell.

### CERATURGUS.

*Ceraturgus* Wiedemann, Analecta Ent., 12, 1824.

*Ceraturgus* Wiedemann, Auss. Zw., I, 414, 1828.

*Ceraturgus* Macquart, Hist. Nat. Dipt., I, 288, 1834.

Robust, nearly bare species with yellowish markings. Antennæ porrect, apparently five-jointed; first and second segments subequal; third elongate; fourth, very short; fifth, fusiform or elongate and densely pubescent. Head much broader than high; the gibbosity of the face reaching evenly to the antennæ: mystax in the female of neither abundant nor strong bristles; in the male, of abundant, almost silky, hair extending upward more thinly to the antennæ. Vertex strongly depressed; ocellar tubercle very prominent and bearing a tuft of hair; occiput with weak bristles in the female; in the male with more abundant hair. Proboscis held nearly

vertical. Thorax well arched, with bristles above base of wings and on the posterior callosities; scutellum with bristles, sometimes very short. Abdomen robust, strongly convex, and but little tapering; lateral forceps of the male genitalia alone prominent and widely separated, thus giving the end of the male abdomen an "open" or "broken" appearance. Legs robust, normal, the fore tibiæ without a terminal claw-like spur. Submarginal and posterior cells widely open; anal cell closed at the margin or narrowly open.

*Type*.—*Dasygogon aurulentus* Fabricius.

#### SYNOPSIS OF SPECIES.

1. Terminal segment of antennæ fusiform; wings pure hyaline; body wholly golden pruinose except the thoracic stripes and a triangular spot at base of abdominal segments.

**aurulentus.**

Terminal segment of antennæ nearly or quite linear; wings usually brownish-yellow.....2.

2. All the abdominal segments with a golden posterior cross-band...3.  
Only segments 1-5 with a grayish posterior cross-band; pleuræ wholly grayish pruinose.....? **dimidiatus.**

3. Pleuræ black, with golden spots.....**cruciatus.**  
Pleuræ thickly light-yellow pruinose ..... **nigripes.**

#### **Ceraturgus aurulentus.**

*Dasygogon aurulentus* Fabricus, Syst. Antl., 166, 1805.

*Dasygogon aurulentus* Wiedemann, Dipt. Exot., 288, 1821; *Analecta Ent.*, 12, 1824; *Auss. Zw.*, 414; pl. V, fig. 5, 1828.

*Ceraturgus aurulentus* Macquart, *Hist. Nat. Dipt.*, I, 289; pl. VII, fig. 4, 1834.

*Ceraturgus aurulentus* Brauer, *Wein, Ent. Zeit.*, I, 56, 1883.

*Ceraturgus aurulentus* Johnson, *Psyche*, X, III; 1903 (fig. of antenna).

♀.—*Length* 8-9 mm.—Black, everywhere golden pruinose except the stripes of the thoracic dorsum and the proximal portions of the abdominal segments. Antennæ apparently five-jointed; first segment cylindrical; second, a little compressed and incrassate at tip; first and second segments subequal; third segment longer than the first two taken together; fourth very short; fifth, compressed, fusiform; the fourth and fifth densely pubescent. Stripes of thoracic dorsum very broad; the median stripe extending from the pronotum nearly to the scutellum; the lateral stripes bisected by a golden pruinose line along the transverse suture and drawn out to a point behind; they are separated throughout their length from the median stripe by

a golden pruinose line. The black on the proximal margins of the abdominal segments broadens out into a distinct triangle with its apex to the rear; last two segments wholly polished black. Pile of entire body fine and golden. Legs bright yellow; apical third of the front and middle femora and the apical fourth of the posterior femora black. Wings hyaline.

*Habitat*.—N. Y. (type locality); Westville, N. J. (Aug. 21, 1892, C. W. Johnson); Castle Rock, Del. Co., Pa. (Sept. 7, 1901, E. Daecke); and Lehighgap, Lehigh Co., Pa. (July 11, C. T. Greene).

This is an extremely rare species, and, until Prof. Johnson made his capture in 1892 at Westville, N. J., was spoken of as the "long lost *aurulentus*." I know of but three specimens in this country, one each in the three collections of Prof. C. W. Johnson of Brookline, Mass., Mr. E. Daecke of Philadelphia, and the American Entomological Society, Philadelphia. It is readily distinguished from *cruciatus* Say by its much smaller size, the almost omnipresent golden bloom, the black triangular spots of the abdominal segments, the yellow legs, the hyaline wings and the shape of the last antennal segment.

***Ceraturgus cruciatus*** (Pl. IV, fig. 2; Pl. VII, fig. 1.)

*Dasygogon cruciatus* Say, Jour. Acad. Sci. Phila., III, 52, 1823; Compl. Works, II, 66.

*Dasygogon cruciatus* Wiedemann, Auss. Zw., I, 381, 1828.

*Ceraturgus fasciatus* Walker, List, II, 367, 1849.

*Dasygogon cruciatus* Loew, Besch, Eur. Dipt., III, 124, 1873.

*Ceraturgus cruciatus* Brauer, Wien, Ent. Zeit., II, 56, 1883.

*Ceraturgus cruciatus* Johnson, Psyche, X, 112; 1903 (fig. of antenna).

*Dasygogon cornutus* Wiedemann, see *Ceraturgopsis*.

♂ ♀.—Length 16–20 mm.—Black, the polished thorax margined and spotted with yellow; abdomen annulate with yellow; wings dusky. Pleuræ not wholly grayish or golden pruinose.

Face brassy-yellow, mystax of same color; ocelli reddish; occiput densely golden pruinose with weak golden bristles. Antennæ black; first segment broadly reddish below; terminal segment elongate and densely black pubescent; when denuded a slight but distinct projection is found on the outer side about one-third the distance from its base. Thorax black, dorsum often with a reddish tinge; the median and lateral stripes very indistinct, scarcely noticeable; humeri, lateral margins, two spots above the humeri and more or less connected with them, and two small spots farther back on the middle of the dorsum

on the transverse suture yellow. Six unequal spots on the pleuræ, a spot above the halteres and on the hind coxæ and the posterior margin of the scutellum, also yellow or golden. Halteres reddish. Abdomen polished black, tip in female sometimes reddish; each segment with a broad golden cross-band on its posterior portion: venter of all the segments except the first with a narrow golden band on the posterior margin; the first two bands being partially bisected. Legs varying from dark to pale ferruginous; the tibiæ and tarsi often nearly straw-colored. Wings varying from deep yellow and blackish to nearly hyaline. The thoracic and scutellar bristles are very short and yellow; the pleuræ are nearly bare except for a patch of slight pile on the mesopleuræ and sternopleuræ. Trichostical hairs long and rather dense. The thorax and abdomen above are thinly clothed with microscopic golden pile.

The male differs from the female in being somewhat smaller; in having the femora much darker, often black, and the general shade of color markings. Two males in the collection of the Massachusetts Agricultural College, and one male in the collection of Frederick Knab, now at the Holyoke (Mass.) Public Library, have grayish markings, and nearly all the other males which I have seen show a strong tendency toward a similar color. The clothing of the male is much finer, and upon the face nearly black. The lateral forceps of the genitalia are quite prominent and clothed with long pile, as also are the terminal segments of the abdomen below.

*Type*.—Lost.

*Habitat*.—North Saugus (July 15, F. H. Mosher), Holyoke (July 10, F. Knab), Chicopee (July 1, F. Knab), W. Springfield (June 27, F. Knab), Montgomery (Aug. 7, F. Knab), Mt. Tom (June 24, July 24, F. Knab), Amherst (June 23, 27, 30; July 6, 7, 8, 11, 12, 18; Aug. 5), Mass; New Haven (June 23, W. E. Britton), Conn.; N. Y.; N. J. (June 8, July 10, E. Daecke); Pa.; Fla.; S. D.; Ark.

This is a common species in Massachusetts and easily recognized. Specimens are apt to become greasy, and thus apparently lose their yellow markings.

#### **Ceraturgus dimidiatus.**

*Dasyopogon dimidiatus* Macq., Dipt. Exot., Suppl. II, 51, 1847.

*Dasyopogon dimidiatus* Walker, List, Suppl. II, 428, 1854.

*Ceraturgus ? dimidiatus* Bellardi, Saggio, II, 61, 1861.

*Ceraturgus dimidiatus* Brauer, Wien. Ent. Zeit., II, 56, 1883.

Mr. Samuel Henshaw has loaned me from the M. C. Z. a female *Ceraturgus* from Dallas, Texas. It is new to the United

States. I believe that it is Macquart's *Dasygogon dimiatus*, hitherto known from Mexico. The following description is made from this single specimen, which is in good condition.

♀.—*Length about 20 mm.*—Polished black, similar to *cruciatus*, but the bloom of head and thorax is wholly grayish, while that of the abdomen is only slightly golden, more nearly gray, and confined to the first five segments. The wholly black antennæ differ from those of *cruciatus* in that the third segment appears longer, and the terminal segment only about one-half as long. In *cruciatus* the thoracic dorsum appears devoid of bloom except on the lateral margins, humeri and the four small golden spots on the outside of the indistinct median stripe, two before, above the humeri, and two on the transverse suture. In this female the bloom covers the entire dorsum except the broad median and the lateral stripes, each lateral stripe being greatly abbreviated anteriorly and narrowly and indistinctly bisected along the transverse suture, thus appearing as two oval spots; the anterior spot being narrowly separated from the median stripe by a line of grayish bloom which appears more brownish along the middle of the spot, the posterior spot of each stripe being confluent with the median stripe, thus leaving the posterior portion of the dorsum, except on the sides and narrowly before the scutellum, bare. Face, front, occiput, pleuræ and coxæ wholly grayish pruinose; scutellum rather thinly grayish pruinose, more densely so on the posterior margin. In *cruciatus* each of the abdominal segments bears a golden pruinose posterior cross-band; in this specimen the bands are present only on segments 1-4, and possibly on segment 5; the remaining segments wholly black. Unlike *cruciatus*, the bands are produced narrowly along the sides and nearly reach the anterior margin on segments 3 and 4. On the posterior lateral angles of segment 5 is a grayish spot. Proximal portion of the venter wholly grayish pruinose; the venter of the last five segments polished. Legs black, all the femora at base and tip, more or less broadly, reddish; the front and middle tibiæ and their tarsi reddish-yellow; the hind tibiæ and tarsi black, the basal half of the tibiæ reddish. Wings yellowish-brown, much darker on the basal half before the basal cells; all the submarginal and posterior cells broadly open, anal cell closed on the margin.

This is a more pilose species than *cruciatus*; the entire pile and bristles of the body are sordid white. In *cruciatus* the bristles of the thoracic dorsum and scutellum are but weakly developed, as is also the pile of the mesopleura and sternopleura; here they are well developed and the pile upon the pleuræ is much longer and denser, longer also is the pile of tergum and venter of the abdomen.

I have a male *Ceraturgus* also from Dallas, Texas, belonging to the M. C. Z., which is about 13 mm. in length and very closely resembles the male of *cruciatus*. The two basal segments of the antennæ are reddish (remaining segments of antennæ gone); there is a fine golden line on the posterior margin of the first abdominal segment, and pale golden spot on the posterior lateral angles of the second and third segments. The coxæ and trochanters are black, the femora chestnut, the tibiæ and tarsi yellowish. Basal portion of the wings are blackish; the outer portion nearly hyaline. The pleuræ are not wholly golden or grayish pruinose, but more as in *cruciatus*.

### ***Ceraturgus nigripes*.**

*Ceraturgus nigripes* Williston, Trans. Am. Ent. Soc., XIII, 287, 1886.

“♂.—Length 14 mm.—Abdomen with golden pruinose posterior cross-bands; legs black. Antennæ in structure like those of *C. cruciatus*, the style somewhat shorter, black; the first segment brushy black hairy, the second segment less so. Face projecting a little more below than in *C. cruciatus*; densely light golden pruinose, and with long, soft, rather abundant light yellow pile below, extending up more thinly in the middle; occiput below with white hair; above, the occipito-orbital hairs are black, longer and more abundant than in *C. cruciatus*; front polished black, with black hair except some yellowish ones on the ocellar tubercle, the orbits narrowly golden pruinose. Dorsum of thorax thickly golden pruinose, leaving two not very broad median brownish-black stripes, separated by a line, and on each side two large, oval, black spots narrowly separated by a sutural line; pile or hair rather long and erect, on the front part yellowish-white, broadly behind black, the bristly hairs of the posterior callosities and the scutellum light yellow; pleuræ thickly light yellow pruinose, below and on the coxæ more grayish. Abdomen in shape like that of *C. cruciatus*, with short, but abundant, erect, light yellow pile; each segment with an opaque light golden yellow posterior cross-band, composed of dense bloom, moderately narrowed on the sides; that on the first segment narrowest, that on the second comprising about one-half the segment, on the last leaving only a slender anterior black band. Legs pitchy black, the tibiæ and tarsi fulvous pubescent; the pile of the coxæ, especially the fore ones, and of the femora below, long and silky white. Wings pure hyaline; neuration as in *C. cruciatus*.”

The female, which I have seen, agrees with the description.

*Type*.—University of Kansas.

*Habitat*.—Georgia (type); Black Mts., N. C. (June 26, W. Beutenmüller).

Mr. W. Beutenmüller captured two specimens among the Black Mts., N. C., of which one is at the American Museum, and the other, a female, at the National Museum.

? ***Ceraturgus niger***. *niger*.

*Ceraturgus niger* Wiedemann, Dipt. Exot., I, pt. 2, 25; pl. II, fig. 1; 1838.

*Ceraturgus niger* Walker, List, Suppl. II, 378, pt. desc.

*Taracticus niger* Osten Sacken, Cat., 72, 1878 (gen. ref.).

? *Cearaturgus niger* Brauer, Wien, Ent. Zeit., II, 54, 56, 1883.

*Ceraturgus niger* Williston, Trans. Am. Soc., XI, 1884 (doubtful generic position).

"♀.—*Long 4 l. niger*.—Abdomine segmentis albo maculis (Tab. 2, fig. 1).

Face et front d'un jaune grisâtre. Moustache simple, jaunâtre. Antennes noires. Thorax a' duvet roux, grisâtre et bandes noires; l' intermediaire divisée par une ligne. Abdomen à reflets bronzés: deuxième-quatrième segments à petite bande blanche de chaque côté, au bord posterior. Pieds fauves; un peu de noir aux genoux intermediaires et posterieurs: jambes noires et articles des tarsi noirs à l' extrémité. Ailes jaunâtres."

Del' Amerique boreale.

**CERATURGOPSIS.**

*Ceraturgopsis* Johnson, Psyche, X, 111, 1903.

*Ceraturgopsis* differs from *Ceraturgus* only in the structure of the terminal segment of the antennæ, which is much shorter than in *Ceraturgus cruciatus*, rounded, and with a slight lobe-like projection on the outer side about two-thirds the distance towards the apex, which bears a short spine, and is entirely naked, while the corresponding segment of either *Ceraturgus cruciatus* or *aurulentus* is densely pubescent.

There is some doubt in my mind as to the validity of this genus. The significant features are the nakedness of the terminal segment of the antennæ and the presence of the projection with the short spine (Pl. IV, fig. 3). Upon denuding the corresponding antennal segment of *Ceraturgus cruciatus*, a slight, but distinct, projection is found on the outer side about

one-third the distance from its base. In nature this is concealed by the pubescence and is easily overlooked. Whether or not the rare *C. aurulentus* bears a similar projection cannot be determined until more material is at hand. I do not consider the difference in the shape of the terminal segment, as found here, of any generic value, for the difference in the outline between the terminal segments of *aurulentus* and *cruciatus* is no less than that between *cruciatus* and *cornutus*.

Can it be that *Dasygogon cornutus* Wiedemann, which Prof. Johnson has made the type of this genus, is an extreme variation and that the annectant species may be found to bridge this seeming difference?

*Type*.—*Dasygogon cornutus* Wiedemann. Two female specimens in the collection of Prof. C. W. Johnson, Curator of the Boston Society of Natural History.

***Ceraturgopsis cornutus*** (Pl. VII, fig. 6.)

*Dasygogon cornutus* Wiedemann, Auss. Zw., I, 382, 1828.

*Dasygogon cornutus* Osten Sacken, Cat., 66, 1878 (syn. of *Ceraturgus cruciatus* Say).

*Ceraturgopsis cornutus* Johnson, Psyche, X, 111, 1903 (figure of antenna).

♀.—Length 16–18 mm.—Black, similar to *Ceraturgus cruciatus* but more robust and more pronounced golden pruinose. Head everywhere, except on the ocellar tubercle, with thick golden bloom; pile of mystax, beard and bristles and pile of occiput also golden; antennæ black; segment 1 yellow, segments 1 and 2 short, subequal; segment 3 long and slender, segment 4 small, very short; segment 5 more or less rounded with a slight lobe-like projection on the outer side near the apex bearing a small spine, the entire segment wholly free from the pubescence found in *Ceraturgus cruciatus* and *aurulentus*. Thorax everywhere golden pruinose, except along the sutures of the pleural scerites; on the broad median geminate stripe extending backward almost to the scutellum, and on two rounded lateral spots, one anterior, the other posterior, to the transverse suture, reddish-brown; the lateral spots behind the transverse suture coalescing with the median stripe. Abdomen black, polished; the posterior margins of all the segments broadly golden pruinose. Legs robust, testaceous. Wings yellowish, the veins wholly so; the submarginal and posterior cells open. All the pile and bristles of the body golden.

*Habitat*.—Ormond, Fla. (Apr., Mrs. A. T. Slosson).

Described from two females in the collection of Prof. C. W.



Johnson, which are the type specimens of this genus. There is also a specimen at the National Museum.

This species is easily distinguished from *Ceraturgus cruciatus* Say, of which it was made a synonym by Baron Osten Sacken, by its more robust abdomen and by its terminal antennal segment being free from pubescence, more rounded and bearing a distinct spine, as above noted. The general color of the body is golden, due to the golden bloom, while the black of *cruciatus* is much more pronounced.

### MYELAPHUS.

*Myelaphus* Bigot, Bull. Soc. Ent. France, 1882, XCI, No. 9, p. 112.

*Myelaphus* Williston, Trans. Am. Ent. Soc., XI, 5, 1884.

Antennæ apparently with five segments; first segment about three times as long as the second, third elongate, fourth and fifth of nearly equal length, third and fourth at the tip with two lobes, or processes, reaching to about the middle of the following segment.

Head broader than the thorax, considerably broader than high. Face a little less than one-third as wide as the head, its sides very nearly parallel, diverging but very slightly below, bare, smooth and polished, on the oral margin in front with a thin row of moderately long bristles; in profile gently receding, above the middle with a moderately large obtuse tubercle (wanting in *lobicornis*), not reaching quite as far forward as the base of the antennæ, between antennæ and facial tubercle gently concave, below the tubercle to the oral margin considerably receding, nearly straight; the oral margin in front is distinctly above the lower borders of the eyes, so that the lateral margins of the mouth are considerably oblique and straight. Antennæ situated upon a large obtuse tubercle, not quite as long as the dorsum of the thorax, composed of five segments as in *Ceraturgus*, all of which are distinctly separated from each other; first segment cylindrical, elongate, rather more than three times as long as the second; second segment short, but little longer than broad; third segment distinctly longer than the first two put together, somewhat compressed,

only a little broader, terminating in two lateral lobes, or processes, which extend as far as the insertion of the second segment of the style; fourth segment, or first segment of the style, somewhat "Y" shaped, the terminal lobes being rather more than one-half the entire length of the segment, longer and more slender than those of the third segment; fifth segment, or second segment of the style, longer than the entire length of the preceding, narrowed, almost pedicellate at base, flattened beyond the tip of the lobes of the preceding segment, and then obtusely pointed, somewhat irregular in shape and shallowly sulcate, clothed with very fine short pile.

Thorax convex, nearly bare, wholly without macrochætæ except a very few short intra-alar ones. Legs rather stout, without macrochætæ except a few short ones at the tip. Wings as in *Ceraturgus cruciatus*, but broader, marginal and first posterior cells open; the posterior intercalary vein arises from the posterior basal transverse vein a short distance from the base of the discal cell. In *melas*, the type, and *rufus*, the fourth posterior cell is broadly open, in *lobicornis* it is open, closed or petiolate. Anterior cross-vein near middle of the discal cell.

Abdomen in structure rather like that of *Dioctria*, shorter than the wings, the sides nearly parallel, or gently concave, to the tip of the fifth segment in the male, in the female the fifth segment gently narrowed behind; a little narrower than the thorax in the male, in the female about as wide; flattened, so that transversely it is only convex above, gently grooved at the incisures, each segment being gently convex longitudinally; smooth, nearly bare, except sparse very short pile; segments of nearly equal length, the sixth a little shorter, the seventh very short. Hypopygium small.

This description is drawn from a male of *melas*, and a female of *rufus*, which agree closely in structure. In *lobicornis* the antennal protuberance is more obtuse, and the face more flattened, in profile very narrow, and the prominence near the middle wholly wanting. The fourth posterior cell variable, and the first posterior cell strongly coarctate. From the diagnosis of this genus given by Monsieur Bigot, there are

some differences which might render the recognition doubtful. The antennæ are not as long as the head and thorax combined, but considerably shorter, and the third segment is at least one-half longer than the first; the third segment has two processes like the fourth segment. There are but two segments in the style, as in *Ceraturgus*.

*Type*.—*Myelaphus melas* Bigot.

The above description has been taken almost bodily from Dr. Williston's paper above cited. With material now in collections it cannot be bettered. I have seen the specimens of *melas* and *rufus* used by Dr. Williston, and many specimens of *lobicornis*. When more collecting has been done, I believe that interesting facts in variation will be discovered.

#### SYNOPSIS OF SPECIES.

1. Face, in profile, wholly without a protuberance near the middle; head and thorax black; legs and abdomen for the most part yellowish-red ..... **lobicornis.**  
Face, in profile, with a moderately large obtuse tubercle.....2.
2. Wholly black species..... **melas.**  
Yellowish-red species..... **rufus.**

#### **Myelaphus lobicornis.**

*Ceraturgus lobicornis* Osten Sacken, West. Dipt., 287, 1877.

*Ceraturgus lobicornis* Brauer, Wien. Ent. Zeit., II, 56.

*Myelaphus lobicornis* Williston, Trans. Am. Ent. Soc. XI, 7, XII, 53; XIII, 288 (additional notes).

♂ ♀.—*Length* 10–12 mm.—Head and thorax wholly black; coxæ, trochanters, more or less of the base of the four fore femora, tips of the tarsi narrow, lateral margins of the abdomen black or blackish; legs and abdomen yellowish-red. Wings in the male tinged with brown, darker, sometimes dark brown, in front toward the base; in the female the basal half yellowish. Face without gibbosity, most prominent above where there is a slight protuberance upon which are borne the antennæ.

Face for most part bare, polished black, often with a golden pruinose stripe on each side above the golden mystax. Antennæ wholly black; front polished. Thorax with short, closely appressed golden pile, not dense on the dorsum above, but quite so on the lateral margins, pronotum, meso- and hypopleuræ and scutellum. A stripe from the base of the wings to the middle coxæ bare, polished. Halteres yellow usually with a pinkish tinge. Abdomen polished, with sparse microscopic pile; genitalia red with white pile; the extreme base and the

lateral margins of the segments above and the venter usually black. Legs yellowish-red, the basal half of the front femora are usually black. The hind femora are thicker than the others. Dr. Williston (loc. cit.), in speaking of a male specimen from Kern County, Cal., thinks it strange that Osten Sacken did not mention "the closed and briefly petiolate fourth posterior cell." In only one of the type specimens from Idaho is the fourth cell barely closed at the margin, the rest are open. This cell is variable.

*Type*.—M. C. Z. Two male and two female type specimens in Osten Sacken's collection, and the two females in that of Loew.

*Habitat*.—Type material all from Snake River, Idaho, except one female from California. Kern County, California (Williston).

The female co-type from California has the face, front and thorax, excepting three indistinct stripes on the thoracic dorsum, the coxæ and neighboring region, proboscis, palpi and basal segments of antennæ (third wanting) reddish. It agrees in size with the other type specimens, and probably represents a variation. It answers quite well to the description of *rufus*, but does not come near it in size.

**Myelaphus melas** (Pl. X. fig. 3.)

*Myelaphus melas* Bigot, Bull. Soc. Ent. France, 1882, No. 9, 112.

*Myelaphus melas* Williston, Trans. Am. Ent. Soc. XI, 5, 1884 (Pl. 5, figs. 1, 1a).

♂.—Length 14.5 mm.—Black, abdomen polished; halteres and pulvilli, yellow; wings black, more dilute behind and at tip.

Face smooth, polished, bare, in the middle on the tubercle, broadly and indefinitely pitchy red; bristles on the oral margin yellowish-white, with one or two black ones on the sides; beard short, sparse, black. Front on the sides near the eye with a few short, black bristles. Antennæ wholly black; on the upper sides of the first and second segments with a few short black hairs. Thorax deep polished black, above with a blue reflection, the dorsum wholly without markings, but covered with very short sparse black hairs; a minute spot on the humeri red, and the post-alar callosities pitchy black. Pleuræ very smooth, polished, except on the upper part of the sternopleuræ and on the mesopleuræ, where it is moderately thickly covered with short pile, black above, whitish below. All the coxæ on their outer sides with sparse whitish pile, and at their lower ends with a few short whitish bristles. Halteres yellow, the extreme base a little brownish. Abdomen polished black, with very short, rather sparse black hairs.

slightly mixed with whitish on the sides of each segment; on the hypopygium with longer light yellowish or whitish pile. Legs deep black, the front and middle knees very narrowly yellowish, the pulvilli and base of claws light yellow; on the front tibiæ below, their tarsi, and on the middle tarsi, less so, with reddish pubescence. Wings blackish on the anterior portion toward the base, along the posterior and outer part more dilute, but still slightly tinged with brown or blackish; first posterior cell not at all narrowed at the margin, fourth posterior cell broadly open, the fifth vein at the tip slightly curved backward. One specimen.

*Type*.—Bigot collection.

*Habitat*.—California (type); Kern County (S. W. Williston).

This description is that of Dr. Williston. He is in doubt as to its specific identity, but I believe that he is correct. Bigot very briefly diagnosed his type as follows: "Long, 15 mm. Totus niger, abdomine nitido; halteribus et pulvillis flavis; alis nigris, intus et apice parum dilutioribus, Oculis nudis.—California."

### ***Myelaphus rufus*.**

*Myelaphus rufus* Williston, Trans. Am. Ent. Soc. XI, 7, 1884, XIII, 288, notes, 1886.

"♂ ♀.—Length 17 mm.—Yellowish-red; the third segment of the antennæ and the style, proboscis, occiput, three broad abbreviated stripes on the dorsum of thorax, two spots on the lower part of the pleuræ and tips of claws black.

Face, front and first two segments of the antennæ reddish-yellow, polished; the face below, near the eyes and on each side of the base of the antennæ lightly yellowish dusted. Bristles of the oral margin yellowish-white; on the sides of the front a few shorter yellow ones. Third segment of antennæ and the style deep black; the first segment in one male is black. Proboscis black, the palpi yellowish. Occiput black, thickly yellowish pruinose on the sides; occipito-orbital bristles short, thin, and, like the sparse short beard below, are yellow. Dorsum of thorax yellowish-red, with three broad black stripes separated from each other by linear intervals; the lateral ones begin some distance behind the humeri and extend to within a short distance of the scutellum, on the posterior part narrow; the middle one begins at the prothorax and has well-defined edges to the transverse suture, immediately behind the suture the stripes become obsolete. The dorsum is clothed with short, not very abundant golden pile, and has three or four short, inconspicuous yellow intra-alar bristles. Pleuræ yellowish-red except a large spot above the middle coxæ and another nearly confluent smaller one above the hind coxæ, which are smooth,

polished, pitchy-black. On the mesopleuræ and upper part of the sternopleuræ, with golden-yellow pile, moderately dense; just beyond this there is smooth polished space. Halteres yellow. Abdomen red, darker, somewhat ferruginous along the tergum; very highly polished and clothed with sparse short golden pile. Legs wholly reddish-yellow, only the tips of the claws black; pulvilli and the base of the veins and cells are yellow; of the male wholly black, except at the very base. The first and fourth posterior cells a little more narrowed at their outer parts than in *melas*; in one male, the fourth is closed in the margin."

*Type*.—University of Kansas. A single female specimen.

*Habitat*.—Kern Co., Cal. (type). March.

I have seen a specimen at the National Museum taken in the same locality in March, which agrees with the description.

### DICOLONUS.

*Dicolonus* Loew, Cent., VII, 56, July, 1866.

*Dicolonus* Schiner, Verh. Zool.-Bot. Ges., XVI, 847; Oct., 1866  
(quotes original desc).

More or less pilose species with fine hair-like bristles hardly distinguishable as such. Head small, scarcely broader than the thorax, vertex but little depressed. Face moderately broad, in profile showing two characteristic protuberances; the facial gibbosity below or on the middle, and bearing a dense mystax of fine, hair-like bristles, and the antennal tubercle above clothed with forward directed hair and bearing the antennæ. Antennæ longer than the head is high, rather stout; first segment cylindrical, about twice the length of the short second segment, both abundantly clothed with short hair above and below; third segment sublineate and subequal to the first two taken together, gradually tapering toward the tip; style short, obtuse, at base equaling in width the third segment; both with a microscopic pubescence. Abdomen of female robust, rather broad; of the male, more cylindrical. Legs moderately robust, front tibiæ without terminal claw-like spurs, all the tarsal segments subglobular, pulvilli normal. Wings proportionately broad, all the posterior cells wide open; the anal cell narrowly so.

*Type*.—*Dicolonus simplex* Loew.

## SYNOPSIS OF SPECIES.

Facial gibbosity more even below, rather suddenly constricted above; body with abundance of erect pile .....**simplex**.

Facial gibbosity greatest in the middle and gradually receding above and below, less pilose species.

**sparsipilosum** n. sp.

**Dicolonus simplex.**

*Dicolonus simplex* Loew, Cent., VII, 56, 1866.

*Dicolonus simplex* Williston, Trans. Am. Ent. Soc., XI, II, 1884, pl. I, fig. 4.

♂ ♀.—Length 10–11 mm.—Wholly polished black, clothed with rather dense furry light yellow pile, but this nowhere fully concealing the ground color.

Head wholly yellowish pilose except that on the palpi, on the outer edge of facial tubercle, on the antennal tubercle, first segments of antennæ, front and narrowly on the occipital orbits, where it is black; that on the antennal tubercle sometimes yellowish. Facial tubercle on the lower portion of face rather even, more suddenly constricted above. Extreme tip of abdomen usually with some black pile intermixed with the yellow. Legs wholly black, thickly clothed with the same yellowish pile and weak bristles as the body; claws black, very narrowly reddish at the base. Wings grayish; the second basal, anal, and axillary cells except distally, and the discal cell, appear milky-white when viewed on about the same level from behind or when over a dark surface.

*Type*.—M. C. Z. A single female.

*Habitat*.—Cal.; Los Angeles Co., Cal. (D. W. Coquillett).

There are several specimens of this species at the National Museum.

**Dicolonus sparsipilosum** n. sp. (Pl. IX, fig. 2.)

♂.—Length 7 mm.—Wholly polished black with bluish reflections; to the unaided eye nearly bare, not clothed prominently with furry, erect pile.

This species is very closely related to the Californian *simplex*, but differs noticeably in the scarcity of the pile. The pile and exceedingly weak bristles are throughout yellowish, as in *simplex*, but the pile is very short and has a tendency to be appressed, while in *simplex* it is longer, furry and erect. The pile of the facial gibbosity is less in extent and without any black; the gibbosity itself is decidedly greatest in the middle and gently rounds off to the face above and below; in *simplex* it is more even and more suddenly constricted above. Like *simplex*, the pile of the antennal tubercle, basal segments of antennæ and front is black. Pile of palpi black and yellow mixed, and the

black pile narrowly bordering the occipital orbits is hardly perceptible. Pile of thorax and abdomen very short, appressed, thickest on the sides of the dorsum and on the pleuræ of the thorax and on the sides of the abdomen. Legs wholly black, only slightly clothed with very pale pile and on the tibiæ and tarsi with very weak, inconspicuous bristles; coxæ with long, coarse pile; claws black, reddish at base; pulvilli pale. Wings dusky hyaline, darker along the costa; the veins very slightly bordered with fuscous; the whole of the second basal, anal, axillary and discal cells milky-white.

*Type*.—Two male co-types, deposited one each in the collection of the Massachusetts Agricultural College, and that of the Montana Agricultural College.

*Habitat*.—Bozeman, Mont., 4,800 ft. elev. (June 25, E. Koch); Col.

### ECHTHODOPA.

*Echthodopa* Loew, Cent., VII, 27, 1866.

*Echthopoda* Loew, Besch. Europ. Dipt., II, 78, 1871.

*Echthodopa* Schiner, Verh. Zool.-Bot. Ges., XVI, 846, 1866. (Quotes orig. desc.)

*Echthodopa* does not differ from *Dioctria* except that the lower third of the face is convex and bears a dense mystax; and that the middle and hind femora bear several short strong bristles. In *Dioctria* the femora are without bristles. The only two species in the United States belonging to this genus, *formosa* and *pubera*, are larger and more robust than our species of *Dioctria*.

*Type*.—*Echthodopa pubera* Loew

### SYNOPSIS OF SPECIES.

Pile of palpi black; wings nearly hyaline; Eastern species .... **formosa**.  
 Pile of palpi yellowish; wing-veins bordered with fuscous; Western species..... **pubera**.

### *Echthodopa formosa*.

*Echthodopa formosa* Loew, Cent., X, 22, 1872.

♂ ♀.—*Length* 13-17 mm.—Polished black, tibiæ clear bright yellow, except their distal portions; mystax golden in the male, whitish in the female; the palpi of both sexes, and the rather large hypopygium of the male with black pile.

Black; tibiæ clear bright yellow except the distal third of the fore and middle, and the distal two-fifths of the hind pair, which are dark chestnut. Face narrower in proportion than in *pubera*, with a dense golden pubescence; front polished black. Mystax dense, golden in



the male, in the female thinner and paler; pile of basal segments of antennæ, frontal orbits, ocellar tubercle, and occiput above, more fulvous, of the beard and proboscis much paler. Antennæ black, elongate; segments 1 and 2 cylindrical, segment 1 a trifle longer; segment 3 longer than segments 1 and 2 together; style distinct from segment 3 and about one-fourth as long. Dorsum partially concealed beneath fine appressed fulvous pile and longer and weak bristles of the same color above the wings, on the posterior portion, and on the posterior margin of the scutellum; pleuræ polished, but obscured in places by a pale yellow bloom and short fine pile, especially on the sides of the prothorax and on the meso- and sternopleuræ; trichostical pile long and pale, halteres yellowish. Abdomen polished black, scarcely at all obscured by the short yellowish pile, which on the sides of segments 1 and 2 is long. Hypopygium larger than that of *Echthodopa majus* (European), black, with black pile. Legs black; coxæ with rather long whitish hair, more abundant on the two anterior pairs; femora, excepting the fore pair, with a few short, stout bristles on the anterior side; pile of femora and the yellowish portion of the tibiæ golden in the male, pale in the female; of the rest of the tibiæ and tarsi black; bristles on the tarsi black. Claws black, yellowish at base; pulvilli tawny. Wings very faintly blackish hyaline; all the posterior cells open, the anal narrowly so; the anal, axillary cells, and second basal slightly milky white in the male; wholly clear in the female.

*Type*.—M. C. Z. A single male in excellent condition.

*Habitat*.—North Saugus, Mass. (E. A. Back, June 14, 1906); Delaware Co., Pa. (July 1, 1892, C. W. Johnson); Va.; N. C.

This species may readily be separated, at a glance, from *pubera* by its deeper, clearer, and more shining black color, its clearer wings, and by the brightness of the yellow portion of the tibiæ. Its pile is also less in quantity and richer in color: *pubera* is only moderately polished, the pile paler, the wings more dusky, and the veins bordered with fuscous.

During the summer of 1906, in a large cage built over a small oak tree in the woods for the rearing of parasites in connection with the gypsy moth work, I captured two specimens of this species which evidently had emerged from the partially moss-covered ground.

### **Echthodopa pubera** (Pl. VIII, fig. 6).

*Echthodopa pubera* Loew, Cent., VII, 27, 1866.

*Echthodopa pubera* Jones, Trans. Am. Ent. Soc., XXXIII, 276, 1907 (locality note).

*Echthodopa pubera* Insect Book, Howard, 1902, Pl. XIX, fig. 2.

♂. ♀—*Length* 11.5–13 mm.—Very similar to *formosa* in structure of body and antennæ, but only moderately polished black; basal portion of tibiæ dull reddish, not clear bright yellowish; pile and bristles of entire body, including that of the palpi and tarsi, pale yellow; wings more dusky, and clouded along the veins.

Black; only moderately polished; base of the hind tibiæ and the basal half of the anterior pairs dull reddish. Face and occiput pale golden pubescent; front polished black. Mystax in male golden; in the female, and the pile and bristles on the rest of the body in both sexes very pale yellow, sometimes nearly white. Thoracic dorsum nearly opaque; pubescence and bristles of both dorsum and pleuræ as in *formosa*, only paler and often more prominent. Halteres pale. Abdomen of female more robust than that of the male, as in *formosa*. Coxæ with rather long pale hair, more abundant on the anterior pairs; the pile and bristles of the legs pale. Wings more dusky than in the more clear-winged *formosa*; all the veins bordered distinctly with fuscous; all the posterior and anal cells open; the second basal, anal, and axillary cells wholly milky white in the male, in the female not so.

*Type*.—M. C. Z. The type series consists of two males and nine females.

*Habitat*.—Neb. (type); Lincoln, West Point, Harlan, and Sioux Counties, Neb. (P. R. Jones); Wyo.; Mont.; S. D.; Pullman, Wash.

### DIOCTRIA.

*Dioctria* Meigen, Illig. Mag., II, 270, 1803.

*Dioctria* Meigen, Syst. Besch., II, 180, 1820.

*Dioctria* Macquart, Hist. Nat. Dipt., I, 289, 1834.

*Dioctria* Schiner, Fauna Austr., I, 119, 1862.

*Dioctria* Coq., Can. Ent., XXV, 80, 1893 (synopsis of species).

Nearly bare, small or rather small species, polished, and often metallic, black. Head clearly broader than high; face flattened, rather broad, bare, slightly protuberant on oral margin to which the mystax is confined; vertex rather deeply excavated, ocellar tubercle prominent. Antennæ approximate, elongate, borne upon a protuberance, very slight in some species, but often highly developed (*resplendens* and several European species): segments 1 and 2 cylindrical, slender, subequal, or segment 1 excelling in length; segment 3 usually equalling in length segments 1 and 2 taken together, linear, as in *vera*, or broader and more rounded at tip as in *albius*, sometimes densely microscopically pubescent, usually

with at least some pile; style short, usually thick, obtuse, and not easily distinguishable from the third segment as in *vera*, or nearly setaceous as in *albius*, varying in length from one-sixth to one-half the third segment.

Dorsum of thorax usually with pubescence and weak bristles; pleuræ polished, with characteristic markings in fine pubescence; scutellum thin, usually projecting and always distinct from the well-rounded metanotum, often with fine short pile on its posterior margin, never or seldom with bristles. Abdomen very narrow and cylindrical, often broader beyond the third segment in the female. Legs often slender, hind metatarsi sometimes normal as in *albius*, or large as in *vera*. Front tibiæ without a terminal claw-like spur; hind femora without strong bristles; pulvilli normally developed. Wings rather large; all the posterior and the anal cell wide open.

*Type*.—*Asilus ælandicus*.

#### SYNOPSIS OF SPECIES.

- |  |                     |
|--|---------------------|
| 1. Wings on the basal half yellow, on the apical half black.....               | 2.                  |
| Wings not marked thus, nearly uniformly darkish.....                           | 3.                  |
| 2. Legs wholly black; length 4 mm.....   | <b>parvula.</b>     |
| Legs partly reddish-yellow, length 7 mm.....                                   | <b>sackeni.</b>     |
| 3. Abdomen wholly black.....   | 4.                  |
| Abdomen and legs partly reddish.....   | 6.                  |
| 4. Legs wholly black.....  | 5.                  |
| Legs black; tibiæ for most part reddish-yellow; mystax black.                  | <b>nitida.</b>      |
| Femora black above; reddish-yellow below; mystax golden.....                   | <b>vera.</b>        |
| 5. Mystax black.....   | <b>albius.</b>      |
| Mystax fulvous and dense; thorax and abdomen beautifully greenish-black .....  | <b>resplendens.</b> |
| 6. Antennal style nearly one-half as long as the third segment; coxæ red ..... | <b>pusio.</b>       |
| Antennal style one-sixth as long as the third segment; coxæ black.             | <b>rubida.</b>      |

**Dioctria albius** (Pl. III, fig. 8; Pl. IX, fig. 8.)

*Dioctria albius* Walker, List, II, 301, 1849.

*Dioctria albius* Osten Sacken, West. Dipt., 287 (notes), 1877.

*Dioctria albius* Williston, Trans. Am. Ent. Soc., XI, 8, 1884.

♂ ♀.—Length 7–9.5 mm.—Wholly polished black, abdomen with copery reflections; face brassy yellow pruinose; thoracic dorsum with golden down; legs wholly black.

Slender black species with face, and often the front, brassy yellow pruinose, the occiput with grayish bloom, particularly prominent along the orbits; mystax confined wholly to the oral margin black; black also is the rather long pile of the basal segments of antennæ, frontal orbits, ocellar tubercle and occiput; the scanty beard and pile of the black proboscis and palpi white. Antennæ black; segments 1 and 2 subequal, cylindrical, the second somewhat incrassate at tip; segment 3 spindle-shaped, a trifle longer than segments 1 and 2 taken together; style very short, sometimes pointed; often blunt. Thoracic dorsum clothed with light golden pubescence which is much more dense on the sides than elsewhere; bristles weak, black; pleuræ polished; on the mesopleuræ just below the dorsopleuræ suture with golden pubescence on sides of prothorax, posterior portion of the sternopleuræ and above the posterior coxæ; trichostical pile fine, pale yellow. Scutellum bare, polished. Halteres whitish-yellow. Abdomen slender, polished black, with coppery reflections; segments 1 and 2 on the sides with fine pale golden or white pile, rest of abdomen with very sparse microscopic pale yellow pile, which in several California specimens is more pronounced, but never at all obscuring the ground color. Legs black, though slightly variable; the coxæ white pruinose and white pilose; all the femora below with minute denticles and thicker white pile; tibiæ and tarsi with scant pile and bristles; claws black; pulvilli tawny. Wings faintly blackish hyaline, the basal portion in the male very apt to be whitish; all the posterior cells broadly, and the anal cell narrowly, open.

*Type*.—British Museum.

*Habitat*.—White Mts., N. H., and Catskill Mts. and the Palisades, N. Y. (Osten Sacken); Amherst, Mass. (June 13 and July 28); Conn.; N. J. (July 19, 20, 24, 29, 30; E. Daecke); Montg. Co., Pa. (May 30, C. W. Johnson); Potomac Cr. (May 22), and Dixie Lndg. (June 1), Va.; N. C.; Ga.; Fla.; Wash. (S. W. Williston); Cal. (Osten Sacken).

In his *Western Diptera*, Osten Sacken speaks of ten male and female specimens from the White Mts, N. H., Catskill Mts. and the Palisades, N. Y., as follows:—"some of the males have the whole auxiliary region of the wing distinctly whitish, while in others the whitish tinge is very distinct on the whole proximal half of the wing. One of the males from the White Mts. has the proximal two-thirds of the wing pale yellowish, the distal third blackish, the tibiæ yellowish-red except at the tip, the fore femora yellowish-red except a broad black stripe on their upper surface. The Californian specimens show

the same tendency to vary in the coloring of the wing as do the Atlantic specimens." I have seen the above-mentioned specimens and lay particular stress upon the variations in the coloration of the wings in the male, as I believe that Dr. Williston's *sackeni*, with more extended collecting, will prove to be but a male variety of *albius*. Prof. C. W. Johnson has a typical *sackeni*, except that the mystax, pile of front, occiput, and antennæ is pale golden instead of white, taken at North Mt., Pa.

### ***Dioctria nitida*.**

*Dioctria nitida* Williston, Trans. Am. Ent. Soc., XI, 8, 1884.

♂ ♀.—Length 11–13 mm.—Polished black, wonderfully like *albius*, but larger, and all the tibiæ, except their tips, bright reddish-yellow.

Face densely, front more thinly, brassy-yellow; occiput grayish pruinose, especially along the orbits. Proboscis, palpi and antennæ, black, the last in structure similar to those of *albius*; pile of mystax, basal segments of antennæ, frontal orbits, ocellar tubercle and upper occiput black; pile of lower occiput and proboscis white. Thoracic dorsum with very short fine golden pubescence denser on the sides than elsewhere, but with golden, not black, bristles, which are more numerous above the insertion of the wings than in *albius*; pleuræ polished, with four light golden spots arranged as in *albius*; trichostical pile pale yellow; scutellum bare, polished. Halteres yellowish-white. Abdomen polished, black, with coppery reflections; pile sparse, golden, microscopic; longer on sides of segments 1 and 2. Legs black; coxæ white pruinose, with white pile as in *albius*; femora with pale pile, thicker below; front and middle tibiæ, except their tips and the hind tibiæ, more broadly, reddish-yellow, with bristles of same color; claws black; pulvilli tawny. Wings nearly uniformly blackish, veins yellowish at base; in some specimens the veins are wholly yellow in basal half; all the posterior and the anal cell open.

*Type*.—University of Kansas. Four male and one female specimens.

*Habitat*.—Washington (type); Seattle, Wash. (May 1); California (Hy. Edwards); San Gabriel, Los Angeles Co., Cal. (June).

### ***Dioctria parvula*.**

*Dioctria parvulus* Coquillett, Can. Ent., XXV, 80, 1893.

♂.—Length 4 mm.—Wholly polished black; base of wings as far as the fifth posterior cell yellowish-white, beyond this blackish. All the posterior and anal cells open. Pile of head light yellow, that on sides

of face very sparse, extending to base of antennæ. First two segments of antennæ subequal in length; the third segment as long as the first two taken together; style one-sixth as long as the third segment thick, blunt. Pile of thorax rather abundant, that of abdomen very sparse, short, bright yellow.

*Type*.—U. S. N. M., Cat. No. 925. Two male specimens.

*Habitat*.—Los Angeles Co., Cal. (D. W. Coquillett).

### **Dioctria pusio.**

*Dioctria pusio* Osten Sacken, West. Dipt., 288, 1877.

*Dioctria pusio* Williston, Trans. Am. Ent. Soc., XIII, 288, 1886.

“♀.—Length 4.2 mm.—Thorax and abdomen black; segments 3–5 of the latter dull reddish; legs yellowish-red; hind tibiæ dark brown, except the tip.

“Antennæ long, black, inserted on a small protuberance; third segment (without the style) as long as the first two taken together; the style not quite half as long as the segment with a small expansion at the base (somewhat like Meigen, tab. 19, fig. 20, only the style in comparison with the segment, is longer in *D. pusio*); face with a bloom, which is golden yellow above, silvery below; mystax of a few whitish hairs; front and occiput black; posterior orbits and two spots above the neck on the occiput silvery pruinose. Thorax black, polished; dorsum with three faintly indicated lines of microscopic pubescence; the lateral ones expanded into triangles anteriorly; pleuræ with several spots with a partly silvery, partly golden reflection. Knob of halteres lemon-yellow. Legs red, including the coxæ; hind tibiæ dark brown, except the tip, which is red and somewhat incrassate; first segment of hind tarsi large and stout. Abdomen black, polished, smooth; second segment with a greenish reflection; the three following segments are reddish, but with darker metallic reflections. Wings with a rather uniform, slight brownish tinge; anal cell open; veins brown, yellowish at base; venation normal.”

*Type*.—M. C. Z. A single female in good condition.

*Habitat*.—Sonoma Co., Cal. (July 4, Osten Sacken); Colorado (S. W. Williston).

Dr. Williston says of the Colorado specimen, a male, that the coxæ are yellow, the tip of the hind tibiæ considerably incrassate, and the slender abdomen has the third and following segments broadly blue-black on the disk of each, the margins yellowish-red, the seventh almost wholly, the hypopygium entirely so. The four fore tarsi are also brownish, except the base.

**Dioctria resplendens.**

*Dioctria resplendens* Loew, Cent., X, 21, 1872.

♂.—Length 5.6 mm.—Everywhere, except the head, polished greenish-black, beautifully resplendent upon thorax and abdomen; mystax very dense, fulvous; wing black.

The greenish-black polished thorax and abdomen, the blackish hyaline wings narrowly white along the veins, the black proboscis, palpi and antennæ, the fulvous pile of mystax, front, basal segments of antennæ, occiput, thorax, abdomen,—all make this an easily recognizable species. The pile of the legs in many places is nearly white. The wings have most beautiful violaceous reflections and are rather broad for the genus. The mystax is more dense than that of the most of the species of *Dioctria*. This species resembles an *Echthodopa*, but the posterior femora being without bristles make it a *Dioctria*.

*Type*.—M. C. Z. A single male specimen. There is another specimen at the National Museum also from California, collected by C. A. Stearns.

*Habitat*.—California (H. Edwards).

**Dioctria rubida.**

*Dioctria rubidus* Coquillett, Can. Ent., XXV, 80, 1893.

♂.—Length 7 mm.—Thorax and scutellum polished black, quite thickly light pilose; abdomen polished, reddish-brown; segment 1, and sometimes segment 2 and a large portion of segments 3 and 4, black. Legs yellowish; coxæ, trochanters, apical three-fourths of tibiæ and all the tarsi black. Head black with light yellow pile. Face covered with a very short, brassy-yellow pubescence, and a little pile above on each side; above the center with a large fovea, below which is a large gibbosity bearing a rather dense mystax. Antennæ black; first segment one and one-fourth times as long as the second, the third segment slightly longer than the first two taken together, the style one-sixth as long as the third segment, very robust, blunt at tip. Halteres yellow. Abdominal pile very sparse, short, light yellow. Wings blackish; all the posterior and anal cells open.

*Type*.—U. S. N. M., Cat. No. 924. Three male specimens.

*Habitat*.—Los Angeles Co., Cal. (D. W. Coquillett).

This species is easily recognized by the polished reddish-yellow femora and middle tibiæ.

**Dioctria sackeni.**

*Dioctria sackeni*, Williston, Trans. Am. Ent. Soc., XI, 8, 1884.

♂.—Length 7 mm.—Black; basal half of wings light yellow, distal half blackish; fore femora below, tip of middle and hind femora, four front tibiæ except their tips, and basal half of the hind tibiæ reddish-yellow.

"Face yellow above, silvery below; mystax, pile of front, of antennæ and the beard white. Antennæ black, rather acute at tip. Dorsum of thorax densely covered with whitish-yellow bloom, the pile of nearly the same color; pleuræ polished black, with small patches of yellowish-white bloom. Abdomen slender, wholly polished. Legs black, the front femora on the under side, the tip of middle femora and more or less along the under side, the hind femora at tip, the four anterior tibiæ except the immediate tip and the hind tibiæ on rather more than the basal half, light reddish-yellow; hind femora much thickened, more so comparatively than in *albius*. Wings on the basal half light yellow, from the cross-veins on blackish."

*Type*.—University of Kansas. Three male specimens.

*Habitat*.—Washington (type); Mt. Hood, Ore.; White Mts., N. H. (Osten Sacken and Geo. Dimmock); North Mt., Pa. (June 9, C. W. Johnson).

There are specimens of this species in the collections of the M. C. Z., Univ. of Ks.; National Museum, and that of Prof. C. W. Johnson. See note under *albius*.

***Dioctria vera* n. sp.**

♂.—*Length about 7 mm.*—Very slender polished black species with very slender hind femora and unusually large metatarsi for an American species of this genus; all the femora black above, reddish-yellow below; wing darkish hyaline.

Polished black; face brassy-yellow, front polished, occiput thinly golden pruinose, the bloom being more dense along the orbits. Bristles of mystax few, fine, confined to oral margin golden; pile of basal segments of antennæ, frontal orbits, occiput and beard paler yellow. Antennæ black; first two segments slender, cylindrical, first segment noticeably longer than the second; third segment linear, much more slender than in *albius*, densely pubescent, somewhat as in *Cereturgeus cruciatus*, only the protuberance does not appear except under a strong lens; style nearly equaling in width the third segment and a trifle less than one-quarter its length, rather obtuse, densely pubescent. Thoracic dorsum with a rather thin golden pubescence which leaves a median geminate strip bare; bristles along the sides very few, short, golden; pleuræ polished black; the pubescence light golden, arranged as follows,—a proportionately broad band extending over the anterior portion of the meso- and sternopleuræ and reaching to the front coxæ, a narrow line extending from base of wing along the mesopleural groove, and, then widening, turning back beneath the pteropleuron, a very small patch just above and behind the middle coxæ and a longer patch between the halteres and coxæ. Trichostical pile short, golden, as also is that upon the posterior margin of the scutellum. Halteres yellow.



lowish. Abdomen very slender; with very sparse microscopic pile, which is longer but scarcely noticeable on the sides of segments 1 and 2. Coxæ reddish-yellow, white pruinose, the fore and middle pairs with whitish pile; femora black, the lower half wholly reddish-yellow; front and middle tibiæ reddish except narrowly on the inside where they are black; hind tibiæ slender, incrassate at tip, black, extreme base reddish; tarsi black; metatarsi unusually large. Pile of legs sparse, whitish; that on the under side of the hind femora and tibiæ quite dense, very short, pure white; bristles of tibiæ sparse. Claws black, narrowly reddish at base; pulvilli pale. Wings darkish hyaline: all the posterior and the anal cells open.

*Type*.—American Museum. A single male specimen.

*Habitat*.—Monterey Co., Cal. (July 2, 1896, W. M. Wheeler).

### CYRTOPOGON.

*Cyrtopogon* Loew, *Linnæa Ent.*, II, 516, 1847.

*Euarmostus* Walker, *Dipt. Saund.*, 102, 1851.

*Cyrtopogon* Schiner, *Fauna Austr.*, I, 133, 1862.

*Cyrtopogon* Osten Sacken, *West. Dipt.*, 294, 1877; *Cat.*, 1878, note 104.

Small to medium-sized species, usually quite pilose and with pruinose bands upon the abdomen. Head broader than high, in typical species the face in profile swollen or gibbose, and clothed with an abundance of pile; front tibiæ without a terminal claw-like spur; fourth posterior cell of wing open, the anal cell narrowly so. Antennæ three-jointed, the third segment with a distinct, rather stout style, less than one-half as long and under the compound microscope, plainly two-jointed, the basal segment being short and about one-sixth as long as the second. In *Lasoipogon*, it is the terminal segment of the style that is long and the basal one short. Thorax moderately well arched, usually very pilose, and with the ground color partially obscured by a pattern in grayish bloom; abdomen normally long and slender; legs normal, the pulvilli and empodia well developed; the marginal, posterior, and anal cell of the wing open.

The structural characteristics of the numerous species belonging to this genus will facilitate a subdivision of the genus when sufficient amounts of material is at hand to make it worth while. I have followed Osten Sacken's paper on *Crypto-*

*pogon* in Western Diptera very closely. I have found no difficulty in running his type material in his keys which I have used, enlarging only sufficiently to include new species, and in so doing have taken care not to impair their value.

As many of his species have never since been collected, and as I have found by actual comparison with type material that his descriptions are excellent, I have not hesitated to embody them direct, with credit, in the text. My reasons for so doing is that when a man has made a good description it seems a waste of time for another to redescribe for the sole purpose of appearing more original.

The species, *cerrussatus*, *nebulo*, *varipeinis* and *gibber*, especially the last three, are aberrant forms. I have allowed them to remain in this genus for the time being, as I know of no better place for them, and it seems unwise to erect new genera for them at this time.

In one day Osten Sacken captured thirteen species at Weber Lake, Sierra Co., Cal., eleven of which were new;—which shows the abundance of the species of this genus in the West.

#### SYNOPSIS OF SPECIES.

##### EASTERN SPECIES.\*

- |    |   |   |                    |
|----|---|---|--------------------|
| 1. | { | Scutellum flat, with very few indistinct hairs.....   | <b>lutatus.</b>    |
|    |   | Scutellum convex, with long, distinct, erect hairs (with short white pile in <i>alleni</i> )..... | 2.                 |
| 2. | { | Third segment of antennæ red, very pilose species.  | <b>marginalis.</b> |
|    |   | Third segment of antennæ black.....   | 3.                 |
| 3. | { | Tibiæ and tarsi altogether black or dark chestnut.....  | 4.                 |
|    |   | Tibiæ and tarsi more or less reddish or yellow.....   | 5.                 |
| 4. | { | Scutellum with long black pile.....   | <b>lyratus.</b>    |
|    |   | Scutellum with short white pile.....  | <b>alleni.</b>     |
| 5. | { | Tibiæ red, the tips only black; the male with two large black spots on the wings.....             | <b>bimacula.</b>   |
|    |   | Tibiæ red at base only; the male without large black spots on the wings.....                      | <b>falto.</b>      |

\* These species are reported more frequently from New England, New York and New Jersey, although specimens have been taken as far west as Minnesota; *marginalis* has been reported from Virginia; *bimacula* has been taken in Las Vegas Range, N. M.

SYNOPSIS OF SPECIES.

WESTERN SPECIES\*.

- |    |   |   |
|----|---|---|
| 1. | { | Scutellum rather convex above, its posterior margin rounded; surface black, sometimes pruinose at base only, and beset with long pile; legs densely pilose, and rather stout (except in <i>princeps</i> , where they are more slender).....2. |
|    | { | Scutellum more or less flattened above, surface densely grayish pruinose; legs moderately hairy, and not very stout (rather hairy in <i>rattus</i> ).....4.   |
| 2. | { | Hind tibiæ more or less reddish in the middle (except in <i>præpes</i> )...3.   |
|    | { | All the tibiæ entirely black..... <b>princeps</b> ♂; <b>cretaceus</b> ♀; <b>longimanus</b> ♂ ♀; <b>rufotarsus</b> ♂ ♀.  |
|    | { | Front tarsi of the male ornamented with dense silvery pile; middle tarsi with brushes of black bristles. <b>callipedilus</b> ♂ —; <b>cymbalista</b> ♂ ♀; <b>plausor</b> ♂ ♀; <b>præpes</b> ♂, ♀.  |
| 3. | { | Front tarsi and tibiæ not ornamented as above, although <i>pulcher</i> has white pile on the fore tarsi.... <b>montanus</b> ♂ ♀; <b>leucozonus</b> ♀; <b>aurifex</b> ♂ ♀; <b>dasyllis</b> ♂; <b>dasylloides</b> ♂, <b>pulcher</b> ♂           |
| 4. | { | Abdomen black, with spots or cross-bands on the posterior margin of the segments.....5.   |
|    | { | Abdomen gray; with black spots..... <b>rattus</b> .   |
| 5. | { | Legs reddish (femora black in <i>dubius</i> ) <b>profusus</b> ♂ ♀; <b>dubius</b> ♀.   |
|    | { | Legs black..... <b>evidens</b> ♂ ♀; <b>rejectus</b> ♂; <b>nugator</b> ♂ ♀; <b>nigricolor</b> , <b>postivus</b> , <b>sudator</b> ♂ ♀.  |
|    | { | Aberrant species..... <b>cerussatus</b> ♂ ♀; <b>gibber</b> ♀; <b>nebulo</b> ♀; <b>varipennis</b> ♂ ♀.   |
| 1. | { | Abdomen† with long, erect, yellow pile; length 16–18 mm. <b>dasyllis</b> , <b>dasylloides</b> .   |
|    | { | Abdomen without such pile; smaller species.....2.   |
| 2. | { | Antennal style as long, or nearly as long, as the third segment. 3.   |
|    | { | Antennal style much shorter than the third segment.....4.   |
| 3. | { | First basal cell of wing without brown spots ..... <b>nebulo</b> .  |
|    | { | First basal cell of wing with two brown spots..... <b>varipennis</b> .  |
| 4. | { | Third antennal segment red.....20.  |
|    | { | Third antennal segment black .....5.  |
| 5. | { | Hind tibiæ more or less red in the middle (black in <i>præpes</i> ).....6.  |
|    | { | Hind tibiæ black .....12.   |

\* Does not include *tibialis* Coq. and *maculosis* Coq. based on females only, near *plausor* and *rejectus* respectively.

† Does not include *dubius*, *gibber*, *maculosis*, *nigricolor* or *tibialis*, all of which are not well known to me, and based only on single female specimens, except *tibialis*, based on three females.

- |     |   |   |                      |
|-----|---|---|----------------------|
| 6.  | { | Male: front tarsi with a conspicuous dense fringe of silvery pile, last two segments of the middle tarsi with a brush of black bristles. Female: hind margins of the abdominal segments white on the sides only; sometimes very little so ..... | 9.                   |
|     |   | Male: front and middle tarsi without such characters. Female: hind margins of the abdominal segments 2-5 altogether white .....   | 7.                   |
| 7.  | { | Scutellum convex, black; the brownish pollen at the base, if any, is hardly perceptible; densely pilose with long, erect pile; face in the middle with white pile.....  | 8.                   |
|     |   | Scutellum flat, covered with dense gray pollen; longer hairs along the edge only; face altogether with black hairs.   |                      |
|     |   |   | <b>profusus.</b>     |
| 8.  | { | Trichostical pile black.....  | <b>montanus.</b>     |
|     |   | Trichostical pile white.....  | <b>leucozonus.</b>   |
| 9.  | { | Scutellum polished black .....  | 10.                  |
|     |   | Scutellum with gray pollen .....  | <b>plausor.</b>      |
| 10. | { | Legs wholly black (see couplet 5).....  | <b>præpes.</b>       |
|     |   | Hind tibiæ more or less red in the middle.....  | 11.                  |
| 11. | { | Abdomen with white pile on the sides .....  | <b>callipedilus.</b> |
|     |   | Abdomen with black pile on the sides from the very base.  |                      |
|     |   |   | <b>cymbalista.</b>   |
| 12. | { | Tarsi reddish, the anterior tarsi of the male slender, honey-yellow, and, together with the front tibiæ, clothed above with not dense white pile.....   | <b>rufotarsus.</b>   |
|     |   | Legs not as above .....   | 13.                  |
| 13. | { | Abdomen gray, with black polished spots .....   | <b>rattus.</b>       |
|     |   | Abdomen black, with white cross-bands.....  | 14.                  |
| 14. | { | White cross-bands on the anterior margins of the abdominal segments .....   | <b>cerussatus.</b>   |
|     |   | White cross-bands on the posterior margins of the abdominal segments .....  | 15.                  |
| 15. | { | Scutellum polished black; legs very hairy.....  | <b>longimannus.</b>  |
|     |   | Scutellum with gray pollen; legs moderately hairy.....  | 16.                  |
| 16. | { | Trichostical pile white.....  | 17.                  |
|     |   | Trichostical pile black.....  | 19.                  |
| 17. | { | First abdominal segment with a white cross-band occupying nearly the entire posterior margin.....   | <b>evidens.</b>      |
|     |   | First abdominal segment with white spots on the sides only.....   | 18.                  |
| 18. | { | Wings brownish hyaline on the distal half; claws black, reddish at base only; length 9-10 mm.....   | <b>rejectus.</b>     |
|     |   | Wings almost uniformly hyaline, claws yellowish white, black at the ends only; length 7-8 mm .....  | <b>nugator.</b>      |

- |     |   |   |                   |
|-----|---|---|-------------------|
| 19. | { | Front and face broad, with a hoary bloom .....  | <b>sudator.</b>   |
|     |   | Front and face rather narrow, bloom upon them not hoary.  | <b>positivus.</b> |
| 20. | { | Tibiæ, except the tip, red.....   | 21.               |
|     |   | Tibiæ black .....   | 22.               |
| 21. | { | Abdomen with a brush of black hair extending over the last three segments; pile along remaining segments arranged in tufts..... | <b>aurifex.</b>   |
|     |   | Abdomen without such a brush, segments 1-2 with pale yellow pile not arranged in tufts.....                                     | <b>pulcher.</b>   |
| 22. | { | Scutellum polished black.....   | 23.               |
|     |   | Scutellum with gray pollen.....   | <b>cretaceus.</b> |
| 23. | { | Hairs on face mixed with some white, compare ( <i>longimanus</i> ).   |                   |
|     |   | Hairs on face yellowish; front tarsi of the male unusually long; front and hind tarsi with silvery hairs on the upper side..... | <b>princeps.</b>  |

## EASTERN SPECIES.

**Cyrtopogon alleni** n. sp.

♀.—*Length about 14 mm.*—Very close to *lyratus*, but larger and more robust, and the pile of the posterior portion of the thoracic dorsum and the scutellum is white, and the pleuræ are wholly and densely white pruinose. Pattern of thoracic dorsum distinct in a yellowish-brown bloom; legs dark chestnut; wings distinctly clouded along some of the veins.

Polished black; face, except middle of gibbosity, frontal orbits and occiput, white pruinose; pile of face nowhere as dense or long, nor wholly black as in *lyratus*, but with many white hairs on the sides of the gently rounded gibbosity. Antennæ black, segment 3 more suddenly coarctate near the middle than in *lyratus*. Pile of basal segments of antennæ, front and upper occiput black; of the lower occiput, pronotum, meso- and sternopleura, before the halteres, on the posterior portion of the dorsum and thin on the scutellum white. Pronotum, entire pleuræ, spots on posterior callosities, lateral margins of the first abdominal segment and the posterior lateral margins of the abdominal segments 2-5 white pruinose. Bloom of pleuræ is dense, which is not the case in *lyratus* specimens that I have seen; in these the bloom is confined to a stripe along the lower part of the pleuræ. Thoracic dorsum almost bare, with fine short black pile as far back as the posterior callosities, from thence to and including the scutellum with white pile, not very distinct, but not present in *lyratus*. The scutellum of *lyratus* has long black pile; of *alleni*, short white pile. The markings of the dorsum are distinct in a yellowish-brown bloom, as follows:—A broad pruinose stripe on each side extending from the posterior callosities forward above the dorso-pleural suture

and extending upward slightly at the transverse suture, to, but not including, the humeri; from thence extending upward to near the center of the dorsum and thence straight back to an imaginary line drawn between the posterior callosities, thus leaving the space usually occupied by the median geminate stripe as a clear black undivided stripe. The humeri are pruinose in certain lights, but more whitish. Abdomen polished black, with bluish reflections; otherwise as above. Legs wholly dark chestnut; tarsi a trifle lighter. Pile of coxæ white, of femora very fine, entirely white, with no black bristles; tibiæ and tarsi almost entirely with black pile and bristles. Wings hyaline, but distinctly clouded on the distal portion of the costal cell, proximal portion of marginal cell, along the anterior cross-vein and all the veins closing the discal cell before, above, and behind, and at the furcation of the third longitudinal vein.

*Type*.—Single female, in the collection of Prof. C. W. Johnson, Curator of the Boston Natural History Society.

*Habitat*.—Mt. Kearsarge, N. H.; collected September 13, 1903, by Dr. G. M. Allen, in honor of whom I have named this species.

### **Cyrtopogon bimacula.**

*Euarmostus bimacula* Walker, Dipt. Saund., Pt. II, 102, Pl. IV, fig. I, 1851

*Cyrtopogon melanopleurus* Loew, Cent., VII, 61, 1866 (female).

*Cyrtopogon bimacula* Loew, Berl. Ent. Zeit., 1874, 365, syn.

♂ ♀.—Length 9–11 mm.—♂.—Black; front and face densely yellowish-brown pruinose; abdomen polished blue-black, segments 2–5 white pruinose on the posterior lateral margins; wings with two large brown spots.

Face and front densely yellowish-brown pruinose, occiput grayish pruinose; pile of face dense, pale yellow on the middle of the gibbosity and reaching nearly to the antennæ; black on the outer side, on the oral margin and just beneath the antennæ. The latter black, first two segments black-haired. Front and upper occiput with fine erect black pile, which, on the ocellar tubercle, is longer and forms a distinct tuft; lower occiput, base of proboscis, sides of prothorax and all the coxæ with fine white pile. Thoracic dorsum yellowish-gray pruinose except the humeri, along the dorso-pleural suture narrowly, more broadly over the base of the wings, the posterior callosities, two spots adjoining the scutellum in front and the scutellum, except the extreme base, which are polished black. The brown geminate stripe is distinct, but not clearly defined and is abbreviated posteriorly. When viewed from before two small dark brown spots are visible about the humeri and two much larger ones before the transverse suture and blending

with the geminate stripe. The bloom between the scutellum and the abbreviated geminate stripe is more nearly white. Posterior angles of the humeri red. Dorsum everywhere with short, erect black pile with a few black bristles on the sides; scutellum with similar but longer pile. Pleuræ polished black, the mesopleura and a small area over the posterior coxæ yellowish-brown pruinose; trichostical hairs and a patch of pile on the mesopleura before the mesopleural groove black. Halteres pale yellow. Abdomen polished blue-black; posterior lateral margins of segments 2-5 white pruinose. Sides of all the segments with pale yellow, almost white, pile, which is long and tufted on the first three segments, but not as noticeable on the following segments. Hypopygium black. Femora wholly black; tibiæ and tarsi dark chestnut; the tibiæ and tarsal segments black distally. Pile of legs almost wholly black excepting numerous pale yellow hairs on the femora, especially below, and a dense array of short appressed golden ones on the inner side of the fore tibiæ and tarsi, and on the distal portion of the hind tibiæ and their first two tarsal segments. Wings hyaline, with two brown spots; one on the outer third of the wing, the other smaller, occupying the distal half of the anal cell and running over into the adjoining cells.

♀.—The female does not differ from the male except in the absence of the spots on the wings. The wings are not hyaline, however, but are more or less darkened on the outer half, and about the anterior cross-vein and the anal cell.

*Type*.—British Museum. There are at the M. C. Z. four males and four females, five of which are in the collection of Osten Sacken and three in that of Loew.

*Habitat*.—N. A. (Walker); White Mts., and Mt. Washington, N. H. (Osten Sacken): top of Las Vegas Range, N. M. (June 28); Lower Minn.

Description made from the M. C. Z. material. In the collection of the Am. Ent. Soc. of Phila. there are four male and two female specimens from the top of the Las Vegas Range, N. M., which agree in every respect with the White Mountain specimens; an interesting case of geographical distribution.

### **Cyrtopogon falto.**

*Dasyopogon falto* Walker, List, II, 355, 1849.

*Cyrtopogon chrysopogon* Loew, Cent., VII, 55, 1866.

*Dasyopogon falto* Walker, Can. Ent. III, 142, 1871 (oc. in Nova Scotia).

*Dasyopogon falto* Osten Sacken, Cat., 1878, 69 (is *falto* same as *chrysopogon*?).

*Cyrtopogon chrysopogon* Howard, Insect Book, 1902, Pl. XIX, fig. 28.

♂ ♀ —*Length* 10–13 mm.—Black, antennæ of same color; bases of all the tibiæ and tarsal segments broadly yellow; mystax wholly golden in the male, in the female edged with black; segments 2–5 of abdomen with white pruinose spots; wings hyaline, toward posterior margin and apex grayish.

Black; face on the sides silvery, front brownish pruinose. Mystax covering gibbosity; in the male very dense, wholly light golden except on the oral margins, where it is black; in the female much thinner, in the center golden, on the outside black. Antennæ black; pile on segments 1 and 2, on the front and occiput black. Beard white. Thoracic dorsum yellowish-brown pruinose; the median geminate stripe and the dilated lateral ones unequally black and polished. When viewed from above there appear to be two rounded spots on each side of the geminate stripe; one just above and behind the humeri, the other before the transverse suture. The humeri, a broad stripe extending from them over the base of the wings to the scutellum, and the scutellum, aside from its base, polished black. Dorsum and scutellum black pilose. Pleuræ yellowish-gray pruinose with a bare polished spot in the center, the mesopleura with fine black pile, the sternopleura with pile; the trichostical pile whitish. Halteres whitish. Abdomen wholly black, polished, white pilose; that of the male toward the apex above and the hypopygium with black pile; the posterior lateral margins of the segments 2–5 white pruinose. Legs black, polished, the basal half or third of the tibiæ and all the tarsal segments, except distally, yellowish; pile of the femora white except at the tip, where, together with the bristles of the femora and the entire clothing of the tibiæ and tarsi, it is black. The front tarsi in the male are more slender than those of the female; the last four segments on their inner sides with pure white cilia. Wings hyaline, toward the posterior margin and toward the apex grayish; veins black, at very base, yellowish; the transverse veins slightly margined with fuscous.

*Type*.—British Museum. There are at the M. C. Z. one male and one female in Loew's collection; one bearing the label "? Falto Wik." in Loew's handwriting. There are also four specimens in Osten Sacken's collection.

*Habitat*.—Nova Scotia (type, Wik.), Quebec (Wulp), Montreal Isl. (June 10, Chagnon), Canada; Franconia and White Mts., N. H.; Mass. (June 1, 6 and 25), Axton, N. Y. (M. and H.); N. J. (Smith Cat.); Fla. (C. W. Johnson); Ill. (Osten Sacken).

A fairly common species found in nearly all insect collections.



**Cyrtopogon lutatius.**

*Dasyopogon lutatius* Walker, List, II, 357, 1849.

*Dasyopogon lutatius* Walker, Can. Ent., III, 142, 1871 (oc. in Nova Scotia).

*Cyrtopogon lutitius* Osten Sacken, Cat., 1878, 281.

♀.—Length 7.5–10 mm.—Legs black, bristles of the tibiæ whitish; mystax white; abdominal segments, except the first, with interrupted white pruinose cross-bands near the posterior margin; wings hyaline.

Front and face grayish pruinose, mystax white extending up to the antennæ; antennæ black. Thoracic dorsum brown pruinose, with the usual stripes; the humeral callosities and the sides of the dorsum are covered with a more yellowish-gray bloom, which sometimes also extends more or less distinctly to the intervals between the dorsal stripes and the median line of the geminate stripe; a rather distinct, grayish-white spot on each side of the median geminate stripe, where the transverse suture reaches it; scutellum rather flat, rugose, with but little hair; grayish pruinose in the middle, black on the sides; pleuræ grayish pruinose; a polished black spot under the root of the wings; the trichostical pile is a mixture of white and black. Halteres yellow. Abdomen of very nearly equal breadth (the seventh segment distinctly narrowed), convex, black, subpolished; first segment with whitish pruinose spots on the sides; segments 2–7 with white pruinose cross-bands posteriorly; interrupted on segments 2–5, subinterrupted, nearly entire on segments 6–7; they touch the hind margin of the segments on the sides, but diverge from it a little on the tergum above. The sides of the abdomen at the base are clothed with white hairs; the tergum with microscopic pile, which in a certain light, appears golden-yellow. Legs black, tarsi more or less dark chestnut-brown; femora with white hairs, tibiæ with white bristles on the under side. Wings hyaline; a grayish tinge on the distal half is hardly perceptible, venation normal.

*Type*.—British Museum. There are seven female specimens at the M. C. Z. named by Osten Sacken.

*Habitat*.—Nova Scotia (Walker); Brookline (C. W. Johnson), and Chicopee (F. Knabb), Mass; Cayuga L., and Pike, N. Y.

Prof. C. W. Johnson has captured several specimens in Brookline, Mass., where it seems to be not at all rare. One of his specimens had the pruinose band on the fifth abdominal segment entire. It is not uncommon about Amherst, Mass.

**Cyrtopogon lyratus.**

*Cyrtopogon lyratus* Osten Sacken, Cat., 1878, 232.

♂ ♀.—Length 13–14 mm.—Head black, densely grayish pruinose on the face, slightly so on the sides of the front; mystax altogether black, hairs on the occiput black above, white below; antennæ black,

third segment but little longer than the two preceding taken together. The usual thoracic stripes are dark brown, the white or yellowish bloom in their intervals forms the following pattern: a median line, attenuated posteriorly; a figure in the shape of a tuning-fork, having the end of the handle in front of the scutellum, connected with the end of the median line; a broad stripe on each side between the humeral and the posterior callosities, attenuated and abbreviated before reaching the latter; these lateral stripes are twice connected by pruinose cross-bands with the branches of the tuning-fork, the second time, along the transverse suture. Scutellum black, with black pile; grayish pruinose anteriorly. Pleuræ grayish pruinose, with a stripe of more dense silvery-gray bloom on the lower part; the trichostical hairs black. Abdomen black, polished, with a bluish reflection on the first five segments; each of these, and often the sixth, has a large white pruinose spot on each posterior lateral margin; the sides of the abdomen are clothed with white hairs, which become gradually shorter posteriorly and do not reach beyond the fifth segment; hypopygium black, with black pile. Legs black; bristles on the tibiæ black; femora with long white hairs on the under side; the hind pair also on the upper side near the base. Halteres reddish-yellow. Wings hyaline on their proximal half, including the discal cell; the distal half has a slight grayish tinge; cross-veins clouded with brown.

*Type*.—M. C. Z. Two female co-types.

*Habitat*.—Catskill Mountain House (type; July), N. Y.; White Mts. and Mt. Washington (C. W. Johnson), N. H.

The above description is Osten Sacken's, altered somewhat so as to include the male, of which I have seen a single specimen, belonging to Prof. C. W. Johnson. "The altogether black legs; the strong contrast between the brown thoracic stripes and the whitish pruinose intervals between them; the altogether black beard, etc., will help to distinguish this species."—Osten Sacken.

A female specimen from Mt. Ranier, Wash., in the collection of the University of Kansas is very close to *lyriatus* and *alleni*, more so to the former, but differs in that the pile of the face is white in the middle; the hind tibiæ are reddish at base; the pleuræ more densely pruinose above; the thoracic dorsum is black with a distinct figure in the grayish bloom which resembles Osten Sacken's tuning-fork, but the handle is very broad where it touches the scutellum, and there is, between the two prongs, a short line of bloom that extends in between the black geminate stripe.

***Cyrtopogon marginalis*.**

*Cyrtopogon marginalis* Loew, Cent., VII, 60, 1866.

*Cyrtopogon marginalis* Loew, Berl. Ent. Zeit., 1874, 365, note.

♂ ♀.—Length 10–12 mm.—Black; antennæ, except at base and tip, reddish-yellow; apex of the femora, tibiæ and tarsi reddish; thoracic dorsum brownish pruinose, broadly polished black above the dorso-pleural suture; segments 2–5 of abdomen each with an interrupted white pruinose fascia; wing, excepting grayish tip, hyaline.

Black; face, front and occiput thinly grayish pruinose, the face more thickly so. First two segments of the antennæ black, apex of the second and third segment reddish-yellow, extreme apex of the latter and the style blackish. Pile on the middle of the face, first two antennal segments, ocellar tubercle and occiput below fine and white; that edging the mystax on the sides, on the oral margin, frontal orbits and upper occiput black. Dorsum grayish or brownish pruinose; the usual geminate and broader lateral stripes darker; subobsolete, while the shade of the bloom is always in sharp contrast with the rather broad polished black band that extends from, and including, the humeri backward above the dorso-pleural suture to the scutellum; pile on the polished area black; on rest of dorsum short and white. Pleuræ grayish-white pruinose with a bare polished area in the middle; pile of the mesopleura, sternopleura and before the halteres unusually long, furry, white. Scutellum polished black; white pilose. Abdomen polished black; segments 2–5 each with an interrupted white pruinose fascia on its posterior portion, not touching, however, the extreme posterior margin except on the sides. Posterior margins of the segments and the venter white pilose; rest of abdomen black pilose; the black pile of the male is much longer and more pronounced upon the sides, where, when viewed from before, it forms a distinct tuft upon segments 2–4. Femora black, reddish at base and tip, with long white pile, below rather yellowish; on the extreme apex black. Tibiæ reddish, darker toward the tip; black pilose on the inner, white pilose on the outer side. Tarsi likewise reddish, darker in the female, the first segment verging toward yellow; the front tarsi of the male more slender and wholly bright yellow, with pile and bristles of same color; bristles of the remaining tarsi and of the tibiæ black. Wings hyaline, veins yellow toward base, the marginal and first submarginal cells toward their apices and the second submarginal cell entire grayish.

*Type*.—M. C. Z. Five females and one male; one female of which only is probably the type. I have made one male and two female homotypes, which are deposited one each in the collection of the Massachusetts Agric. College, Am. Ent. Soc. of Phila. and in my own private collection, respectively.

*Habitat*.—Canada; White Mts., N. H.; Springfield, Mass.

(G. Dimmrock); New Haven, Conn. (May 15); Catskill Mts., N. Y.; N. J. (Smith Cat.); N. J. (E. Daecke, May 10); Va.

A female from Virginia has hyaline wings without any trace of grayish at the tip, thus agreeing with the Canadian female mentioned by Loew in *Berl. Ent. Zeit.* This is a very pilose species; the pile upon the prothorax, pleuræ and tibiæ being very long and fine.

*Middle tarsi of male with brushes of black bristles.*

**Cyrtopogon callipedilus** (Pl. VIII, fig. 1.)

*Cyrtopogon callipedilus* Loew, *Berl. Ent. Zeit.*, 1874, 358.

*Cyrtopogon callipedilus* Osten Sacken, *West. Dipt.*, 296, 1877.

*Cyrtopogon callipedilus* Williston, *Trans. Am. Ent. Soc.*, XI, 12, 1884; oc. in Wyo.

*Cyrtopogon callipedilus* Coquillett, *Psyche*, IX, 149, 1902; oc. in N. M.

“ ♂ ♀.—*Length*, ♂ 11–12 mm.; ♀, 11–13 mm.—♂.—Black; thoracic dorsum with a very weak brownish bloom, forming an indistinct geminate stripe in the middle and some ill-defined marks on the sides; long white pile on the face, the lower part of the occiput, front part of the thorax, fore coxæ and the sides of the first two abdominal segments; black pile on the remainder of the abdomen and the top of the head; some scattered black hairs in the mystax above the mouth. Femora black, with long, soft, white pile; tibiæ reddish, beset with blackish pile; tarsi black, except the first segment of the hind four tarsi, which is often reddish to a greater or less extent from the root; the front tarsi, beginning with the second segment, are densely beset on their upper side with recumbent, short, silvery hairs, parted in the middle; the under side of the same segment is densely beset on both sides with short black bristles; the last two segments of the middle tarsi have on each side a dense, flattened tuft of black bristles, which form together a kind of disk, which is a little broader than long. Wings grayish hyaline, more hyaline on the proximal half.

♀.—Head, and especially the face, covered with dense whitish-gray bloom, the thoracic dorsum covered with a brownish-gray bloom, completely concealing the black ground color, except at the four corners and on the scutellum, which is black, polished; a geminate darker line in the middle of the dorsum, not reaching the scutellum; pleuræ likewise clothed with a dense yellowish-gray bloom. Abdomen polished black, the hind margins of segments 2–5 with white triangles on each side. The hairs on head and thorax are like those of the male, but of a less pure white; the white hair on the sides of the abdomen reaches to its tip, gradually becoming shorter. Legs like those of the

male, but the sexual ornaments on the front and middle tarsi are wanting. Wings with the grayish tinge a little more saturate than in the male."

*Type*.—M. C. Z. One male specimen in Loew's collection. There are, however, three males, three females, and a pair in coitu in Osten Sacken's collection. Osten Sacken states that his above description was made from eight males and seven females, but they are not all at the M. C. Z. Neither is the female type from which Loew made his detailed but unrecognizable description. There is one male homotype at the Massachusetts Agricultural College.

*Habitat*.—Yosemite Valley (June 5-12), Summit Station, Sierra Nevada (July 17), and Webber Lake, Sierra Co. (July 22-26), Cal.—Osten Sacken: Southern Wyo. (alt. 8,000 ft.); Hudsonian Zone, N. M.; Sisco, Cal. (alt. 6,000, from G. Franck).

A very pretty species. Easily and quickly recognized by the sharp contrast between the long fine white pile of the first and second abdominal segments and the black pile of the following segments, and by the parted silvery pile of the front tarsi and the broader than high brush of the middle tarsi. In the female too much stress cannot be laid upon the density of the thoracic bloom and the definitiveness of the two narrow dark stripes on the dorsum.

### ***Cyrtopogon cymbalista*.**

*Cyrtopogon cymbalista* Osten Sacken, West. Dipt., 297, 1877.

♂ ♀.—Length 11-13 mm.—“♂.—Length 11-12 mm.—Like *callipedilus* in the ornamentation of the four anterior tarsi and in the general coloring of the body, but with the following differences:—The abdomen is uniformly clothed with black pile. The white pile on the lower part of the occiput and on the thorax and front coxæ is less long and conspicuous. The black pile on the upper part of the occiput reaches much lower here. Only the four anterior femora have some white pile on their posterior side. The brownish bloom on the thorax is hardly perceptible here. The front tibiæ and the tips of the four hind tibiæ are black. Besides the silvery hair on segments 2-5 of the front tarsi, some silvery pile is also perceptible on the first segment. The under side of the same tarsal segment is not beset with dense brushes of short black bristles as it is in *callipedilus*, so that the white silvery hairs are visible from below, which they are not in the other

species. The pulvilli of the four hind tarsi are brown, while in *callipedilus* they are whitish. The wings are a little shorter. The abdomen is slightly tapering from base to tip, instead of being nearly cylindrical, as in *callipedilus*. A vestige of a spot of whitish bloom is generally visible in the hind corner of the fourth segment.

♀.—Length 12-13 mm.—Black, polished; thoracic dorsum with a slight brownish bloom, which is a little denser than in the male, but much less dense than in the female of *callipedilus*. The hair on the face is deep black; a little whitish pile on the lower part of the occiput and on the front coxæ; pile on the legs black; their coloring the same as in the male, only the front tibiæ sometimes are reddish at the base and along their front side; abdomen with small triangles of whitish bloom on the posterior corners of segments 2-4, the largest on the fourth segment. The shape of the abdomen is different from that of the *callipedilus*; gradually tapering from base to tip, instead of slightly expanding about the middle."

Type.—M. C. Z. Type series consist of two male and three female specimens.

Habitat.—Summit Station, Sierra Nevada, July 17, and Webber Lake, July 23-24, Cal.; both sexes found in each locality.

#### **Cyrtopogon plausor.**

*Cyrtopogon plausor* Osten Sacken, West. Dipt.

*Cyrtopogon plausor* Williston, Tr. Am. Ent. Soc., XI, 12, 1884.

*Cyrtopogon plausor* Howard, Insect Book, 1902, Pl. XIX, fig. 26.

*Cyrtopogon plausor* Jones, Trans. Am. Ent. Soc., XXXIII, 277, 1907. (Note.)

"♂ ♀.—Length 12-13 mm.—Very like *callipedilus* and *cymbalista* in the ornamentation of the four anterior tarsi of the male, and at the same time very different, even in those characters.

♂.—Pile on the face yellow, sometimes yellowish-white, black above the mouth; lower part of the head posteriorly and front part of the thorax with yellowish-white pile; thoracic dorsum, including even the base of the scutellum, covered with a yellowish-brown pollen, except at the four corners, which are black; three stripes on the dorsum are less pruinose and therefore darker; the intermediate one geminate, and abbreviated posteriorly; the lateral ones broad, abbreviated and rounded anteriorly, converging toward each other posteriorly, in front of the scutellum; abdomen black, polished, clothed on the sides with dense yellowish pile, gradually diminishing in length toward the tip. Legs black; tibiæ reddish, black at tip; front tibiæ often altogether black. Segments 2-5 of the front tibiæ densely beset with silvery white recumbent hairs along the outer and upper side only, and there-

fore not parted in the middle; in *callipedilus* and *cymbalista* the silvery hairs are found both on the outer and inner side of the upper part of the tarsi, and are parted in the middle; some silvery pile on the outside of the first segment; the last two segments of the tarsi with a disk-shaped, flat brush of black bristles, as in *callipedilus* and *cymbalista*; pulvilli blackish-brown; all the femora and the four posterior tibiæ beset with long pale yellowish pile. Wings grayish hyaline.

♀.—Like the male, except in the sexual ornamentation of the front and middle tarsi, etc. Abdomen black, polished, the sides densely beset with pale yellowish-white pile, through which, on segments 2-5, the white pruinose spots in the hind corners of the segments are visible. Will be easily distinguished from *C. callipedilus* female by its pruinose scutellum, less densely pruinose thoracic dorsum, more yellowish pile of the face and thorax, etc."

*Type*.—M. C. Z. Four male and two female specimens.

*Habitat*.—Morino Valley, N. M. (July 1); Spanish Peakes, Col. (June); Sioux Co., Nebr.; Cache Valley, Utah; divide between Idaho and Montana.

I have referred a male specimen from Gallatin Valley, Mont. (July 6, R. A. Cooley), to this species.

### **Cyrtopogon præpes.**

*Cyrtopogon præpes* Williston, Tr. Am. Ent. Soc., XI, 12, 1884.

"♂ ♀.—*Length* 11-12 mm.—Scutellum convex above, pilose; legs densely pilose, wholly black; front tarsi of the male with a single row of silvery pile from the very base, and the terminal segments of the middle tarsi with a disk of black pile, longer than broad; sides of the abdomen at base white pilose, shorter and black on distal portion.

Black, polished. Face thickly yellowish pruinose, but concealed beneath the dense light yellow mystax, black on the oral margin. Beard, anterior and middle coxæ, first two segments of the abdomen on the sides, and all the femora below, and on the posterior part, thickly, nearly white pilose; front, upper part of the occiput, basal segments of the antennæ, dorsum and scutellum, tergum and sides from the second segment, upper surface of femora and all the tibiæ black pilose. Dorsum with two large spots on each side of the middle in front, brownish pruinose; pleuræ thickly light pruinose. Legs wholly deep black, the posterior tibiæ at tip and their metatarsi with golden-red pubescence. Legs not very stout nor the bristles very strong; front tarsi slender, on their upper side for their whole length with a row of short, dense, silvery pile, not parted, except at the tip, the surface below is smooth, but along the sides there is a fringe of very short black bristles; last two segments of middle tarsi with the disk of black pile narrower than in the other species, longer than broad. Wings nearly hyaline.

♀.—Like the male, but the face is a little more bare upon the sides, the pile throughout somewhat shorter, the dorsum more grayish pruinose, in front leaving two slender median dark stripes, the light pile of the abdomen is less abundant and extends on the sides to the fourth segment, and the black pile very short; the posterior angles of segments 2-4 white pruinose; the pile of the femora is more obscure, the silvery pile of the anterior, and the black disk of the middle tarsi wanting."

*Type*.—University of Kansas. "Two males and two females." One of the male co-types marked "type" is at the M. C. Z. and is in poor condition.

*Middle tarsi\** of male without brushes of black bristles.

### **Cyrtopogon aurifex.**

*Cyrtopogon aurifex* Osten Sacken, West. Dipt., 301, 1877.

♂ ♀.—*Length* ♂, 8.2 mm.; ♀, 9-10 mm.—"♂.—Abdomen narrow, tapering, black, polished, with some bluish reflections on the first segment and very distinct purplish toward the tip before the hypopygium; first segment on the sides with tufts of black pile anteriorly and white pile posteriorly; the hind part of the second and the greatest part of the third and fourth segments are occupied each by a conspicuous broad fringe of long, erect, yellowish-fulvous fur, with narrow base spaces between these fringes. The three following segments are covered with short, dense, erect, deep black hairs, forming a brush, especially conspicuous on the sides, and longer posteriorly before the hypopygium; the purplish-black, polished ground color is almost covered up by this pile; hypopygium black, polished, with but little pile. Face and front with brownish-gray bloom; face with whitish pile above and black pile below; occiput with white pile below and black pile above and on the vertex; third antennal segment red; the style black. Thorax black, brownish pruinose, especially about the humeri; a brown geminate stripe, with a paler, grayish-yellow dividing line in the middle. Femora black; front tibiae red at base, black on their distal half; the other tibiae red, broadly black at tip; tarsi black, the base of the first segment and the extreme root of the following segments red; first three segments of the front tarsi with some white pile on the upper side. Wings brownish hyaline; fourth posterior cell hardly coarctate.

"♀.—Legs like those of the male; only the red on the tarsi occupies more space and the front tarsi have no silvery pile; the hairs on the face are more scarce and whitish; the abdomen comparatively narrow, polished black; segments 2-5 each with a moderately broad cross-band of yellowish-white bloom near the posterior margin; segments 2-4 are

\* Under this come several species, the males of which have never been taken.



sparsely clothed with yellowish-fulvous erect pile, not concealing at all the ground color, and not forming the fringes of fur so conspicuous in the male; segments 5-7 are almost glabrous, some very scarce, short pile only being perceptible. The thorax is more densely pruinose than in the male; the grayish bloom forms a V-shaped figure posteriorly, the apex of which rests on the scutellum, the ends branch off on each side along the thoracic suture; the geminate stripe is longitudinally divided by a more yellowish line; the usual brownish shadows in the humeral region."

*Type*.—M. C. Z. A single male and female.

*Habitat*.—Webber Lake, Sierra Nevada, Cal. (Osten Sacken, July 22, 1876).

The male is easily recognized from all other species by the white tuft of pile on the posterior lateral margins of the first abdominal segment, and the larger tufts of yellow pile on segments 2-4 which are very distinct and unique when viewed from above. The short pile on the terminal segments which forms a brush is another characteristic which goes to make this one of the prettiest *Cyrtopogons*. The female has a similar red third antennal segment, but the tufts of pile on the abdomen are reduced in amount so that they are not at all prominent; in fact, cannot really be called tufts in the sense that they are in the male. Pruinose bands, similar to those in the female, are found in the male, but are not conspicuous because of the tufts of yellow pile. In the female the pruinose bands are most prominent; in the male, the tufts.

### ***Cyrtopogon princeps*.**

*Cyrtopogon princeps* Osten Sacken, West. Dipt., 302, 1877.

"♂.—*Length* 10.5 mm.—Front tarsi remarkably long, once and three-quarters the length of the tibiae; their whole upper side beset with a dense fringe of silvery pile; hind femora, tibiae and tarsi on the upper side with a similar, but broader, covering of silvery pile. Face and front with a brownish-yellow bloom; mystax pale yellow, black only above the mouth and on the lower part of the face; lower part of the occiput with white, upper part and vertex with black pile; third antennal segment red, rather long and slender, the style black. Thorax black, somewhat polished posteriorly, and somewhat brownish-pruinose, especially about the humeri; scutellum black; thoracic pile black. Abdomen black, polished, with black pile; segments 2-6 with a yellowish-gray bloom on the hind margins; on the second segment, this pollen is visible on the sides only; on the third and fourth, it forms an

interrupted cross-band; on the two following segments, this cross-band is broader and only subinterrupted by a deep emargination; the sixth segment is entirely covered with gray pollen, except a small black triangle in front; hypopygium black, with black pile, and only a small fringe of minute yellowish hairs at the extreme end. Legs black, ornamented as described above; claws whitish, with black tips. Wings uniformly blackish; veins normal; fourth posterior cell hardly coarctate at all."

*Type*.—M. C. Z. A single male specimen.

*Habitat*.—Webber Lake, Sierra Nevada, Cal. (Osten Sacken).

A pretty species, easily recognized by the long, slender, silvery piled front tibiæ and the similar silvery pile of the hind legs.

**Cyrtopogon pulcher** n. sp.

♂ —*Length* 12–13 mm.—Black, all the tibiæ and tarsi, except their tips, yellowish-red; the front tibiæ on the outer side with fine silky white pile, very sparse and hardly perceptible at the base, but increasing in amount toward the tip; the front tarsi with similar pile much longer on the outside, where it is arranged in tufts corresponding to the tarsal segments. Third antennal segment reddish. Segments 2–5 of abdomen with white pruinose fasciæ; segments 1–2 on the sides with long yellowish pile, remaining segments nearly bare. Face, front and occiput, grayish pruinose; middle of gibbosity with golden pile; pile on rest of face, palpi, basal segments of antennæ, front, and upper occiput black, that of beard and proboscis white. Third segment of antennæ reddish, compressed, sublinear, not coarctate distally nor noticeably constricted proximally; style rather distinct, about one-fourth as long as the third segment tapering to a point. Thoracic dorsum polished black with a bloom ranging from nearly white to a dull olive and black; geminate stripe dull olive, distinct, divided by a fine white pruinose line; viewed from before, there appears two rounded dark spots on each side in front of the transverse suture incompletely surrounded by a nearly white bloom; this whitish bloom, closing the spot behind, crossing the suture, extends backward but does not reach the scutellum, as does the narrow pruinose line dividing the geminate stripe; thus leaving a limited area on the rear of the dorsum glistening black. Pleuræ and base of scutellum grayish-white pruinose; the posterior border of the latter polished black. Pile of and bristles of dorsum and long pile on the convex scutellum black; that of the pleuræ likewise black, but before the halteres yellow and black mixed. Halteres white. Abdomen polished black, segments 2–5 with white pruinose posterior cross-bands interrupted on segments 4–5; sides of segments 1–2 with rather long, pale yellow pile which, becoming shorter, extends up onto the tergum, being more noticeable

on the tergum of segment 2; pile of remaining segments almost microscopic, yellowish on segment 3, black on the following and longer on the genitalia. Venter on the proximal half with pale yellow pile. Femora wholly black; the tibiæ, except their tips, and the tarsi, except last segment, yellowish-red; the anterior tarsi paler; pile of coxæ whiter; that of the femora pale yellow with a little black intermixed; bristles of tibiæ and tarsi quite numerous, black. The anterior tibiæ on the outer side with fine white silky pile, which toward the base is shorter and more sparse, but becoming longer and more noticeable toward the tip; anterior tarsi with similar white pile on the metatarsi, confined to the outer side, on the other segments on both sides, though most prominent on the outer side where it is longer, and, when viewed from certain positions, appears arranged in tufts corresponding to the segments. There is a slight amount of white pile on the intermediate tarsi, but there is no ornamental brush of black hair. Claws broadly yellowish at base. Wings almost clear hyaline, venation normal, veins not clouded or spotted with black.

*Type*.—U. S. N. M., Cat. No. . A single male deposited for safe keeping by Prof. C. P. Gillett of Colorado.

*Habitat*.—Palmer Lake, Col. (July 10).

This species somewhat resembles *rufotarsus* in the ornamentation of the front tibiæ and tarsi, but in this species the white pile is confined chiefly to the outer side, while in *rufotarsus* it is on the upper side. These two species are easily separated from those species like *callipedilus* and *præpes* by the absence of the brush on the intermediate tarsi, and by the nature and arrangement of the white pile on the anterior tibiæ and tarsi.

#### *Cyrtopogon rufotarsus* n. sp.

♂ ♀.—*Length* 9.5–11.5 mm.—Black, tarsi in both sexes reddish, the front pair of the male slender, clear honey-yellow, and, together with the front tibiæ, clothed above with not dense short white pile. Pile of body and legs for most part black, on the abdomen wholly so; segments 2-5 of the female abdomen and segments 2-6 of the male, with interrupted white pruinose bands. Body wholly black, a typical *Cyrtopogon*; face and front densely white pruinose, occiput somewhat so; anterior portion of thoracic dorsum grayish-white pruinose, especially on the humeri and on either side of the median stripe, which is narrowly bisected and more grayish. Pile of entire body abundant, black, except a small patch on the upper portion of the facial gibbosity, a small amount in the beard, that on the anterior pairs of coxæ, and a trifle at the base of the anterior femora below, which is white. Antennæ wholly black, third segment slender at base, swollen toward tip;

the style thick, pointed at tip, not easily distinguished from the third segment. Scutellum convex, with long black pile. Halteres reddish-yellow. Segments 2-6 of abdomen with posterior white pruinose cross-bands, interrupted in the middle. Legs wholly black, tarsi deep reddish; the front pair slender, clear honey-yellow. The fore tibiæ and tarsi above clothed with short white pile, which is more or less depressed, but neither obscuring the ground color nor parted as in *callipedilus*. In fact, in looking at the fore tarsi without a lens, one notices the yellowish color of the tarsi fully as much as the white pile upon the segments. Hind tarsi darker than the middle tarsi, and the terminal segment of each tarsus is darker; claws broadly yellowish at base; pulvilli pale. The middle tarsi without the ornamental brush found in *callipedilus*. All the bristles of the tibiæ and tarsi black; those on the fore tarsi scant and weaker; the tips of the hind tibiæ and the under side of their tarsi with golden pubescence. Wings blackish hyaline; darker on the anterior cross-vein, the separation of the second and third longitudinal and at the end of the costal vein; venation normal.

♀.—The female does not differ from the male, except it is naturally more robust and the pile of the entire body is black except on the anterior pairs of coxæ. All the tarsi are similar in appearance, dark reddish; in one specimen the bases of tibiæ are reddish. Abdomen less pilose, segments 2-5 with white pruinose posterior cross-bands broadly interrupted. Face and occipital orbits grayish, the front brownish pruinose; thoracic dorsum on anterior two-thirds rather densely yellowish-brown pruinose, grayish on the anterior margin, leaving a distinct geminate stripe well divided by a narrow pruinose stripe which extends backward clear to the scutellum, widening before reaching it. The humeri and a large spot anterior to the transverse suture subshining, distinct; dorsum on posterior third nearly devoid of bloom; scutellum thinly, the pleuræ more densely, grayish pruinose. The stripes and spots of dorsum are best seen from before. Wings as in male, only darker from the anterior cross-vein to the end of the costal vein.

*Type*.—Described from two male and three female specimens; one male and one female co-type deposited in the collection of the Massachusetts Agricultural College, and one male and two female co-types in that of the Montana Agricultural College.

*Habitat*.—All from Gallatin Co., Mont., elev. 8,000-9,400 feet; (July 9-11, E. Kock).

**Cyrtopogon dasyllis** (Pl. IX, fig. 7.)

*Cyrtopogon dasyllis* Williston, Kans. Univ. Quart., II, 66, 1893.

“♂.—Length 16–18 mm.—Black, thickly pilose; pile of face wholly black. Abdomen, except the tip, with long, dense, erect, yellow pile. Tarsi red. Wings hyaline; just before the tip a large, deep brown spot. Face and front with long and dense deep black pile; beard black. First two segments of the antennæ black, the third red; style short and thick. Thorax black, thickly black pilose; dorsum deep opaque brown, on the sides narrowly, and behind polished. Scutellum thickly black pilose, subpolished, convex. Abdomen nearly parallel on the sides, polished, but its shape and color largely concealed by the long, erect, yellow pile; the first segment sparingly black pilose on the sides; the last three segments and the hypopygium with abundant black pile. Legs black, black pilose, the coxæ with some whitish pile; the tarsi red, the hind tibiæ more deeply so. Wings hyaline, with a large black or deep brown spot before the apex, extending across the wing; a narrow cloud along the last section of the fifth vein.”

*Type*.—University of Kansas.

*Habitat*.—Colorado, top of Deer Mt. (August, F. H. Snow).

A male specimen marked “type,” loaned me by Prof. F. H. Snow, agrees perfectly with the above description except that all the tibiæ are reddish. This species is strikingly like *dasylloides* but differs, according to Dr. Williston, in the color of the third antennal segment, the facial pile, and in the wing markings. Dr. Williston’s species are both founded upon male specimens; *dasylloides* upon a single male. I have three female specimens which I cannot place with certainty either under *dasyllis* or *dasylloides*, and yet they are, beyond doubt, one or the other. Two of them, from Pike, N. Y. (N. Y. St. Mus.), and Sisco, Cal. (Massachusetts Agricultural College), respectively, are like *dasyllis* except that the antennæ are black, the facial pile and beard light golden, as in *dasylloides*, instead of black, and the wings do not have the distinct spot as found in *dasyllis*, but have more the coloration of those of *dasylloides*. The female of *dasyllis* would not be expected to have a distinct spot on the wing if we can draw any conclusions from the male and female wing of *bimacula*. The third female is from Colorado (Am. Ent. Soc.); it has the antennæ as in *dasyllis*, but the pile of the face, beard and abdomen is wholly light yellow, and the wing coloration is more nearly

like that of *dasyloides*. It is hardly safe, having seen so little material, to express the opinion that these two species may eventually be proved the same, yet such is my conviction.

### **Cyrtopogon dasyloides.**

*Cyrtopogon dasyloides* Williston, Trans. Am. Ent. Soc., XI, 11, 1884.

“♂.—Length 17 mm.—Black, thickly black pilose; mystax thick, light yellow; coxæ with white pile. Abdomen, except the tip, with long, dense, furry, erect, light yellow pile; tarsi red; wings hyaline, the distal half in front blackish.

“Face very thickly light yellow pilose, on the lowest portion somewhat black; beard white. Style of antennæ short, thickened. Pile of the front, occiput and of the first two segments of antennæ black. Thorax thickly black pilose, dorsum nearly opaque, on the sides of the middle in front a little brownish pruinose; bristles not strong. Scutellum thickly pilose, not pollinose, convex. Abdomen nearly parallel on the sides, polished, but its shape and color nearly concealed by the very long, erect, furry, yellow pile, the first segment with a very little black pile above on the sides, and the last segments and the hypopygium wholly thickly pilose. Coxæ white pilose. Legs black, densely black pilose, hind tibiæ deep red, all the tarsi lighter red, the front pair with white pile. Wings hyaline, the outer half in front from the margin of the third vein blackish, a little lighter at the tip, and fading out behind.”

*Type*.—University of Kansas. One male specimen.

*Habitat*.—Washington.

The pile of the abdomen is evenly distributed and not at all arranged in tufts.

### **Cyrtopogon longimanus.**

*Cyrtopogon longimanus* Loew, Berl. Ent. Zeit., 1874, 360.

*Cyrtopogon longimanus* Osten Sacken, West, Dipt., 303, 1877.

♂.—Length 8-9 mm.—Translation by Osten Sacken from Loew. The ground color of the whole body is, without exception, polished black. The front with long black pubescence with which are mixed some whitish hairs, or such which appear whitish toward the tip. Antennæ black; the first two segments sparsely beset with black hairs, partly whitish toward their tips; the third segment very slender, strongly coarctate in the middle; terminal style slender, a little more than half as long as the segment. The long mystax reaches up to the antennæ, and is composed in the middle of hairs which are whitish or black at their base only; the hairs on its outer side, all around, are exclusively black, so that, seen from the sides, the mystax seems to

consist entirely of black hairs; the long pile on the occiput is white; in the vicinity of the vertex and on the greatest part of the posterior orbit it is black. The pruinose design on the thoracic dorsum resembles that of *C. marginalis*. It consists of three broad stripes covered with dense brown bloom; the lateral ones are considerably abbreviated anteriorly; the intermediate one, seen from the front side, appears entire; seen from the hind side, it appears bisected by a broad black line; the region in front of the lateral stripes is covered with a thin white bloom, of which there is also a trace in the intervals between the middle stripe and the lateral ones. These intervals do not show the polished surface of the broad lateral margin of the thoracic dorsum, which is entirely free from bloom; the inner end of the thoracic suture, on each side, shows a small spot of more dense whitish bloom. The thoracic dorsum is beset with long black pile, which is rather scarce, except on the polished black sides of the dorsum, where it is a little more dense. Among this black pile there is a shorter and more delicate white pubescence; it does not exist, however, on the polished black portions of the dorsum. The polished black scutellum is rather densely beset with long, exclusively black, pile. Pleuræ with a thin grayish bloom; their pubescence in front of the halteres and of the roots of the wings is altogether black; above the anterior coxæ the stronger hairs are black, the more delicate pile whitish. Segments 2-4 of the polished black abdomen have on the posterior margin a very broad cross-band of white bloom, which is even expanded in the middle; a similar cross-band on the fifth segment is less broad, and a little interrupted in the described specimen (perhaps in consequence of detrition). The pile on the abdomen is rather long, but becomes gradually shorter towards its end. On the first five segments it is chiefly white; however, the side of the first three segments (exclusive of their posterior corners) bear some black pile, which may show a trace of whitish reflection on the tips of the single hairs only. This black pile reaches down to the venter. From the sixth segment to the much developed hypopygium the pile on the abdomen is altogether black. Coxæ with whitish pile. The black legs do not show any trace of lighter color; they have the ordinary structure. The anterior tarsi are comparatively long, equaled only by those of *marginalis* and *montanus*. The hairs on the legs are long, chiefly whitish on the femora. At their tip, however, and on the upper and hind side of the anterior femora, the hairs are more or less exclusively black. On the under side of all the femora, especially toward their base, the hairs have a pale yellowish tinge. The pubescence of the anterior tibiæ is chiefly black; but on their distal half there is a good deal of white pile. On the posterior tibiæ, the hairs are prevailing white, although there are many black hairs near the base, on the under side more than on the upper side. The hairs on the tarsi are chiefly white, on the upper side the first three segments

of the posterior tarsi comparatively long, otherwise short, all the bristles on the legs are black. Halteres blackish-brown. Proximal half of wings hyaline; distal half blackish-gray; venation normal; veins black.

*Type*.—M. C. Z.

*Habitat*.—San Francisco, Cal. (H. Edwards).

Osten Sacken states that he has three males 4–10 mm. long, from San Rafael, Marin Co., Cal., May 31, which agree perfectly with Loew's description except that the grayish pruinose cross-bands on segments 2–4 have a distinct black emargination in the middle, which Loew does not mention. The third antennal segment is sometimes reddish; the antennal style is long though, longer than half of the third segment. The thorax of Osten Sacken's specimens show, on each side of the median stripe, anteriorly, a short streak of whitish bloom.

Osten Sacken gives the following description of three females taken on the same day with the males, and a fourth taken at the end of April in Sonoma County.

“♀.—The cross-bands of whitish bloom on segments 2–4 are nearly parallel, slightly narrower in the middle, especially on the fourth segment, where they are more expanded on the sides; on the fifth segment, the cross-band is interrupted in the middle. The pile on the sides of the abdomen is white, with the exception of a tuft at the base of the first segment on the sides and of a smaller one on the sides of the second segment. The prevailing pubescence on the tarsi is black; the white hairs on the posterior tarsi, which are conspicuous in the males, are wanting here. The brownish on the distal part of the wings is much less distinct than in the male, hardly perceptible. The antennæ of one of the specimens are somewhat reddish toward the end. *Length* 10–12 mm.”

There is one male and one female at the Massachusetts Agricultural College from Vernon, B. C., captured in May 14–22, which agree with the above description.

### ***Cyrtopogon montanus*.**

*Cyrtopogon montanus* Loew, Berl. Ent. Zeit., 1874, 362.

*Cyrtopogon montanus* Osten Sacken, West. Dipt., 298, 1877.

♂ ♀.—*Length* 8–11 mm.—Deep black; hind tibiæ, except at base and tip, and the tarsi, in varying degree, reddish; pile chiefly black; segments 2–5 of abdomen each with a posterior white pruinose fascia; wings grayish hyaline.

♂.—Deep black; hind tibiæ dark reddish, brownish-black at base and tip; all the tarsi dark reddish, the fore pair moderately slender.



Face, front and occiput grayish pruinose; mystax dense, extending up to antennæ, whitish in the center and above, black on the sides and oral margin. Antennæ black; third segment longer than the first two taken together, constricted toward base, more swollen distally, style bristle-like, about one-third the length of the third segment. Pile of palpi, front, upper occiput, dorsum, the long pile of the convex scutellum and on the pleuræ wholly black; that of the basal segments of the antennæ largely, lower occiput, proboscis and coxæ white. Thoracic dorsum with a thin brownish bloom, which conceals but very little the black polished ground color; the median geminate stripe is hardly perceptible, but on each side of it a semblance of a figure 5 in gray bloom, with its reverse on the outer side, is more distinct. Pleuræ grayish pruinose; scutellum brownish pruinose at base only, polished on the outer margin. Halteres yellowish-white. Abdomen polished black; segments 2-5 each with a moderately broad cross-band of white bloom apparently entire on segments 2-4, but interrupted on segment 5; pile of abdomen wholly black except on sides of first segment, where there is often some white pile, longest on sides of segments 1-2, but gradually decreasing in length from thence to tip. Pile of femora is largely, though not altogether, black; some whitish hairs on the under side of the front femora at the base, and short white hairs on the greater part of the hind femora above are especially perceptible; front tibiæ chiefly black pilose, but the hind tibiæ are clothed on the under side only with black hairs, elsewhere with white pile, which on the upper or posterior side is more prominent; the pile of the tarsi and bristles of legs black. Wings grayish hyaline, hardly more grayish at the distal half; venation normal, the central cross-vein with vestiges of darker shades which will probably not be visible in fresher specimens.

♀.—Quite similar to male, but dorsum more densely and more brownish pruinose, the double figure 5 on each side of the brown median stripe grayish pruinose. Abdomen less pilose, the white pruinose cross-bands of segments 2-5 entire, that on segment 5 sometimes interrupted; side of all the segments with short fine white pile except at the base, where the pile is black. Osten Sacken says that this black pile appears as "tufts," but I have not seen indications of such. The trichostical pile is black and white mixed. Tarsi with only traces of reddish color; almost black.

*Type*.—M. C. Z. Loew's single male type is, as he says, in poor condition, somewhat greased. The three male and five female specimens mentioned by Osten Sacken in "Western Diptera," are at the M. C. Z. and in good condition.

*Habitat*.—Sierra Nevada (type), Col.; Beulah, N. M. (H. Skinner); Yosemite, and Webber Lake, Sierra Nevada (July 22, Osten Sacken); Vernon, B. C. (May 14, 22, Miss Ricardo).

***Cyrtopogon leucozonus*.**

*Cyrtopogon leucozonus* Loew, Berl. Ent. Zeit., 1874, 364.

*Cyrtopogon leucozonus* Osten Sacken, West. Dipt., 299, 1877  
(translation).

♀.—*Length* 8–9 mm.—Black; posterior tibiæ and their metatarsi reddish, with black and white pile, abdomen wholly white pilose, segments 2–5 each adorned with a posterior white pruinose fascia; wings grayish hyaline.

Deep black; hind tibiæ, and the middle ones in a much less degree, reddish, their extreme bases brown, their tips hardly darkened; hind metatarsi dark reddish, brownish toward tip. Face, front and occiput grayish-white pruinose. The dense mystax reaching to antennæ, black, white above. Antennæ black. Pile of front long, black; that of the palpi, upper occiput and a narrow fringe along the occipital orbits likewise black; that of the rest of the occiput and basal segments of antennæ, white. Dorsum whitish-gray pruinose near the humeri, elsewhere brownish-gray pruinose, the markings of dorsum very indistinct; pile chiefly white, but from the middle toward the anterior margin, the black hairs become gradually more numerous; usual thoracic bristles black. Pleuræ brownish-gray pruinose, pile wholly white; that on the mesopleura and before the halteres well developed. Scutellum everywhere thinly clothed with long black and white hairs mixed. Halteres whitish-yellow with brown stem. Abdomen polished black; segments 2–5 each with a moderately broad white pruinose cross-band, that on segment 5 interrupted; pile of abdomen wholly white, longer at base, shorter and more scarce toward the end. Pile of coxæ wholly white. Pile of femora prevailingly, but not exclusively, whitish; that of anterior femora toward tip mostly black on the upper and anterior side; on the posterior femora most of the black pile is at the end of their posterior side. Hairs of front and middle tibiæ mostly black, on the upper side of the latter numerous white hairs are mixed with the black; on the posterior tibiæ the under side is beset with long black hairs, while the rest of the pile is white, on the upper side rather dense and moderately long; pile of tarsi and bristles of legs black. Wings grayish hyaline, hardly more grayish on distal half; venation normal, veins blackish, the central cross-veins show in their immediate surroundings distinct traces of a darker shade, which are probably less distinct in very fresh specimens.

*Type*.—There are five females in Osten Sacken's collection at the M. C. Z. Whether one of these is Loew's type is hard to say.

*Habitat*.—Sierra Nevada (type), Webber Lake (July 22), and Yosemite Valley (June 8), Cal.; Beulah, N. M. (H. Skinner).

Loew was right in regarding this species not the female of *montanus*, for I have seen males and females of the latter from British Columbia, Canada. The females described by Osten Sacken as *montanus* agree with the B. C. females. The white pile of the thoracic dorsum is most prominent upon the posterior callosities and immediately before the scutellum, and is best seen from in front and a little to one side.

### **Cyrtopogon dubius.**

*Cyrtopogon dubius* Williston, Trans. Am. Ent. Soc., XI, 13, 1884.

"♀.—Length 11 mm.—Scutellum flattened, gray pruinose above; abdomen polished black, first segment on the sides, and the four following, with interrupted posterior cross-bands of gray bloom; femora black, tibiæ and tarsi dark red; head, except the beard, wholly black pilose, antennæ black; wings with narrow brown clouds on the cross-veins.

"Face thickly whitish pruinose and densely black pilose; beard below white; on the sides and above black. Dorsum of thorax deep blackish brown, with dense gray pruinose markings, as follows: A slender median stripe obsolete behind; a large spot in front of the scutellum, slenderly prolonged on its anterior angles to the middle of the dorsum, the humeri, a spot on their inner sides, another large one behind, concave on its inner border, and a smaller one on the postalar callosities. Pleuræ gray pruinose; the fan-like fringe of hairs in front of the halteres black. Abdomen with white pile on the sides in front; the last two segments wholly polished. Anterior and intermediate coxæ, and all the femora below towards the base with long soft white pile; anterior tibiæ on their inner sides and their metatarsi with golden pubescence; posterior tibiæ at their tip and the tip of their metatarsi with white pubescence; femora black; tibiæ and tarsi red; the latter more brownish-red. Wings hyaline in the basal half, distinctly clouded with brownish on the distal half; the veins from the margin of the second longitudinal to the beginning of the posterior basal transverse narrowly but distinctly clouded with brown; the veins at the base of the second submarginal and the first and second posterior cells less distinctly clouded."

*Type*.—University of Kansas. One female specimen.

*Habitat*.—Mt. Hood, Oregon (type).

### **Cyrtopogon maculosis.**

*Cyrtopogon maculosis* Coquillett, Proc. Ent. Soc., Wash., VI, 184, 1904.

"♀.—Length 10 mm.—Near *rejectus*, but the wings distinctly spotted, thorax with a crest of hairs, etc. Black, including the halteres. Face strongly gibbose; mystax black, rather dense, mounting nearly to the

antennæ; third joint of antennæ one and one-fourth times as long as the first two taken together, gradually tapering to apex, three times as long as the robust style; hairs of front and on upper edge of occiput chiefly black, on remainder of occiput whitish. Thorax with the usual brown markings, a median crest of rather long black hairs, bristles black and rather slender; mesopleura and sternopleura hairy, pteropleura bare, hairs of hypopleura whitish; scutellum strongly convex, yellowish-gray pruinose, rather densely covered with long white hairs and with a row of slender black bristles around the margin. Abdomen polished, the lateral margins narrowly gray pruinose, produced inward a short distance at the hind angles of each segment. Hairs and bristles of legs chiefly whitish; tarsal claws black. Wings hyaline, a distinct brown cloud on veins and cross-veins near middle of discal cell."

*Type*.—U. S. N. M., Cat. No. 7958. A single female specimen.

*Habitat*.—Pullman, Wash. (April 29, 1902, Prof. C. V. Piper).

### ***Cyrtopogon nigricolor*.**

*Cyrtopogon nigricolor* Coquillett, Proc. Ent. Soc. Wash., VI, 183, 1904.

"♀.—*Length* 9 mm.—Near *rattus*, but the bristles of the tibiæ are black, the abdomen is largely polished, etc. Black; the halteres yellowish; the knees narrowly brownish-yellow. Hairs of the front whitish, on the vertex mixed with black; bristles of upper part of occiput black, hairs of the lower part white; mystax mixed white and black, mounting nearly to the antennæ; face strongly convex; first joint of antennæ slightly longer than the second, the latter with a pair of stout black bristles on the under side; third joint one and one-fourth times as long as the first two taken together, strongly constricted a short distance beyond the base and considerably narrowed at the apex, about three times as long as the slender style. Bristles of the body and on the tibiæ and tarsi, black. Brown stripes of mesonotum diffuse, the hairs sparse and rather short; mesopleura, pteropleura and sternopleura bare, hairs of hypopleura chiefly black; scutellum flat, yellowish-gray pruinose, almost bare, with six strong marginal bristles. Abdomen polished, sides of first segment, bases and hind angles of the three following ones gray pruinose (the remaining segments may also have had similar markings, but these do not now appear, possibly owing to the partial greasing of the specimen). Tarsal claws black. Wings hyaline, the apical half faintly tinged with yellowish; small cross-vein slightly beyond middle of discal cell."

*Type*.—U. S. N. M., Cat. No. 7956. A single female specimen.

*Habitat*.—Los Angeles Co., Cal. (June, D. W. Coquillett).

**Cyrtopogon tibialis.**

*Cyrtopogon tibialis* Coq., Proc. Ent. Soc. Wash., VI, 183, 1904.

“♀.—Length 9.5–11 mm.—Near *plausor*, but the mystax is black and rather sparse, not concealing the ground color, scutellum flat, etc. Black; the halteres yellow; the tibiæ, bases of tarsi and extreme apices of femora reddish-yellow. Hairs of front and on upper edge of occiput black, on remainder of occiput white; third joint of antennæ slightly longer than the first two joints taken together, greatly widening medially, two and one-third times as long as the rather slender arista; face strongly gibbous. Mesonotum gray pruinose, marked with a pair of submedian brown stripes not extending on the posterior portion, and on either side with a pair of large brown spots separated by the suture; hairs sparse and rather short; bristles black; mesopleura and sternopleura hairy; pteropleura bare; hairs of hypopleura whitish; scutellum gray pruinose on the upper surface, sparsely covered with long black hairs most abundant around the margin, devoid of stout bristles. Abdomen polished, with a bluish tinge on the first five segments, a gray pruinose fascia on hind part of the first six segments, that on the first and sixth broadly interrupted in the middle. Hairs of coxæ and femora white, bristles of tibiæ and tarsi black, tarsal claws whitish, their apical third black. Wings hyaline, small cross-vein near one-third length of discal cell.”

*Type*.—U. S. N. M., Cat. No. 7957. Three female specimens.

*Habitat*.—Arizona (H. K. Morrison).

**Cyrtopogon rattus.**

*Cyrtopogon rattus* Osten Sacken, West. Dipt., 308, 1877.

♂ ♀.—Length 9–10 mm.—Altogether covered with a yellowish-gray bloom; thorax with a geminate black line in the middle; abdominal segments on each side anteriorly with a polished black spot.

Face and front grayish pruinose, the former with a white mystax; the bristles above the mouth are black; ocellar tubercle and occiput beset with whitish hairs; a small tuft of black hairs on each side of the vertex near the upper corner of the eye. Thorax gray, with a black double line in the middle, abbreviated before reaching the scutellum; the lateral stripes are paler brown, ill defined and crossed transversely by the grayish pruinose thoracic suture. The pile on the thorax is whitish anteriorly, black posteriorly; bristles black. Scutellum gray, clothed with long, soft, whitish pile. The fan-like fringe of hairs in front of the halteres is white. Abdomen gray, clothed with soft, whitish pile; segments 2–6 on each side at the base with a large polished black spot, diminishing in size on each subsequent segment. In the female these spots are much smaller. The

seventh segment, in the female, is black, polished; the hypopygium of the male is also free of bloom, but beset with yellowish-white pile. Tips black, beset with long, white pile; bristles on the tibiæ also white, except the terminal ones and those on the front side of the front pair. Halteres with a lemon-yellow knob. Wings hyaline, veins black, normal.

*Type*.—M. C. Z. Five male and one female specimens in excellent condition.

*Habitat*.—Webber Lake, Sierra Co., Cal. (July 22, Osten Sacken).

The antennal style is comparatively shorter in all the preceding species (*positivus* and *sudator*), somewhat coalescent with the third segment; the bristles at tip are very distinct.

### **Cyrtopogon profusus.**

*Cyrtopogon profusus* Osten Sacken, West. Dipt., 305, 1877.

*Cyrtopogon profusus* Williston, Trans. Amer. Ent. Soc., XI, 13 (locality reference).

“ ♂ ♀.—*Length*, ♂ 11-12 mm.; ♀ 12-13 mm.—Thorax, including its sides and corners and scutellum, densely clothed with gray pollen; three brown stripes on the dorsum; the intermediate one geminate, reaching from the anterior border to the scutellum (where it becomes almost black), longitudinally bisected by a gray line; the lateral stripes broad, abbreviated anteriorly and bisected transversely by a gray line along the thoracic suture; the two halves thus produced are about equal in size, the anterior one being nearly round; both are dark brown on their inner side; the hair on the dorsum is black; a fringe of black hairs along the edge of the scutellum. Abdomen black, polished; posterior margins of segments 1-5 with a moderately broad cross-band of white bloom, in the male the segments preceding the hypopygium are also whitish pruinose; the sides of the abdomen on the basal half have tufts of long, soft, white hair; the fan-like fringe of hairs on the pleuræ in front of the halteres is white. Hypopygium beset with some black pile. Face and front brownish-gray, beset with black pile; in the female I perceive some white hairs mixed with the black ones in the mystax. Antennæ black. Legs brownish-red; femora with black stripes along the upper side; they are beset with long, soft, white hairs; tibiæ with short, white pile and black bristles, a few of the bristles on the middle and hind tibiæ are pale yellow; tarsi reddish-brown, almost black on the upper side; claws whitish, with black tips; pulvilli whitish. Wings grayish hyaline; venation normal.

*Type*.—M. C. Z. One male and three female specimens.

*Habitat*.—Morino Valley, N. M.; Sangre de Cristo Mts., Col.; Kans. (F. H. Snow).

It is seldom that the geminate stripe extends from the anterior margin of the mesonotum to the base of the scutellum or so sharply defined as in this species.

### **Cyrtopogon cretaceus.**

*Cyrtopogon cretaceus* Osten Sacken, West. Dipt., 302, 1877.

“♀.—Length 10.5 mm.—Thoracic dorsum rather evenly clothed with a grayish-white bloom, completely concealing the ground color; the coloring of this bloom is rather uniform, a geminate median stripe is hardly perceptible; posterior callosities black, polished; scutellum black, brownish pruinose at the base; pleuræ with dense yellowish-gray bloom. Abdomen polished, black; segments 2–5 each with a moderately broad cross-band of yellowish-white bloom on the hind margins. Face and front densely covered with yellowish-gray pollen; mystax white above, black below above the mouth; vertex and upper part of the occiput with black pile; lower part with long white hair. Third antennal segment red or reddish, the style black. Thorax with fine black erect pile on the front part, and with whitish pile on the back part of the dorsum; the base of the scutellum with whitish pile, the remainder with long black pile. On the pleuræ the fan-like fringe of pile in front of the halteres is mixed of white and black hairs; the sub-humeral callosities and the lower part of the pleuræ are beset with white hairs; but, in front of the root of the wings there is some black pile. The abdomen on the sides is beset with white pile; it is long and tuft-like at the base, but becomes rather rare beyond the third segment. Legs uniformly deep black, polished; they are much less stout than in *C. callipedillus* ♀; the tibiæ, especially the front pair, are more straight; front tarsi rather long, the pile and bristles on the four anterior legs are black, except some white pile on the under and hind side of the femora; the hind femora and tibiæ are beset with white pile, which is particularly dense on the upper side of the hind tibiæ; the bristles, as usual, are black; the first segment of the hind tarsi shows, in a reflected light, some short, white pile; otherwise the tarsi are uniformly black. Claws whitish, with black tips. Wings grayish hyaline; venation normal.

*Type*.—M. C. Z. Two female co-types.

*Habitat*.—Webber Lake, Sierra Nevada, Cal. (Osten Sacken, July 22, 1876).

This species cannot be taken for any other *Cyrtopogon* now known to me because of the uniformly grayish-white and dense bloom on the face, front and dorsum, where it is very conspicuous. The geminate stripe and other markings are so nearly obsolete that they do not spoil to any degree the wholly grayish-white effect. “This species,” says Osten Sacken, “like

*C. princeps*, has the claws whitish, with black tips; both species were found in the same locality; they are too different, however, to be taken, without further evidence, for the sexes of the same species. The other species of *Cyrtopogon*, described in this paper (Western Diptera), have the claws black and more or less brownish or reddish at the base only. *C. profusus* and *nugator* are the only species which, in this respect, resemble the two above-mentioned ones."

### **Cyrtopogon evidens.**

*Cyrtopogon evidens* Osten Sacken, West. Dipt., 306, 1876.

♂ ♀.—Length ♂ 7–8 mm.; ♀ 10–11 mm.—First abdominal segment with an uninterrupted white cross-band on the posterior margin; stripes on the thorax very distinctly marked, brown; the longitudinal dividing line of the geminate stripe is very distinct; the portion of the lateral stripe anterior to the thoracic suture is large, conspicuous, of a rich dark brown; white cross-bands on abdominal segments entire, somewhat interrupted on the fifth segment only, rarely (in the male) on the fourth segment. In the male the brownish tinge of the distal half of the wing is more marked than in *C. rejectus*, *nugator*, *positivus*, or *sudator*.

*Type*.—M. C. Z. Three male and four female specimens.

*Habitat*.—Webber Lake, Sierra Nevada, Cal. (July 22–24, Osten Sacken).

The original description is short, but to the point. I will add the following. Face and front broad, wholly and densely grayish-white pruinose, as is also the occiput. Pile of face and front wholly black, and nowhere so dense as to obscure the dense bloom. Antennæ wholly black. Pleuræ and scutellum grayish pruinose. The two brownish stripes on dorsum and the whitish pruinose stripe separating them are *very distinct*, and together with the large spots anterior to the transverse suture, which are most prominent when viewed from above, and the markings of the abdomen make this an easily recognized species. Pile of thoracic dorsum short, erect, bristles black, as are those on scutellum. Legs wholly black; coxæ and under side of all the femora with silky white pile; tibiæ with long black bristles. Trichostical pile and that on side of segments 1 and 2 of abdomen fine and white.



**Cyrtopogon rejectus.**

*Cyrtopogon rejectus* Osten Sacken, West. Dipt., 307, 1877.

“♀.—Length 9-10 mm.—First abdominal segment white pruinose on the sides only; the white cross-bands on segments 2-4 interrupted; on segment 5 the extreme sides only of the hind margin are white. Median geminate thoracic stripe less well marked and abbreviated earlier posteriorly; the portion of the lateral stripe anterior to the transverse suture is well marked, brown.”

*Type*.—M. C. Z. Four female specimens.

*Habitat*.—Webber Lake, Sierra Co. (July 22-24), and Summit Station, Central Pacific Railroad (July 17), Cal., Osten Sacken.

Head wholly grayish pruinose, occiput and thorax wholly brownish-yellow pruinose; viewed from above, the scutellum, posterior callosities and the dorsum behind the abbreviated geminate stripe lighter pruinose. Abdomen as above described, almost bare; the white pile on the side of the segments not prominent, longest on segments 1 and 2. Trichostical pile white. Legs wholly black, clothed with black bristles and pile with the exception of some white pile on the femora below. Pile of dorsum and scutellum black. Wings hyaline on the proximal half, slightly tinged with grayish on the distal half.

Osten Sacken says that “*rejectus* alone is doubtful to me, and may possibly be only a variety of *evidens*.”

**Cyrtopogon nugator** (Pl. X, fig. 6).

*Cyrtopogon nugator* Osten Sacken, West. Dipt., 307, 1877.

*Cyrtopogon nugator* Williston Tr. Am. Ent. Soc., XI, 13, 1884.

♂ ♀.—Length 7-8 mm.—“First abdominal segment white pruinose on the sides only; the white cross-bands on segments 2-5 very markedly interrupted; length of the interruption nearly equal on segments 2-4. The abdomen (♀) is narrower, more cylindrical and convex, of more equal breadth from the base than in the female of *evidens* and *rejectus*. Wings almost uniformly hyaline. Thoracic stripes very distinct, more blackish; the portion of the lateral ones preceding the suture is not conspicuously darker, and has not the rich dark brown color which distinguishes it from *evidens* and *rejectus*. Claws whitish-yellow, the tips black. In size, this species is smaller, the female being only 7-8 mm. long. I have a male specimen which seems to belong here on account of its size and hyaline wings; but the stripe on the second

abdominal segment is *not* interrupted (the thorax of the specimen is greasy); the claws are whitish-yellow, with black tips, a very characteristic mark of the species."

*Type*.—M. C. Z. Four female, and one male specimens.

*Habitat*.—Webber Lake, Sierra Co., Cal. (Osten Sacken); Mt. Hood, Oregon (Williston).

I have the following notes upon the type material. Face, front, occiput, pleuræ, scutellum, grayish-white pruinose; pile of face, front and upper occiput fine, black, not dense, nor obscuring the bloom. Beard, pile of pleuræ, trichostical pile, and that of the sides of the segments 1 and 2 of abdomen white. Pile of thoracic dorsum short, erect; bristles black; scutellum with long weak bristles only on the posterior margin. Legs black; often tinged with chestnut; coxæ white pruinose; femora below with white pile; rest of the pile and bristles black.

Williston states that a male from Mt. Hood has the second and third abdominal pruinose cross-bands narrowed in the middle, but entire (thus removing the doubt from Osten Sacken's male). I have two females and two males from Cloudcroft, N. M., belonging to the Am. Ent. Soc. which I refer to this species.

### **Cyrtopogon positivus.**

*Cyrtopogon positivus* Osten Sacken, West. Dipt., 307, 1877.

"♂.—*Length* 7-8 mm.—Peculiar coloring of the thoracic dorsum: the extreme anterior margin and the posterior beyond the thoracic suture are grayish; the intervening space is of a rich dark brown, the usual stripes coalescing completely; they reach for a very short distance beyond the thoracic suture; the longitudinal dividing line of the median stripe is very feebly marked with a paler bloom (sometimes indistinct); front and face rather narrow, clothed with a brownish bloom and dense deep black pile; first segment of abdomen black, with very little white on the sides; posterior margin segments 2-5 marked with white on the sides only, the interruption growing wider on each subsequent segment."

*Type*.—M. C. Z. Three male specimens.

*Habitat*.—Webber Lake, Sierra Co., Cal. (July 22-24, Osten Sacken); Moscow, Idaho (F. H. Snow); Cloudcroft, N. M. (May 17, 23, 27).

Beard white. White pile on the first three abdominal seg-

ments tufted and quite long in proportion; it, together with the grayish bloom of the posterior portion of the thorax and scutellum, is one of the principal distinguishing features. Trichostical pile black. Legs wholly black, not abundantly clothed with black and white pile; bristles black.

I have a male from Moscow, Idaho, which I refer to this species. It is a trifle larger than the type material and is greased, but has the same characteristic white pile of the abdomen. There appears to be a white pruinose spot on the sixth segment; there is a similar spot on a corresponding segment of one of Osten Sacken's co-types which he failed to mention.

### **Cyrtopogon sudator.**

*Cyrtopogon sudator* Osten Sacken, West. Dipt., 307, 1877.

“♂ ♀.—Length, ♂ 8.5–9 mm.; ♀ 8.5–10 mm.—Front and face distinctly broader than in either *evidens*, *rejectus*, *nugator* or *positivus*, clothed with a whitish hoary bloom; bloom on the thorax also whitish-gray in most specimens; the brownish stripes are variable, but often feebly marked, although distinct. Often abdominal segments are marked with white on the sides only; in the female, the usual white cross-bands on segments 2–4 are entire, on the fourth interrupted, occasionally subinterrupted on the fourth; in the male, interrupted on all segments.”

*Type*.—M. C. Z. Two male and eight female specimens.

*Habitat*.—Webber Lake, Sierra Co. (July 22–24), and Summit Station, Central Pacific Railroad (July 17), Cal. (Osten Sacken).

Pile of face, front, thoracic dorsum, scutellum and before the halteres black; on the occiput, sides of abdominal segments white. Wings hyaline slightly tinged with grayish on the distal half.

#### ABERRANT SPECIES.

### **Cyrtopogon cerussatus.**

*Cyrtopogon cerussatus* Osten Sacken, West. Dipt., 308, 1877.

“♂ ♀.—Length 6.5–8 mm.—Black; thorax whitish pruinose; abdomen with whitish cross-bands on the *anterior* margin of segments 2–6; the sides of the same segments posteriorly each with a large white spot; wings hyaline; legs black, with white hairs.

“Face covered with a white hoary bloom; mystax black, more dense immediately above the mouth than higher up; facial gibbosity rather flat, little prominent; antennæ black; third segment three times the

length of the first two taken together, narrow, almost linear; the style is very short, perhaps one-tenth of the length of the segment, cylindrical, with a minute bristle; ocellar tubercle rather large and broad, with deep grooves on each side between it and the orbit of the eye; both the tubercle and the opposite side of the groove are beset with black pile, which commonly form a distinct tuft on the top of the head; on each side of this tuft, along the orbits of the eye, there is a narrow margin of minute microscopic yellowish-white hairs; lower down, on the orbit, on a level with the antennæ, there is, on each side, a small tubercle, the upper and outer side of which is clothed with the same microscopic yellowish-white pile; the occiput is beset with white hairs, except in its upper part, where there are some black hairs. Thorax black, clothed with a thin gray bloom; three indistinct stripes are somewhat brownish; the lateral ones are incurved and somewhat expanded anteriorly, where they end in a brown spot above the humerus; the median line is simple and rather indistinct; the dorsum is clothed with short, sparse, white pile and longer black bristles; some of the latter form two rows on the lateral thoracic stripes. Scutellum flat, with six black conspicuous erect bristles on its hind edge. The fan-like fringe of hairs in front of the halteres is usually mixed of black and white hairs, its upper part being black, the lower one showing some white hairs; in some specimens, principally males, it is altogether white. Abdomen black, polished, moderately convex, of nearly equal breadth; segments 2-6 anteriorly have a narrow cross-band of white bloom, not reaching the lateral margins; on that margin, in the posterior angles of each of the same segments, there is a large white spot. The two basal segments have some long white hairs on the sides. Legs black, densely clothed with short appressed white pile, beset with longer white hairs and black bristles; hind tibiæ gradually incrassated from the base to the tip; the first segment of hind tarsi also somewhat stout. Halteres pale brownish. Wings hyaline; venation normal."

*Type*.—M. C. Z. Six male and six female specimens.

*Habitat*.—Los Guilucos, Sonoma Co., Cal. (Osten Sacken, July 5, 1877).

"This species differs in many respects from the typical one of the genus. The broad ocellar tubercle with the deep grooves on each side of the antennæ, the row of erect bristles on the lateral stripes of the thoracic dorsum, the subclavate hind tibiæ, the shortness of the antennal style in proportion to the length of the third segment, the gently convex but hardly gibbose face, the conspicuous six bristles on the otherwise bare scutellum, are so many characters which are not found in other species."

**Cyrtopogon gibber.**

? *Cyrtopogon gibber* Williston, Trans. Am. Ent. Soc., XI, 14, Pl. I, fig. 9, 1884.

? ? *Holopogon? appendiculatum* Bigot, Annales, 1878, 438.

"♀.—Length 7 mm.—Dorsum of thorax strongly convex; front much excavated, facial gibbosity slight, posterior tibiæ and tarsi thickened. Black; abdomen with narrow interrupted anterior cross-bands and small lateral spots, wings hyaline, cross-vein and costal cell at tip narrowly clouded with dark brown; anterior branch of the third vein angulated.

"Face in profile only a little convex below, gray pruinose and with whitish bristles on the oral margin of the same color, but more pile-like above. Antennæ black; the first two segments of nearly equal length, the third segment not twice as long as the first two together, not very slender, style acute, about half as long as the third segment, the tip with a bristle. Front much excavated on the sides of the ocellar tubercle, which has a few black bristles; pile of the occiput below white; above black. Thorax in profile remarkably convex and high, the convexity being greater on the front part, bare except with four rows of moderately strong bristles; of a rich brown color, with an irregular white stripe on the side in front. Pleuræ dark brown lightly pruinose. Scutellum small, bare except two erect black bristles at the tip; metanotum thickly white pruinose. Abdomen gently convex, and gently and evenly tapering from the base to the tip, brownish-black, polished, with distinct gray pruinose markings, as follows: On the anterior margin of the second segment with an interrupted narrow cross-band, and a little beyond it two narrow transverse spots forming an abbreviated interrupted cross-band, near the middle and touching the lateral margin another smaller spot; third, fourth, fifth and sixth segments with an interrupted abbreviated cross-band, and a smaller lateral spot near the middle. Legs black; femora with sparse white pile, tibiæ with white bristles; the posterior tibiæ considerably thickened gradually from the base, the metatarsi also somewhat thickened. Wings hyaline, all the cross-veins and base of first submarginal cell, and the costa from the tip of second to the tip of fourth vein narrowly clouded with dark brown, a similar cloud at the furcation of the third vein, the anterior branch of which is angulated, and with a minute stump of a vein."

*Type*.—University of Kansas. A single female specimen.

*Habitat*.—California (type).

Dr. Williston appends the following notes: "This species does not belong in *Cyrtopogon*, but it may be provisionally placed here until a better place is found for it. It shows some relationship to *Holopogon*, but not as much as to several of

the species from the West now placed under *Cyrtopogon*. The structure appears to be the same as the species described by Bigot as *Holopogon? appendiculatum*, but it cannot be the same species, as will be seen by comparison of the description of the thorax, abdomen, legs and wings. *Cyrtopogon cerusatus* Osten Sacken must also somewhat resemble this. The convexity of the thorax, which is "Kaputzenartig" resembles very much that of *Pseudorus bicolor* Bellardi as figured by Bellardi, and is seen in less degree in our species of *Holocephala*. The face in profile is gently convex from the antennæ to the oral margin, but is most projecting below. The species is very thinly pilose."

? ***Cyrtopogon nebulo*** (Pl. IX, fig. 1.)

*Cyrtopogon nebulo* Osten Sacken, West. Dipt., 309, 1877.

*Cyrtopogon nebulo* Williston, Tr. Am. Ent. Soc., XI, 14, 1884.

"♀ —Length 8–9 mm.—Gray; thorax with a geminate brown stripe; abdomen polished, black, with white spots in the hind corners of segments 1–5; wings with brown clouds on the cross-veins and on the furcation of the third vein.

"Face and front grayish pruinose, with black hairs; the hairs on the face, in a certain light, look whitish at the tip; occiput with white hairs. Antennæ black. Thorax grayish pruinose, with brown stripes; the intermediate one dark brown, geminate, abbreviated before reaching the scutellum, but coming in contact with a pair of elongated brown spots in front of the scutellum; scutellum convex, with rather dense, long and soft white hair, and some blackish bristles along the hind edge; pleuræ with whitish pile. Halteres with a dark brown knob. Abdomen black, polished, with white hair on the sides; segments 1–5 in the hind corners with a spot of white bloom of moderate size. Legs black, beset with long white hairs; most of the spines are also whitish, especially toward the tip, the roots being often brownish. Wings hyaline, with black veins; central cross-veins, those at the distal end of the discal cell, the small cross-vein and the bifurcation of the third vein are very distinctly clouded with brown."

*Type*.—M. C. Z. A single female.

*Habitat*.—Webber Lake, Sierra Co., Cal. (O. S., July 22, 1876); Wash. (Wilst); Coldstream Ranch, Vernon, B. C. (Miss Ricardo, May 22, 1902).

The specimen from British Columbia is a female in the collection of the Massachusetts Agricultural College. As it agrees perfectly with the type specimen, I have made it a homotype. Dr. Williston states that two specimens from Washington have the antennal style a trifle shorter than the third segment.

**Cyrtopogon varipennis.**

*Cyrtopogon varipennis* Coquillett, Proc. Ent. Soc. Wash., VI, 184, 1904.

♂ ♀.—“Length 7–10 mm.—Near *nebulosus*, but the first basal cell marked with two black spots near the middle, etc. Black; the halteres dull yellow. Face rather strongly convex, mystax black, somewhat sparse; hairs of front and on upper part of occiput chiefly black, those on remainder of occiput whitish; third joint of antennæ slightly longer than the rather slender style. Mesonotum quite densely covered with rather long erect black hairs, the bristles scarcely longer or stouter than the hairs; mesopleura and sternopleura hairy, pteropleura bare, hairs of hypopleura mixed black and white; scutellum convex, not pruinose, the upper surface rather densely covered with long whitish hairs, the many marginal bristles very slender, chiefly white, but several are brown on the basal portions. Abdomen polished; the hind angles of the first six segments marked with a gray pruinose spot. Hairs and bristles of legs whitish, many of the bristles with brown bases; tarsal claws black. Wings gray, with a few hyaline spots and streaks; the costa from apex of axillary vein to apex of upper branch of the third broadly bordered with brown, a dark brown spot in base of first submarginal cell extending across the marginal, one in base of second submarginal, first and second posterior and two near middle of first basal cell; of the last two spots, one is along the basal part, the other along the apical portion of the prefurca of the third vein; the brown spot on the small cross-vein extends to apex of discal cell; small cross-veins slightly beyond of discal cell.”

*Type*.—U. S. N. M., Cat. No. 7959. One male and two female specimens.

*Habitat*.—Washington State (Prof. O. B. Johnson).

---

The following references should be examined before new species are created.

*Cyrtopogon*, n. sp., Williston, Trans. Am. Ent. Soc. Phila., XI, page 12.

*Cyrtopogon*, n. sp., Williston, Trans. Am. Ent. Soc. Phila., XI, page 13.

? *Cyrtopogon*, n. sp., Williston, Trans. Am. Ent. Soc. Phila., XI, page 14 (Pl. I, fig. 11).

? *Cyrtopogon* (?*Lasiopogon*), n. sp., Williston, Trans. Am. Ent. Soc. Phila., XI, page 14.

*Cyrtopogon*, n. sp., Jones, Trans. Am. Ent. Soc. Phila., XXXIII, page 277.

**LASIOPOGON.**

*Lasiopogon* Loew, *Linnae Ent.*, II, 508, 1847.

*Daulopogon* Loew, *Berl. Ent. Zeitsch.*, XVIII, 377, 1874.

Black species of small to medium size, of comparatively long body structure, and only moderately haired; with the ground color more or less obscured by a grayish or brownish bloom, which on the posterior portions of the abdominal segments is often grayish-white. Head of moderate breadth, obviously broader than high; face broad, but clearly narrowed above, on the lower half with a large protuberance which is wholly covered with a long and moderately thick haired mystax. Antennæ (Pl. IV, fig. 8) approximate, the first two segments short, the second shorter than the first, both with stout hair; the third segment elongate oval, of medium length, a trifle longer than the first two segments taken together; style distinct, bristle-like, a trifle less in length than one-half the third segment, and terminated by a fine bristle. Vertex broad, above much widened, saddle-shaped, hollowed out, with three parallel deep longitudinal furrows, the middle one of which begins at the anterior ocellus. The frontal orbits, ocellar tubercle, and upper occiput along the orbits with hair and bristles varying in number and stoutness. Ocellar tubercle fairly prominent, palpi very bare. Thorax but little arched, moderately hairy and with a varying number of well-developed bristles; scutellum with bristles; the pleuræ usually without pile, but with well-developed trichostical hair. Abdomen cylindrical, flattened, moderately bare, the last segment of the male short; the male genitalia large, with large forceps much as in *Asilus*; the last segment of the female proportionately short, the under lamellæ prominent, overlapping each other, with rounded ends. Legs rather slender, the hind femora not much more slender than the front ones. The first tarsal segment longer than the following ones but still, properly speaking, not long; the stout bristles of the tibiæ and tarsi only of medium length, those on the femora are very short and situated chiefly on the upper side toward the tip. The front tibia without a terminal claw-like spur; pulvilli normal. Wings usually grayish hyaline with all the



submarginal and posterior cells wide open; the anal cell closed at the margin or slightly petiolate.

After establishing the generic name *Lasiopogon*, Loew discovered that it was already used as such in botany, and so changed his name to *Daulopogon*, which was adopted by Osten Sacken in his Catalogue (1878). As there is no rule demanding such a change, Dr. Williston was justified in restoring the older name in his Manual of N. Am. Diptera (1896). Osten Sacken states that this genus is quite abundantly represented in California, but the difficulty in recognizing the species from descriptions led him to describe but one species in his Western Diptera.

SYNOPSIS OF SPECIES.\*

1. Legs reddish-brown, abdomen polished black; the posterior margins and hind corners of the segments brownish, the latter grayish pruinose.....**terricola.**  
 Legs black, in *arenicola* yellowish-gray .....2.
2. Abdomen grayish pruinose, with a dark spot on the anterior lateral margins of segments 2-6.....3.  
 Abdomen with the grayish bloom confined chiefly to the posterior margins of segments 2-6.....4.
3. Bristles of body pale.....**arenicola.**  
 Bristles of body black.....**opaculus.**
4. Dorsum of thorax with two narrow widely separated, distinct black stripes .....**bivittatus.**  
 Dorsum of thorax with stripes, but not as above.  
**tetragrammus.**

This key has been made with the type material before me.

**Lasiopogon arenicola.**

*Daulopogon arenicola* Osten Sacken, West. Dipt., 310, 1877.

“♂ ♀.—Length 7-8 mm.—Brownish-gray; abdominal segments 2-6 each with a pair of semi-circular brown spots at the base.

“Brownish-gray, sometimes with a tinge of yellowish; the mystax and the few hairs on the vertex and on the upper part of the occiput yellowish-white; those on the lower part of the occiput pure white; antennæ black. Thorax with two, rather distant, brown stripes, expanded and somewhat diverging anteriorly; the hairs and bristles on the dorsum whitish; scutellum with a quantity of long, erect, whitish

\* This key does not include the recently published species *quadrivittatus*, which Mr. Jones says is quite closely related to *arenicolor*.

hairs on its edge; a semi-circular impressed line parallel to this edge is very distinct. Abdominal segments 2-6 at the base each with a pair of semi-circular brown spots, gradually diminishing in size on each subsequent segment; a vestige of such spots is also visible on the seventh segment. Hypopygium of the male black, beset with whitish pile and with an appressed tuft of yellow hairs above the forceps. In the female, the eighth segment is black, polished. Legs yellowish-gray, with short appressed whitish pile and yellowish-white bristles. Wings with a slight brownish tinge; the small cross-vein before the middle of the discal cell; second posterior cell sometimes very narrow, in some specimens even petiolate; the fourth posterior in some specimens, coarctate toward the end, even closed; these characters are very inconsistent."

*Type*.—M. C. Z. Four males and four females; two pairs of which are in coitu.

*Habitat*.—San Francisco, Cal., on the sands about Lone Mountain, April 6, and again June 29. (Osten Sacken).

This species and *opaculus* are similar in size and in spots of the abdomen, but *arenicola* possesses more pile and bristles than *opaculus*, and they are wholly pale, while the bristles of *opaculus* are chiefly black.

### **Lasiopogon bivittatus.**

*Lasiopogon bivittatus* Loew, Cent., VII, 57, 1866.

*Lasiopogon bivittatus* Loew, Berl. Ent. Zeitsch., XVIII, 370, 1874 (note).

*Daulopogon bivittatus* Osten Sacken, West. Dipt., 310, 1877.

♂ ♀.—*Length* 8 mm.—*Translation*. Black; brownish-gray pruinose, the two narrow thoracic stripes black, separated by a broad interval, the median transverse vein of the vein projecting beyond the middle of the discal cell. *Length* of body 4 lin; of wing 3-7-12 lin.

Wholly black; mystax, pile of palpi, antennæ, front and vertex, black; beard whitish. Thoracic dorsum covered with brownish bloom, black pilose, and marked with two narrow black stripes, separated by a broad interval, diverging anteriorly and subabbreviated; scutellum of the same color, black pilose, with the same depressed line as Osten Sacken mentions in his description of *arenicola*; pleuræ more grayish pruinose, with a little white pile; pile in front of the wings and the trichostical bristles black. Abdomen black, polished; the first segment almost wholly, the posterior margin and sides of the remaining segments, broadly grayish-white pruinose. Pile of the abdomen rather longer, sordid whitish; the posterior margin of the first segment toward the sides with a few black bristles. Venter grayish pruinose with whitish pile. Hypopygium large, black, polished, with black

pile. Legs wholly black, all the bristles and pile of the tibiæ and tarsi and of the apical third of the femora black; the pile of the rest of the femora sordid white; femora slightly grayish pruinose. Wings grayish hyaline, veins blackish, the transverse median vein a little further removed from the base of the discal cell than from the apex.

*Type*.—M. C. Z. A single female in the Loew collection is probably the type. There are, in addition, four male and three female specimens in Osten Sacken's collection, which are probably those which he mentions in *Western Diptera*.

*Habitat*.—California (type); near San Francisco, March 28, (Osten Sacken); Los Angeles County, Cal. (Coquillett); Mount Hood, Oregon (June 9).

This species and *tetragrammus* are similar in the coloration of the abdomen but markedly different in the stripes of the dorsum of the thorax.

***Lasiopogon opaculus*** (Pl. IX, fig. 6; Pl. IV, fig. 8).

*Lasiopogon opaculus* Loew, Berl. Ent. Zeitsch., XVIII, 367, 1874.

♀.—*Length* 8-9 mm.—Black; thoracic stripes obsolete; terminal segment of abdomen polished black and black pilose; rest of the body wholly obscured by a grayish-brown bloom, but the anterior angles of the several abdominal segments broadly brownish.

*Translation*. Ground color of body is, without exception, black; head, thorax and abdomen with a denser dull bloom, but the last abdominal segment wholly without bloom and polished black. The bloom of the head and thorax yellowish-gray, almost brownish-gray; distinct thoracic stripes are not perceptible on the specimen described, yet the space between the middle and the lateral stripes appears darker than the surrounding color usually is. The abdomen, excepting the last segment, is covered with a grayer bloom and entirely dull; from the second segment on, the anterior angles of the several segments are broadly brownish, which color is first on the fifth segment less in degree, on the sixth segment somewhat broadened on the fore part, likewise not very dense and gradually shades off into the gray, so that it is indistinctly defined, whereas it has a sharp distinctive limit on the preceding segments, which one distinctly notices when one looks at the abdomen from behind. Halteres yellowish. Wings grayish, venation normal; veins brownish-black; the anterior cross-vein is considerably before the middle of the discal cell. The hair and bristles are as usual in this genus; mystax, hair of the first two antennæ segments, of the front and of the upper part of the occiput black; the hair on the larger lower half of the occiput, on the mentum and on the under side of the proboscis white; that on the lateral borders of the mouth opening pale yellowish. Prothorax with more

whitish hair, thoracic dorsum and scutellum with more blackish hair. Hair on the pleuræ whitish only in front of the mesopleural suture; beneath the base of the wing there is some stouter black hair. The hair on the first three abdominal segments is whitish, almost yellowish-white; on the gray pruinose area of the second segment there are numerous black hairs which also extend over onto the third segment; the short hair on the following segments, not excepting the last, is exclusively black. The prevailing black hair and the small amount of white hair of legs is arranged as usual; all the bristles of the legs black, as in the other species.

*Type*.—M. C. Z. Single female type.

*Habitat*.—Illinois (type); N. J. (Am. Ent. Soc.); Veta Pass, Col. (June 21).

### **Lasiopogon terricola.**

*Daulopogon terricola* Johnson, Ent. News, XI, 326, 1900.

♂ ♀.—*Length* 5-7 mm.—Black, head and thorax grayish-brown pruinose; the abdomen polished black, the posterior margins and corners of all the segments, except the first, and the legs more or less reddish-brown; the posterior lateral margins of the abdominal segments grayish pruinose.

Head grayish pruinose; the front, except narrowly along the orbits, and the upper portion of the occiput brownish; the antennæ and proboscis black; the mystax, fine pile on lower half of occiput and the proboscis beneath white; the bristly hair of the basal segments of the antennæ, frontal orbits, ocellar tubercle and upper occiput black. Thoracic dorsum yellowish-brown pruinose, the humeri and scutellum more grayish; pleuræ grayish pruinose, more brownish on the mesopleuræ. On either side of the middle of the dorsum is a rather indistinct line of a much browner bloom. The short hair and bristles of the dorsum and the trichostical bristles blackish; a patch of pile on the lower part of the prothorax and on the coxæ white. Abdomen polished black, thinly white pilose and finely punctate; segments from the second on, with their posterior borders and posterior angles, brownish, but this color on the latter is more or less obscured by a grayish bloom; sides of the first segment and the venter grayish pruinose. Genitalia of male brownish, with whitish pile; spines of the female ovipositor black. Legs brownish; the coxæ, front, and usually the middle femora, except at tip and base, and the terminal segments of the tarsi blackish; the coxæ and femora more or less obscured by a whitish bloom; pile of coxæ and legs short, fine, white, the under side of all the femora with longer pile; all the bristles of the legs black. Wings grayish hyaline; the veins dark brown, sometimes slightly bordered with fuscous; the anal cell closed on the margin, all the posterior and submarginal cells open. Halteres whitish-yellow.

*Type*.—Collection of Prof. C. W. Johnson, Curator of the Boston Society of Natural History. There are two metatypes in the collection of the Massachusetts Agricultural College.

*Habitat*.—Chicopee, Mass. (May 18-24, F. Knab); Ocean County (J. B. Smith), Clementon (May 9, 30), Wenonah (May 14) and Riverton (May 29), N. J.

Prof. C. W. Johnson, who is responsible for the last three references, states that this is quite a common species during the spring on the low damp ground of southern New Jersey, where he has taken it in good numbers.

### ***Lasiopogon tetragrammus*.**

*Lasiopogon tetragrammus* Loew, Berl. Ent. Zeitsch., XVIII, 368, 370, 1874.

♀.—*Length about 9 mm.*—Translation. Black; the usual thoracic stripes fuscous, the intermediate one narrowly bisected, the lateral ones much abbreviated anteriorly, and the lateral ones of the same color; the space between the lateral and intermediate stripes and the last segment of the abdomen polished black, the latter white pilose the rest of the body black pilose; the several segments of the abdomen grayish pruinose on the posterior margin. Length of body 4-7-12 lin., of wing 4 lin.

Not greatly unlike *L. bellardi* Jaen., but the bloom of the head and thorax, with the exception of the more yellow of the face, yellowish-brown or almost deep brownish. The bisected middle thoracic stripe blackish-brown, sharply defined, the lateral stripes greatly abbreviated anteriorly, of the same color, but less sharply defined; between the middle and lateral stripes on each side is inserted a blackish-brown stripe, the fore part of which is bent outward and extends as far as the grayish pruinose humeri. Abdomen black, only moderately polished; the first segment everywhere, and the six following ones only on the sides and hind border, grayish pruinose; the last segment wholly without bloom and highly polished. Halteres yellowish. Wings grayish, the venation normal, veins brownish-black; the small cross-vein lies considerably before the middle of the discal cell. The arrangement of the hair and bristles is as usual in this genus. Mystax, hair on the first two antennal segments, the front and upper part of the occiput black; the hair on the larger lower part of the occiput and on the under side of the proboscis white; that on the lateral oral margins yellowish-white. The prothorax only on the sides with more whitish, above with more black hair; dorsum of mesothorax and scutellum with black pile and bristles; the scant pile on the pleuræ whitish in front of the mesopleural suture, the fine hairs and the trichostical hair black. The first abdominal segment whitish pilose, on the pos-

terior lateral margins with black bristles; the pile on the whole lateral margin of the second segment and on the outermost lateral edge of the third segment is white; the pile of the rest of the second and third and of the following four segments is wholly black; that of the last segment whitish; on each segment, beginning with the second, there is a transverse row of perhaps four conspicuous black bristles. The prevailing black and sharply-defined white hair of the legs is arranged as usual; all the bristles are black.

*Type*.—M. C. Z. A single female type specimen from Canada (Provencher).

*Habitat*.—Canada; White Mts., N. H.

Osten Sacken has named a male and a female *Lasiopogon* from the White Mountains *opaculus* with a question mark. They are not *opaculus*. I believe they are *tetragrammus*. They agree with the type of the latter in size, general coloration of abdomen, but the genitalia are rather larger, grayish-brown pruinose, with black pile.

#### ***Lasiopogon quadrivittatus*.**

*Lasiopogon quadrivittatus* Jones, Trans, Am. Ent. Soc., XXXIII, 278, 1907.

“ ♀.—*Length* 9–11 mm.—Near *L. arenicola* O. S. Black; covered everywhere with a dense grayish bloom. Front broad, densely gray pruinose; hair everywhere whitish; that of the occiput with a more decided yellowish tinge, beard and hair on occipital margin fine, silky and purer white. Face in profile with a strong gibbosity reaching more than half the distance from the oral margin to the base of the antennæ. Antennæ black; first two segments nearly equal; second a trifle longer than the first; the third longer than the first two taken together; style about one-half as long as the third segment; first two segments of the antennæ with whitish hair. Thorax black, covered with dense grayish bloom and very fine white pile; a few light colored bristles on the lateral margins and posterior part of the dorsum; four brownish, nearly median stripes on the dorsum, diverging anteriorly, the bloom on the lateral margins brownish, forming an obscure stripe. The interval between the inner stripes is wider than that between the others, so that there appears to be two geminate stripes. Scutellum flat, covered with a bloom similar to that of the thorax, and with a row of light colored bristles on the posterior margin. Bloom of the pleuræ gray, with a brownish tinge. Halteres yellowish, the trichostical hairs white. Abdomen black, covered with dense grayish bloom and very fine, short, decumbent whitish pile; anterior margins of the second, third and fourth segments reddish-brown; last segment polished black. Bristles on the posterior margins of the first segment

whitish. Legs black, covered with dense, fine, whitish pile, longer on the under side of the femora and interspersed with a few light colored bristles. Coxæ and legs with brownish-gray bloom, thicker on the coxæ; coxæ with long white pile. Wings hyaline; anal cell closed and petiolate; fourth posterior cell slightly narrowed at the margin of the wing; anterior cross-vein at the middle of the discal cell."

*Type*.—One female type and two female paratypes, in the collection of the University of Nebraska.

*Habitat*.—Halsey (type, June 1, 1906, H. S. Smith), and War Bonnet Cañon (May 27) and Bad Lands, Mouth of Monroe Cañon (May 28), Sioux Co., Nebr.

"This species can be readily distinguished from *L. arenicola* Osten Sacken, in being more densely pruinose and not so densely pilose as that species. The thoracic stripes will also serve to separate them, and my specimens of *L. arenicola* from Southern California have a few black bristles in the lateral margins of the thorax which *quadrivittatus* does not have."

I do not know this species.

#### METAPOGON.

*Metapogon* Coquillett, Proc. Ent. Soc. Wash., VI, 181, 1904.

"Near *Cyrtopogon*, but the face is nearly flat, only slightly swollen on the lower part; the mystax very sparse except along the oral margin and composed chiefly of bristles, etc. head unusually broad, over twice as broad as high, deeply excavated on the vertex, ocelli tubercle very prominent, front only slightly widening upwardly, at its lower end about three-fifths as wide as either eye, face slightly widening below, subequal in width to the front, eyes unusually prominent (nearly as in *Holcocphala abdominalis*); antennæ less than twice as long as length of head, the first segment subequal in length to the second, the latter as wide as long, each bearing a stout bristle on the under side, third segment nearly twice as long as first two together, slightly widening outwardly, about five times as long as its greatest width, style less than half as wide as the third joint and at most one-third as long; proboscis straight, tapering to the tip. Mesonotum greatly swollen, provided with strong bristles. Abdomen cylindrical. Fe-

mora with long but slender bristles on the under side, tibiæ and tarsi with strong bristles, front tibiæ devoid of a stout spur at the apex, pulvilli well developed, not unusually thick. Marginal, submarginal and posterior cells open, the anal open or closed in the margin, the fourth posterior with a cross-vein at its base, the fifth separated from the discal by the fourth."

*Type*.—*Metapogon gilvipes* Coquillett, U. S. N. M., Cat. No. 7954.

As this genus is known to me only by the type material consisting of the unique type of *gilvipes* in poor condition, and a specimen of each sex of *punctipennis*, I have used the original descriptions. The arrangement of the bristles of the mesonotum resembles much that of *Lestomyia*, and easily catches the eye.

#### SYNOPSIS OF SPECIES.

Abdomen yellowish-gray pruinose; hind margins of segment 1, a large triangular spot on segments 2-6, segment 7 entire, and genitalia, polished..... **gilvipes.**

Abdomen polished; segment 1 gray pruinose on base and sides, segments 2-6 each with a gray pruinose spot on the base.

**punctipennis.**

#### *Metapogon gilvipes.*

*Metapogon gilvipes* Coq., Proc. Ent. Soc. Wash., VI, 182, 1904.

"♀.—Length 6.5 mm.—Black; the first two joints of the antennæ and the legs, except the tarsi toward their apices, brownish-yellow, the halteres light yellow. Mystax yellowish, its bristles arranged in three rows on lower half of face, bristles of occiput whitish, those of the ocellar tubercle black. Antennal style about one-third the length of the third segment. Bristles of mesonotum black; the hairs very short and sparse; bristles and hairs of hypopleura white; mesopleura, pteropleura and sternopleura bare; scutellum rather flat, nearly bare, with subapical pair of stout bristles. Abdomen yellowish-gray pruinose, the hind margin of the first segment, a large triangular spot on the five succeeding segments, covering nearly the whole of the hind end of each segment in the middle, also the whole of the seventh segment and the genitalia polished. Hairs and tarsi dark brown, tarsal claws black. Wings hyaline; veins and cross-veins beyond base of first submarginal cell indistinctly bordered with pale brown; small cross-vein nearly three-fourths of the length of the discal cell."

*Type*.—U. S. N. M., Cat. No. 7954. A single female specimen in poor condition.

*Habitat*.—Los Angeles Co., Cal.



**Metapogon punctipennis.**

*Metapogon punctipennis* Coquillett, Proc. Ent. Soc. Wash., VI, 182, 1904.

"♂ ♀.—Length 7 mm.—Black; the first two segments of the antennæ, the tibiæ, bases of tarsi and extreme apices of femora reddish-yellow; the halteres pale yellow; all hairs and bristles white. Antennal style about one-fifth as long as the third joint, mystax ascending about three-fourths the height of the face. Mesonotum grayish pruinose, marked with a submedian pair of black vittæ which extend from the front end three-fourths of the distance to the scutellum, also with a pair of blackish spots on either side separated by the suture; hairs of mesonotum very short and sparse; mesopleura, pteropleura and sternopleura bare; scutellum flattened, nearly bare, thinly grayish pruinose bearing a subapical pair of stout bristles. Abdomen polished; first segment gray pruinose on the base and sides, second with a gray pruinose fascia near the base and an oblique spot in each hind angle, segments 3-6 each with a gray pruinose fascia at the base connected at either end with an oblique spot that extends to the hind angle of the segment, the spots on the segment of the female separated from the fascia; each of these fasciæ are rather strongly narrowed in the middle of the posterior side; a gray pruinose spot on either side of the seventh segment. Wings hyaline; veins and cross-veins at base of the discal, posterior and submarginal cells, distinctly, but rather narrowly clouded with brown; the small cross-vein nearly two-thirds the length of the discal cell."

*Type*.—U. S. N. M., Cat. No. 7955. A single specimen of each sex.

*Habitat*.—Organ, N. M. (T. D. A. Cockerell).

**PLESIOMMA.**

*Plesiomma* Macquart, Dipt. Exot., I, pt. 2, 54, 1838.

Strikingly different from all other Asilids in that the large eyes of both males and females are nearly contiguous above, or noticeably approaching that condition; thus the face is very broad below and gradually narrows upwards so that the face and front together form a triangular area. Antennæ are situated on a line with the middle of the eyes or a trifle above: segments 1 and 2 subequal, cylindrical, with bristles above and below; segment 3 subequal to segments 1 and 2 taken together, more or less oval, with short forward directed bristles on its upper side; style distinct, more or less bristles-like. Ocelli borne on a slight elevation and vary in their location

from midway between the antennæ and the vertex to nearer the vertex. Mystax usually consists of a single row of bristles on the oval margin which is about one-half the distance between the antennæ and the proboscis. Thoracic dorsum with bristles on the humeri and posterior margin; pleuræ bare, trichostical bristles present. Abdomen in both male and female long, slender, narrowed toward the base; segment 1 with bristles on its lateral margins; genitalia but little prominent. Legs long, slender; front tibiæ without a terminal claw-like spur. All the posterior cells of the wings open: the fourth narrowly so; anal cell closed at the margin.

According to Macquart, the founder of this genus, the ocelli are situated midway between the antennæ and the vertex in his type species, *testacea* (patria inconnue). This is true of the North American forms only in *leptogaster*, but in *indecora*, *funesta* and *lineata* the ocelli are higher up on the front, and in *unicolor* much nearer to the vertex than to the antennæ. Their position varies with the degree of contiguity of the eyes. The nearer the eyes approached each other at the vertex, the farther down upon the front are the ocelli found.

In North America, *Plesiomma* is a strictly southern genus; being well represented in the West Indies, especially in Cuba: our only United States form thus far known is *unicolor* from New Mexico and Texas.

This genus differs from *Deromyia*, which it somewhat resembles, in that the eyes are nearly contiguous above, the nearly central position of the styled antennæ and the relative position of the oral margin and the ocelli. Also in the open fourth posterior cell, the more slender abdomen and legs and the absence of the terminal claw-like spur from the front tibiæ.

*Type*.—*Plesiomma testacea*.

#### SYNOPSIS OF SPECIES.

I have seen the types of *funesta*, *indecora* and *leptogaster*, and specimens of *lineata* at the M. C. Z. and although *unicolor* is the only *Plesiomma* now known from the United States, I will include them in the following table.

- 1. Black species, with black wings (Cuba)..... **funesta**.  
More yellowish species.....2.
- 2. Body and legs wholly brownish-yellow, without black markings.  
**unicolor**.  
Body not wholly yellowish.....3.  
Thoracic dorsum with three black vittæ; bristles of thorax reddish  
(West Indies; San Domingo, Mex.)..... **lineata**.
- 3. Thoracic dorsum not so marked; wings brownish with yellowish  
areas.....4.
- 4. Abdomen unusually slender; eyes closely approximated above,  
ocelli equidistant between the vertex and antennæ (Cuba).  
**leptogaster**.  
Abdomen rather stout; ocelli situated higher up than in *lepto-*  
*gaster* (Cuba, Jamaica)..... **indecora**.

**Plesiomma unicolor** (Pl. VI, fig. 5.)

*Plesiomma unicolor* Loew, Cent., VII, 35, 1866.

♂ ♀.—Length 19 mm.—Wholly brownish-yellow; posterior margins of the last abdominal segments occasionally slightly darkened; wings blackish, the costal portion of the cells much lighter.

Entirely brownish-yellow; front, toward the vertex, less narrow than is usual in *Plesiomma*, and the ocelli much nearer to the vertex than to the antennæ. Face and occiput slightly golden pruinose, the bristles of the mystax more in number, weaker, and arranged in two irregular rows instead of in one, as in most of the species of this genus from North America. Segment 3 of the antennæ short, oval, tapering slightly, and with fewer bristles on its upper side than is usual; style bristle-like, nearly one-half as long as the segment. Segments 1 and 2 of the antennæ, the ocellar tubercle and the occiput, with well developed bristles. The hair of the dorsum longer than usual, of the abdomen short; on the intermediate segments for the most part black, the rest reddish-brown; the bristles of the entire body brownish-yellow. Claws black, reddish at base. Wings rather broad, blackish; the center of all the cells, excepting the costal and subcostal, lighter yellowish.

*Type*.—M. C. Z. One male and one female specimen.

*Habitat*.—N. M.; west Tex. (July 7, Osten Sacken), Cotulla, La Salle Co., Tex. (J. C. Crawford, May 5).

The female from Cotulla, Texas, leads me to believe that the pale areas of the wing are variable. In this specimen only the second submarginal and the fifth posterior cells have a distinct spot, and there is an indistinct pale band extending from the outer end of the second basal cell to the costa.

[NOTE.—Since leaving Amherst I have been informed by Mr. Coquillett that a specimen of *Plesiomma*, named by myself *unicolor*, is the same as Schiner's *longiventris*. This being the case, *longiventris* becomes a synonym of *unicolor*, being published in Verh. Zool.-Bot. Ges., 1867, p. 375. The specimen in question agrees with Loew's type of *unicolor* and comes from the type locality.

### HOLCOCEPHALA.

|| *Discocephala* Macquart, Dipt. Exot., I, 2, 50, 1838.

*Holcocephala* Jaenicke, Neue Exot. Dipt., 51, 1867, name changed.

Rather small species. Head very much broader than the thorax (Pl. V, fig. 4) and strongly compressed antero-posteriorly, hence the old generic name, *Discocephala*. Eyes proportionately very large, giving the head a "goggle-like" appearance; the facets on the fore part very large, but gradually decreasing toward the upper, outer and lower margins. Face broad, not at all swollen, somewhat excavated along the orbits; mystax sparse and confined to the oral margin. Antennæ small, not closely approximated; first two segments very short, rounded, with weak bristles above and below; third segment cylindrical, twice the length of the first two segments taken together; style well developed, distinct, proximally nearly as broad as the third segment, distally narrowed to a point. Front deeply excavated; ocellar tubercle large, prominent. Proboscis weak; palpi small, cylindrical, almost as long as the proboscis and terminated with long pile. Thorax strongly arched, without bristles; scutellum without pile or bristles. Abdomen variable but never longer than the wings, more or less, or not at all, coarctate. Male genitalia in part composed of a pair of lateral lamellæ above, a pair of long slender forceps originating from the venter of the last segment and curved upward, and a prominent, three-pronged penis, curving downward and backward between the forceps. Hind tibiæ swollen distally, and the metatarsi much enlarged in the male, not as much so in the female and at least twice as long as the following segments; legs sparsely clothed with fine pile and bristles, the latter on the femora confined to the lower side; the front tibiæ without a terminal claw-like spur.

Wings longer than abdomen, all the posterior cells broadly open; anal cell variable.

*Type*.—Macquart states that *D. oculatus*, *rufithorax* and *Discocephala rufiventris (abdominalis)* are the typical species.

## SYNOPSIS OF SPECIES.

Abdomen reddish-yellow ..... **abdominalis**.  
 Abdomen brownish; posterior margins of segments 1-3 grayish pruinose..... **calva**.

**Holcocephala calva.**

*Discocephala calva* Loew, Cent., X, 35, 1872.

*Holcocephala calva* Osten Sacken, Cat., 1878, 71.

♂ ♀.—*Length* 8-9 mm.—Small black species but with the ground color wholly concealed above by a dark brown bloom and on the face, occiput, humeri, above base of wings, posterior portion of thoracic dorsum, scutellum, pleuræ, coxæ, metonotum and, in varying degrees, on the posterior margins of the abdominal segments and the venter grayish pruinose. Eyes bronze; antennæ and proboscis black; palpi reddish. Mystax, hair of palpi, occiput and legs white. The dark bloom of the thoracic dorsum is broken by indistinct lines of grayish bloom along the sutures. In greased specimens the humeri, posterior callosities and coxæ appear reddish. Halteres dark. Abdomen brownish pruinose, noticeably contracted toward the base, more slender and elongate than that of *abdominalis*; distally, especially in the female, a trifle dilated; penis of male three-pronged, and usually well exerted as in *abdominalis*. The grayish bands on the posterior margins of the segments appear distinctly only on the first three segments. Legs dark reddish-yellow; all the femora and tibiæ darker on their distal portions; the front tarsi darker than the others. Wings blackish, not quite as broad as in *abdominalis*; all the posterior cells open, closed or petiolate.

*Type*.—M. C. Z. A female specimen.

*Habitat*.—Texas (type); Western N. Y. (Osten Sacken); Princeton (July 21), and Cumberland Co. (Sept. 1); N. J. (Smith Cat.); Phil., Pa. (Aug. 7); Tifton, Ga. (Oct. 3, C. W. Johnson); Juniper Creek, Fla. (May 15, C. W. Johnson).

**Holcocephala abdominalis** (Pl. XI, figs., 4, 5; Pl. IV, fig. 6).

*Dasyogon abdominalis* Say, Jour. Acad. Sci. Phil., III, 50, 1823; Compl. Works, II, 64.

*Dasyogon abdominalis* Wiedemann, Auss. Zw., I, 412, 1828.

*Discocephala rufiventris* Macquart, Dipt. Exot., I, 2, 50, Pl. IV, fig. 2, 1838.

*Dasygogon ata* Walker, List, II, 362, 1849.

*Dasygogon laticeps* Van der Wulp, Tijdschr. v. Ent. X, 137, Pl. III, figs. 10-16, 1867 (Loew in Zeitsch. f. Ges. Naturwiss., XXXVI, 115; 1870).

*Holcocephala abdominalis* Jones, Trans. Am. Ent. Soc., XXXIII, 278, 1907 (locality note).

♂ ♀.—*Length* 4.5-7 mm.—Small yellowish species with broad blackish wings; legs reddish; tips of all the tibiæ and of the tarsal segments more or less black.

Head black; face and front dull brassy-yellow pruinose; occiput grayish pruinose; the mystax and occipital hair pale golden; eyes black, with bright bronze reflections. Antennæ as figured, black; ocellar tubercle and proboscis black; palpi dark reddish, with pile of the same color. Thorax polished black, but wholly concealed beneath a dense clothing of brownish-yellow bloom; a very broad median and lateral stripes of rich brown, all greatly abbreviated behind, the lateral ones bisected at the suture and considerably attenuated posteriorly. These stripes are apt to vary in distinctness. The pleuræ are more grayish pruinose in several specimens. Halteres sordid brown. Thorax and abdomen without bristles; the latter rather stout, broad at base, but tapering toward apex, bright yellow in fresh specimens, more faded in dried ones. In drying, the abdomen usually becomes much shriveled. In the male the penis is three-pronged and prominent. Legs reddish, tips of all the tibiæ and of the tarsal segments and the claws more or less blackish; the femora sometimes black above; pile of legs rather sparse and the bristles numerous and weak, on the femora confined to the lower side. Wings blackish with violaceous reflections, somewhat paler on the outer portion; all the posterior cells open; the anal cell closed and petiolate.

*Type*.—Type of Say's *abdominalis* is lost.

*Habitat*.—White Mts., N. H. (Mrs. A. Slosson); Amherst, Mass. (July 14-22, in large numbers, Aug. 29); Conn. (July 16); N. Y. (July); Princetown (July 21), Dunnfield (July 9), Cumberland Co. (Sept. 1), N. J. (Smith Cat.); Pa.; Raleigh, N. C. (July 15, F. Sherman, Jr.); Tifton, Ga. (July 18, C. W. Johnson); St. Augustine, Juniper Creek (May 15), Fla. (C. W. Johnson); Wis.; Cedar Bluffs and Meadow, Nebr. (P. R. Jones); Opelousas, La. (May, C. W. Johnson); Tex.; Ks.; Ky.; Ala., Brazil.

This is a widespread species inhabiting damp localities; I have taken specimens in large numbers in the sweeping net

in rather damp grass lands where they are found clinging to the grass stems. I have found many specimens, but they show little variation except in the intensity of the black markings of the legs.

### HOLOPOGON.

*Holopogon* Loew, Linnæa Ent., II, 473, 1847.

*Holopogon* Schiner, Fauna Austr., I, 129, 1862.

Small species. Head proportionately rather broad (Pl. V, fig. 5), but not at all "goggle-like" as in *Holcocephala*; face of average equal breadth, only very greatly swollen, without protuberance; mystax extends up to the antennæ, composed of very fine outstanding pile. Front above somewhat broader; vertex but slightly hollowed out, ocellar tubercle distinct; the front and occiput usually well clothed with fine erect pile. Antennæ (Pl. IV, fig. 7) nearly approximate, short, slender; first two segments cylindrical, subequal, the first a trifle longer, the third segment longer than the first two taken together, tapering toward the tip; style very slender, likewise tapering, nearly or quite as long as the third segment; both the first and second segments with long bristly hairs beneath. Thorax short, dorsum strongly arched, usually with pruinose markings, and sparse, erect, fine pile; pleuræ more or less pilose. Abdomen rather cylindrical, somewhat flattened, usually polished, with very fine microscopic pile on the tergum, with longer pile on the sides at base, and on the venter; male genitalia small. Legs rather slight, the front tibiæ without a terminal claw-like spur; the hind tibiæ very much thickened, their metatarsi likewise greatly thickened and swollen; pulvilli normal. The femora clothed with delicate pile, the tibiæ and tarsi with fine pile and longer bristly hair. All the submarginal and posterior cells of wing wide open; the fourth only slightly narrowed; anal cell closed and with a short peduncle; the second posterior cell long and narrow.

The species of this genus, now known, are small, ranging from four to eight millimeters; usually of a general black color, and with fine outstanding pile on head, thorax, and on the abdomen on sides at base and venter. The species as a whole

are characterized by the broad but not "goggle-like" head, the well-arched thoracic dorsum and the very stout hind tibiæ and their swollen metatarsi. In this last respect they resemble much the species of *Holcocephala*.

?*Holopogon appendiculatus* Bigot is not an *Holopogon*; I do not know what it is.

SYNOPSIS OF SPECIES.

- |  |   |    |
|--|---|----|
| 1. Wings deep black, except at tip.....  | <b>atrypennis, laetus.</b>              | 2. |
| Wings not deep black.....  |   | 2. |
| 2. Tibiæ and tarsi reddish.....  | <b>snowi.</b>                           |    |
| Legs wholly black.....   |   | 3. |
| 3. Wholly white pilose species.....  | <b>seniculus.</b>                       |    |
| Not wholly white pilose species.....   |   | 4. |
| 4. Pile of body almost wholly brownish, very dense, especially on<br>venter of abdomen from base to tip.....   | <b>umbrinus.</b>                        |    |
| Pile of thoracic dorsum chiefly black; white in varying amounts<br>on the anterior and posterior portions..... | { <b>guttula.</b><br><b>phæconotus.</b> |    |

**Holopogon atrypennis** n. sp. (Pl. XI, fig. 1.)

♂ ♀.—*Length about 6 mm.*—Wholly deep black, the wings deep black, except on the outer fourth, where they are paler, but not pure hyaline.

Wholly black; face and front grayish pruinose; the face of the male clothed with black hair, with a few white ones intermixed; that of the female with a predominance of the white hairs. In the male the pile of the front, dorsum and pleuræ of thorax is black; that of the coxæ and abdomen white; in the female the pile of the pleuræ and part of that of the dorsum is white. Legs black, with white pile and slender black bristles. Halteres yellowish. Wings black, on the distal fourth paler, but not pure hyaline; many of the veins very narrowly bordered with a pale line; venation normal.

*Type*.—Am. Ent. Soc. of Phila. One male and one female specimen.

*Habitat*.—The type localities are Highrolls (June 2, 1902), and Cloudcroft (June 19, 1902), N. M.

In both specimens the thorax is greased, there are traces of a golden pruinose spot on the humeral angles of the thorax, and a paler bloom on the pleuræ. I regard the black wings as the best distinguishing feature.



**Holopogon guttula.**

*Dasyopogon guttula* Wiedemann, Dipt. Exot., 228, 1821.

*Dasyopogon guttula* Wiedemann, Auss. Zwei., I, 411, 1828.

*Dasyopogon guttula* ? Walker, List, II, 355, 1849.

*Holopogon philadelphicus* Schiner, Verh. Zool.-Bot. Ges., XVII, 360, 1867.

*Holopogon philadelphicus* Loew, Berl. Ent. Zeit., XVIII, 367, note, 1874.

*Holopogon guttula* Johnson, Psyche, 76, 1905.

♀.—Length 6-7 mm.—Black; the abdomen polished blue-black; the pleuræ and a large angular spot above and behind and including each humeral angle grayish-white; the rest of the dorsum thinly clothed with a dark olivaceous bloom.

Face and front yellowish-brown pruinose; the occiput more grayish; pile of face, except on the extreme oral margin, and the beard white; that of the wholly black antennæ, front, tubercle and upper occiput black. Thorax, when viewed from before, shows on each side two grayish-white pruinose spots including the humerus and extending above and inward to the obscure median geminate stripe, and backward nearly to base of wings; rest of dorsum clothed with a thin brownish-black, in some lights olive-black, bloom; pleuræ and coxæ grayish-white pruinose. Dorsum of thorax and scutellum with black, not very prominent, black pile; the white pruinose spots, posterior callosities and the pleuræ with white pile. Trichostical pile long and white. Abdomen highly polished, with bluish reflections, the microscopic pile of the tergum and the longer pile of the sides and venter wholly white. Legs wholly black, the long pile white, the weak bristly hair black; the front tibiæ and their metatarsi clothed on the inner side with a dense golden pubescence. Wings hyaline, beautifully violet; veins black; venation normal.

*Habitat.*—North Saugus, Mass. (July 6); Penn.; N. J.; N. C.; Savannah, Ga.; Ormond, Fla. (Mrs. Slosson, Apr.). Prof. C. W. Johnson in Smith's list reports this species from the following places in New Jersey: Clementon (May 30), Newark (June 14), Jamesburg (July 4), Dunnfield (July 9). In the National Museum, Mr. D. W. Coquillett has identified specimens from Ariz., Col. and Mont.

The above description was made from a fresh perfect specimen taken by the writer at North Saugus, Mass. In the collections of the Massachusetts Agricultural College and the Am. Ent. Soc. of Phila. are several partially greased specimens of both sexes; they agree for the most part with the above description, but there seems to be in some individuals a ten-

dency for the mystax to be almost wholly black, or white and black mixed, and the wings do not seem to be quite so clear. In badly greased specimens the white pruinose spots of the dorsum show only faintly.

The writer has seen this species resting upon the dead twigs of the sweet fern (*Myrica asplenifolia*) from which it would dart after its prey.

### **Holopogon laurus.**

*Holopogon laurus* Coq., Jour. N. Y. Ent. Soc., XII, 33, 1904.

♂.—Length 6 mm.—An unusually broad, robust species. Black; the halteres yellow, their bases brownish; hairs and bristles white or yellowish; hairs of mesonotum except posteriorly, very short and sparse. Head gray pruinose; hairs of mystax very sparse, the bristles confined to two or three rows along the oral margin; first two segments of antennæ subequal in length, together about three-fourths as long as the third, the latter slightly longer than the slender style. Thorax and scutellum opaque, grayish pruinose; mesonotum with three confluent brownish-black stripes, abbreviated posteriorly, and the outer pair much abbreviated anteriorly. Abdomen somewhat polished. Hind legs considerably thickened, the tibiæ on the outer and inner sides and the first tarsal segment both above and below quite densely fringed with rather short hairs. Wings from base to beyond apex of discal cell dark brown, the limits of this color strongly arcuate, the remainder of the wing hyaline; apex of second vein before middle of second submarginal cell; wings very broad, the alula quite strongly developed."

*Type*.—A single male specimen in the collection of the Brooklyn Institute of Arts and Sciences.

*Habitat*.—Texas.

I have not seen this species. In wing colorization it must closely resemble *atripennis*.

### **Holopogon nitidiventris.**

*Holopogon nitidiventris* Bigot, Annales, 1878, 437.

♀.—Length 7 mm.—Translation.—In all respects like *H. tenerum* (see remarks), excepting thorax is covered with a reddish bloom, lateral margins of dorsum grayish; halteres of a clear testaceous; hair of coxæ and femora deeper; abdomen gray, each segment adorned behind with a large triangular spot and on each spot marked with a rounded point of polished black; tarsi somewhat brownish; wings quite clear, of a brownish tinge, which is more marked and intense along the transverse veins, the longitudinal veins at base of wing deep testaceous.

*Type*.—Bigot collection.

*Habitat*.—California (type).

*H. tenerum* is a Chilean species. The points of similarity between it and the above are "antennæ at the base black (rest wanting) \* \* hair of vertex, front and occiput black, beard white; face of a pale yellow; \* \* coxæ with white reflections and white bloom \* \* legs polished, covered with a white bloom beneath, pulvilli whitish.

I have never seen either *nitidiventris* or *tenerum*, but doubt the generic position of *nitidiventris*.

### **Holopogon phæonotus.**

*Holopogon phæonotus* Loew, Berl. Ent. Zeit., XVIII, 366, 1874.

♀.—*Length about 6 mm.*—Translation.—Black; thorax opaque, with very broad dorsal stripes, confluent, brownish-black, the median one entire, the lateral ones abbreviated; humeri and the lateral margins as far as the wings broadly grayish-white pruinose; wings grayish, veins brownish-black. Oral margin, basal segments of antennæ, front, upper half of occiput, thoracic dorsum, excepting the posterior angles and the tarsi, black pilose; the scutellum covered with longer black and shorter white pile. Mystax except the oral margin, posterior angles of thorax, pleuræ, abdomen, coxæ, femora and tibiæ white pilose; the stouter bristles of the tibiæ and the bristles of the tarsi are black. A truly normal *Holopogon*.

*Type*.—M. C. Z. A single female specimen.

*Habitat*.—Texas (type); Highrock, N. M. (June 2, Am. Ent. Soc.).

This species is based upon a single female, which, by direct comparison, differs so little from the female *guttula* that it is almost impossible to separate them in a key. The legs are wholly black.

### **Holopogon seniculus.**

*Holopogon seniculus* Loew, Cent., VII, 62, 1866.

*Holopogon seniculus* Jones, Trans. Am. Ent. Soc., XXXIII, 279, 1907 (locality note).

♂ ♀.—*Length 5-7 mm.*—Wholly black; easily distinguished from all the other species herein described by the long white or whitish pile of the head, thorax, basal segments of abdomen and legs, and by the pure hyaline wings with yellowish veins.

Black, polished; head and thoracic dorsum covered with a whitish bloom, which on the middle of the dorsum is very thin, but more dense

on the head and humeral angles of the thorax; the pleuræ and coxæ likewise very thinly white pruinose. Abdomen polished black, on the tergum almost bare. Mystax and pile of entire body of male, snow-white, of the female white or sometimes pale yellow and, aside from the very short pile of the tergum of the abdomen, very long. In the male, the pile of the venter of the abdominal segments 1-3 is long and forms a large tuft which can readily be seen from above. Legs wholly black; pulvilli pale. Wings purest hyaline, veins pale yellow; venation normal.

*Type*.—M. C. Z. The type series consists of four male and five female specimens.

*Habitat*.—Neb. (type); Glen, Sioux Co., Neb. (P. R. Jones); Lorrey's Lake (Sept. 7) and Carbon Co. (Am. Museum), Wyo.; Col. (Aug., C. W. Johnson). Prof. R. A. Cooley has sent me specimens from the following places in Montana: Lombard (July 25, elev. 4,000 ft.), Livingston (July 14), East Flathead (July 25, elev. 5,700 ft.), Bozeman (June 25, July 3, elev. 4,800 ft.), and Lolo Mount, (July 1).

In specimens which have been kept a long time under poor conditions, and those which have become greased, the pile is matted or otherwise injured, so that it does not appear very prominent.

**Holopogon snowi** n. sp. (Pl. XI, fig. 2).

♀.—*Length* 6-8 mm.—Black; when viewed from the side, the grayish bloom of the anterior portion of the thoracic dorsum and of the pleuræ stops short at the transverse and mesopleural sutures respectively; legs black, the tibiæ and tarsi dark reddish.

Wholly black, including the antennæ; the abdomen highly polished; pile of the entire body white, except that on the upper occiput, basal segments of antennæ, a few hairs on the upper and lower portions of face and on the posterior portion of dorsum, which are black. Face and front densely brownish-yellow pruinose; the occiput black; the ocellar tubercle with a tuft of white hair. The pruinose spot on each side of the thoracic dorsum, including the humerus and extending inward to the median thoracic stripe and backward as far as the transverse suture, is gray, with a slight tinge of yellow; the bloom of the pleuræ is most dense upon the mesopleuræ. When viewed from the side, the bloom of thoracic dorsum and pleuræ stops suddenly at the transverse and mesopleuræ sutures respectively; the remainder of the pleuræ is clothed with a pale bloom, which is nearly or quite as dense on the sternopleuræ as on the mesopleuræ, but elsewhere very much thinner and hardly perceptible. The broad median thoracic stripe

extending from the prothorax, a large spot confluent with it on each side in front of the transverse suture, the entire dorsum behind the suture and the scutellum, with a very thin blackish bloom nowhere wholly obscuring the polished black ground color. Abdomen wholly polished black, nearly bare, the pile of the tergum microscopic and sparse, that of the sides, especially of the first segments and on the venter, longer. Femora polished black, the tibiæ and tarsi reddish; pile of legs white, the long fine hair-like bristles of the under side of femora, and many on the tibiæ, white, the remaining bristles of the tibiæ and tarsi black. Halteres sordid white. Wings pure hyaline, veins black, brownish toward base; venation normal.

*Type*.—University of Kansas. Two female specimens.

*Habitat*.—Type locality, Clark Co., Ks. (May, elev. 1,692 ft., F. H. Snow).

I have named this species in honor of Dr. F. H. Snow, Chancellor and Professor of Entomology and Zoology at the University of Kansas, through whose kindness I was able to study this species.

***Holopogon umbrinus* n. sp.**

♀.—*Length* 6.5 mm.—Wholly black, polished, very pilose; the pile of body almost wholly dark brown, dense on the venter of abdomen from base to tip; wings dusky.

Wholly black, polished, very pilose. Face and front only grayish pruinose, wholly clothed with black pile, on the ocellar tubercle with a few paler hairs. Occiput with dense black pile, only narrowly below and on the base of the proboscis with white pile. Sides of prothorax, the coxæ and a small patch on the sides of the first abdominal segment with white pile; legs with some scattering white pile. Pile of body and legs elsewhere dark brown, extremely dense on the scutellum and on the sides and venter of the abdomen,—much denser and longer than on any of the other species. In the male of *seniculus* the pile is fully as dense on segments 1-3 of the abdomen, but it does not continue thus to the tip of the abdomen as it does in *umbrinus*. Halteres lemon-yellow. Legs black, the front and middle pair slightly pitchy. Wings dusky hyaline.

*Type*.—M. C. Z. A single female specimen.

*Habitat*.—Webber Lake, Sierra Co., Cal. (July 25, O. Sacken).

The above description refers to the *Holopogon* specimen mentioned by Osten Sacken in his *Western Diptera*, page 310. The specimen is at the M. C. Z. and bears a label with the specific name *umbrinus*, which I have retained. It is very distinct from the other *Holopogon* species known to me.

**HETEROPOGON.**

*Heteropogon* Loew, Linnæa Ent., II, 488, 1847.

*Heteropogon* Schiner, Fauna Austr., I, 132, 1862

*Anisopogon* Loew, Berl. Ent. Zeit., XVIII, 377, 1874: changes name to *Anisopogon* on account of prior use of *Heteropogon* in Botany.

*Anisopogon* Coquillett, Can. Ent., XXV, 20, 1893 (synopsis of species).

Slightly to quite hairy species of medium size; thorax short, much arched; head set very low in comparison with the height of the thoracic dorsum, much broader than high; face moderately broad, of equal width, hardly convex, without protuberance; mystax dense and, on the oral margin, composed of longer, denser, stouter hair, above with finer, more sparse, pile, extending to base of antennæ. Antennæ short, nearly approximate; the first two segments short, subequal, more or less cylindrical; the third segment longer than the basal segments taken together, very slender, tapering from base toward tip; style very slender, bristle-like, shorter or longer than the third segment. Front but little broader above, on the vertex distinctly depressed, ocellar tubercle large and very prominent. Abdomen above very bare; on the sides and venter usually with longer pile; male genitalia very small, downward directed. Legs slender, rather bristly, the front tibiæ without a terminal claw-like spur; the hind tibiæ toward the tip somewhat stouter; the hind tarsi a trifle shorter than the anterior pairs, and of all, the metatarsi are markedly elongate; in many species the front tarsi and middle tibiæ of the male bear characteristic hair markings which are wanting in the female; pulvilli normal. All the submarginal and posterior cells wide open; the anal cell closed or slightly open.

*Type*.—*Dasyopogon manicatus* Meigen.

## SYNOPSIS OF SPECIES.

1. Scutellum (except sometimes the extreme base) black or blackish.....2.  
Scutellum and face yellow, abdomen yellow, marked with five black fasciæ, wings pale yellow.....**vespoides**.
2. Abdominal segments 1-4 wholly black.....3.  
Abdominal segments 3-6 (except sometimes their lateral margins) reddish.....6.



**Heteropogon johnsoni** (Pl. X, fig. 4.)

*Anisopogon johnsoni* Back, Can. Ent., XXXVI, 293, 1904.

♂ ♀.—Length 10–12 mm.—Black; head, thorax, scutellum, posterior margins of abdominal segments, venter and legs with dull yellowish-white or whitish pile. Pile, except on the posterior margins of the abdominal segments, where it is short, recumbent and often deeper yellow than on the thorax, long, erect, not dense, giving the insect a furry appearance. Face, thinly white pruinose; mystax composed of long, dense, black pile on the oral margin, above not as dense, yellowish-white, and extending upward to the antennæ on either side of the face in such a way as to leave the middle of the face below the antennæ bare. Occiput white pruinose, with long pile; in one male specimen with a few black bristles. Beard long and fine; palpi small, with black and white pile; proboscis and antennæ black, style of the latter nearly or quite as long as the third segment. Thorax in several specimens slightly white pruinose beneath the long pile. Abdominal segments finely punctate, the anterior two-thirds of each segment with short black pile, not easily noticeable. Last two segments of the female polished black, not punctate; genitalia of male small, reddish, with fine pile. Coxæ and femora black, with the same long pile of the thorax; in the male there is a small patch of short black pile on the upper distal portion of the middle and hind femora; tibiæ and tarsi vary from nearly black to deep testaceous. The pile and bristles of the tibiæ moderately long and whitish; the bristles of the hind pair in part black; the middle pair without the brush found in *ludius* or *scnilis*. The front metatarsi clothed with sordid white, appressed, but not very dense, pile; this same pile is found in less degree on the other metatarsi, but there is usually confined to the basal half; bristles of the remaining tarsal segments, with the exception of one or two on the second segment black. Claws black; pulvilli dark brown. Wings hyaline; veins yellow.

*Types*.—Three pairs of co-types deposited one each in the collections of the Mass. Agr'l College, Prof. C. W. Johnson, and the American Ent. Soc. of Phila. Ten paratypes, eight of which are in the collection of the Am. Ent. Soc. and two in my own collection.

*Habitat*.—Colorado; Fort Collins, Col. (Sept. 12, 1901).

I have placed this species under *Heteropogon* because it does not possess those dense tufts of pile on the sides and venter of the abdominal segments which I consider fully as characteristic of *Pycnopogon* as the shape of the abdomen.



**Heteropogon lautus.**

*Heteropogon lautus* Loew, Cent., X, 34, 1872.

*Anisopogon lautus* Williston, Tr. Am. Ent. Soc., XI, 16, 1884.

♂ ♀.—Length 9-11.5 mm.—Black; the thorax brownish-gray pruinose; the tibiæ and tarsi reddish or reddish-brown. In the male the wings are pure hyaline and the front tarsi are densely clothed above with white pile. In the female the wings are pure hyaline except the extreme base as far as the humeral veinlet, which is black; the transverse veins, and the unions of the veins, are likewise narrowly margined with black.

♂.—Black; the tibiæ and tarsi reddish, the apex of the former and the several segments of the latter toward the apex a little more deeply tinged. Head covered with a dense grayish-white bloom, opaque; the pile white and bristles whitish; but the bristles of the mystax immediately above the oral margin, all the pile of the palpi, and most of that of the antennæ, and indeed the stout bristle which is situated just above the second segment of the antennæ—all black. The whole thorax is obscured by a brownish-gray bloom; the color of the pleuræ and of the humeral angles verging much toward a whitish color, that of the rest of the dorsum and of the scutellum much toward brownish-gray. All the pile of the thorax white, bristles black; on the posterior margin of the dorsum and on the margin of the scutellum, whitish. The first six segments of the abdomen black, polished, with very short pile, the posterior margin and the posterior angles of each segment covered with a grayish-white bloom and with very short pale pile; the last two segments, and the small hypopygium reddish; toward the base, the sides of the abdominal segments are covered with long, white pile. Venter grayish, clothed with long, white pile. Femora above almost wholly covered with short black pile, the rest of the pile white, much longer toward the base of the femora; bristles of the femora mostly black, a few whitish. The tibiæ covered with white pile and armed with black and white bristles; the front tarsi above densely clothed with pure white pile, the middle and hind tarsi with white hair and black bristles. The middle tibiæ are not adorned with the brush of hair and bristles, as it is in some of the other species. Halteres yellowish. Wings wholly purest hyaline, the lower part of the base as far as the axillary veinlet somewhat grayish.

Like the male, but the bloom of the front, face, dorsum and scutellum verges into deep brown; the marginal bristles of the scutellum are black; the abdomen almost wholly black, more rarely is absolutely reddish toward the apex; the posterior margins of the several segments scarcely showing traces of a grayish bloom and of pale pile; the front tarsi above are adorned with no dense pure white pile, the lowermost part of the base of the hyaline wings as far as the humeral veinlet, is black, and the transverse veins and junctions of the veins are narrowly shadowed with blackish.

*Type*.—M. C. Z. The type series consists of two male and two female specimens in good condition.

*Habitat*.—Texas (type, Belgrage).

The two females mentioned by Dr. W. S. Williston in the second reference I believe to be either *ludius* or *senilis*.

### **Heteropogon ludius.**

*Anisopogon ludius* Coquillett, Can. Ent., XXV, 20, 1893.

♂ ♀.—Length 12–16 mm.—Wholly black; the tibiæ and tarsi varying from pale yellow to dark reddish-brown, white pilose, the front tarsi of the male clothed above with dense appressed white hairs and the middle tibiæ before with a brush of black and white hairs and bristles.

♂.—Black; the tibiæ and tarsi dark reddish-brown. Face gently convex, white pilose, bristles of lower part black; the first segment of antennæ slightly longer than the second, the third tapering to the tip three times as long as the second, the style slender, seven-eighths as long as the third antennal segment; pile of occiput, thorax, pleuræ, coxæ and venter white; upper side of each front tarsal segment with a dense covering of appressed white hairs. Upper side of middle femora toward its apex with a dense covering of short appressed hairs, which, however, leave a large elliptical naked space between the apex and the middle; middle tibiæ white pilose in front, and above the middle ornamented with a large patch of appressed black hairs and bristles, which form an inner and an outer fringe; inner side of posterior tibiæ near the tip, and also of the hind metatarsi, densely bright yellow pubescent; wings smoky-brown, lightest at the apex and along the hind margin; all the posterior and the anal cell open.

♀.—Like the male, except that the front tarsi, middle femora and tibiæ are not ornamented as in the male, and the wings are much lighter, the brown forming a border to some of the veins."

*Type*.—U. S. N. M., Cat. No. 927. Type series consists of two male and three female specimens.

*Habitat*.—Los Angeles and San Bernardino Counties, California, and British Columbia.

Notwithstanding Mr. Coquillett's note that "the species is closely related to *senilis* Bigot, but in the latter species the wings are wholly hyaline and the appressed white hair on the front tarsi of the male is confined to the first segment," I am of the opinion that more collecting will prove them identical. My reason for thinking so are that Bigot does not state definitely whether the metatarsi or all the tarsal segments of the

front legs are clothed above with appressed white pile, and that the color of the wings is apparently variable.

In 1904 I sent a rather poorly-preserved male specimen to Mr. Coquillett, of which he wrote under date of March 16th, "the specimen is not in the best condition for comparing or studying, but it is apparently identical with my *H. ludius*. The coloring of the wings appears to be variable in the same species of this genus." This specimen had pure hyaline wings, as *senilis* is described to have. There is a pair of Heteropogons at the Brooklyn Institute from South Creek, Beaver Co., Utah, named by Mr. Coquillett "*senilis*." Both the male and female have the wings pure hyaline, but the male has all the front tarsal segments, instead of the first, clothed above with appressed white pile. The specimen from Florida recorded by Prof. C. W. Johnson as *senilis* (Proc. Acad. Nat. Sci. Phila., 1895, page 323) is, by comparison, the same as the specimen named for me by Mr. Coquillett as *ludius*. If the amount of pile on the front tarsi is variable in its extent, my key to the males will be of little use.

**Heteropogon macerinus** (Pl. X, fig. 5.)

*Dasyopogon macerinus* Walker, List, II, 356, 1849.

*Heteropogon gibbus* Loew, Cent., VII, 58, 1866.

♂ ♀.—Length 10-12 mm.—Black; head, thorax excepting the stripes on dorsum and the posterior angles of the first four abdominal segments whitish pruinose; wings hyaline, the costal margin and apical half blackish. In the male the front metatarsi with dense appressed white pile; the middle tibiæ with a black brush.

♀.—Head covered with a whitish or pale yellow bloom; occiput more obscurely covered with white pile and with white and black bristles; pile of front white; bristles of ocellar tubercle black. First two segments of the antennæ reddish-brown with black pile, the second segment beneath with a very long black bristle; third segment black, longer than the first two basal segments taken together, tapering to point; style very long, very slender, nearly as long as the basal segments taken together. Mystax white or very pale yellow, black on the oral margin, very fine, extending upward to the antennæ. Palpi for the most part with black pile, occasionally with white and black pile mixed; beard white. Thorax grayish pruinose, the three dorsal stripes broad, black, very much abbreviated behind; the lateral stripes brownish, subinterrupted; humeri and pleuræ mostly reddish-brown. In many specimens the whole thorax except the dorsal stripes, is red-

dish-brown, and the stripes themselves are not black, but more brownish; this coloration is most noticeable in greased specimens in which the bloom has been affected. Pile of the thorax white, that on the dorsum mostly black; all the bristles black, in a few specimens partly white on the posterior callosities. The scutellar bristles, about three on each side of the posterior margin. Abdomen black; the lateral margins of all the segments and, sometimes, the extreme posterior margins as well, are brownish; rather bare, covered with very short black pile, on the sides with longer white pile; posterior angles of segments 1-4 whitish or yellowish pruinose. Venter reddish-brown, whitish pruinose, with white pile, longer toward the base, toward the apex, black. Legs brown; apices of the femora, tibiae and of the tarsal segments, largely black; pile mostly white, on the tips of the tibiae and on the tarsi black; femora toward the apex with a few bristles, mostly black; tibiae with many bristles, mostly whitish or yellowish, some black; bristles of tarsi, black. Halteres pale yellow. Wings long, hyaline, costal cells and the apical half of the wing blackish; the whole of the discal cell and the fourth and fifth posterior cells toward the base, however, clear; veins black.

♂.—The male does not differ appreciably from the female except in the secondary sexual characters of the legs. The front metatarsi only are clothed above with dense appressed white pile; there is a little white pile on the second segment also, but here it is not noticeable. The middle femora on the outer half above with short black hair in the middle of which is an oval bare area; the middle tibiae clothed before with dense appressed white pile, and a trifle above the middle, with a brush of black hair and bristles; all the other bristles of the tibiae, except at very tips, white. The pile of the coxae, metapleurae and venter of abdomen is white and longer than in the female, and the blackish cast to the wings is confined to a smaller area at the tip.

*Type*.—M. C. Z. There are five female specimens in the Loew collection; they are the type of *gibbus*. *Dasyopogon macerinus* is in the British Museum.

*Habitat*.—Trenton Falls, N. J. (type, *macerinus*); (type, *gibbus*), Ky.; Lehigh Gap, Pa. (July 16, H. L. Viereck).

This species is at once separated from *lautus* and *phaenicurus* by the rather broad median velvety black stripe on the thoracic dorsum, which is separated from the similarly colored lateral stripes by narrow light pruinose lines which are always, in good specimens, very distinct. Specimens become greasy and then the velvety blackness of the stripes is lost. Osten Sacken states (Western Diptera, page 310) that he had species from California and Vancouver Island which were not unlike

*macerinus*, but certainly different, yet too poorly preserved for describing.

I am here enabled to mention the male for the first time through the kindness of Prof. C. W. Johnson, who has kindly loaned me a specimen. He says that this species seems to be quite common at Lehigh Gap, Penn.

I regret that we must use the specific term *macerinus* in place of *gibbus*. Walker's description, while not as good as Loew's, refers to this insect.

### **Heteropogon nigripes.**

*Heteropogon nigripes* Jones, Trans. Am. Ent. Soc., XXXIII, 279, 1907.

"Length 9 mm.—Near *H. lautus* Loew. Head broader than high, front but slightly excavated; front and face white pruinose, covered with long white hair, above the mouth and near the ocellar prominence, black. Face flat, slightly convex below, wide. Antennæ black; first and second joints equal; third slightly longer than the first two together; style slender, about two-thirds the length of the third joint. Thorax black (slightly greased in the specimen at hand), covered with long, light colored pile; pleura whitish pruinose, covered with long white pile; scutellum similar in color to the thorax, but with a brownish tinge, covered with long white pile and a marginal row of weak bristle-like hairs, dark at base and white at apex. Halteres dark brown or black; stem slightly lighter; fan-like row of hairs in front white. Abdomen black, polished; tergum covered with very fine, short, sparse, light colored pile; lateral margins with long white pile; posterior lateral margins of first six segments with a white pruinose spot. Legs black; covered with long light colored pile, weak bristles of tibiæ light colored; pile of tibiæ and tarsi yellowish, shorter and denser than that of the femora. Wings hyaline; veins at base of submarginal, first, second, fourth, fifth, posterior and discal cells, clouded with black."

*Type*.—University of Nebraska. A single female specimen.

*Habitat*.—Monroe Cañon, Sioux Co., Neb. (L. Bruner).

Mr. Jones states that this species can be separated from *H. lautus* by its entirely black legs, and the difference in the pilosity of the legs. I have never seen this species, but it must very closely resemble *johnsoni* except for its clouded wings.

### **Heteropogon patruelis.**

*Anisopogon patruelis* Coquillett, Can. Ent., XXV, 21, 1893.

"♂ ♀.—Length 13-16 mm.—Same as the following description of *rubidus*, with these exceptions:—Head, antennæ, thorax, scutellum

and femora except the apex, black; apical third of first abdominal segment and the apical three-fourths of the second segment, reddish in the female but black in the male. Style one and one-fourth times as long as the third antennal segment. Wings smoky-brown, lighter on the base as far as the furcation of the second and third veins; a lighter transverse shade passes through the middle of the discal cell. Front metatarsi of the male densely covered with appressed white hairs above."

*Type*.—U. S. N. M., Cat. No. 10425. A single male specimen and a single female specimen.

*Habitat*.—Texas (type, H. K. Morrison).

I have not studied this species.

### **Heteropogon phœnicurus.**

*Heteropogon phœnicurus* Loew, Cent., X, 33, 1872.

*Heteropogon phœnicurus* Howard, Insect Book, Pl. XIX, fig. 12.

♂ ♀.—*Length* 9–12 mm.—Black; apex of abdomen reddish; the tibiæ and tarsi brown or reddish; the basal half of the wings, excepting the extreme base, hyaline; apex black.

♂.—Black; the posterior margin of the fifth abdominal segment, the whole of the following ones and the hypopygium deep rufous; the tibiæ and tarsi brown, the segment of the latter blackish toward the apex. Front covered with brownish bloom and black pilose. Face densely grayish pruinose in sharp contrast to the brown of the front; the lower part of the mystax wholly black, above mixed with black and whitish pile, the latter toward the oral margin sometimes very pale yellow. Antennæ black; more slender than in many European species and with a longer style. Occipital orbits with long black bristles; the whole occiput, mentum and base of proboscis with very long and very dense white pile. Thoracic dorsum subpolished, excepting the three usual very broad vittæ, covered with pale yellowish, sometimes almost whitish, bloom; whole dorsum white pilose except the pile on the humeri and the bristles above the base of the wings, which are black. Pleuræ and scutellum white pruinose; the margin of the latter on each side with a single black, rarely white, bristle. Pile of tergum of abdomen very short, black; thence from the posterior margin of the fifth segment, reddish; on the hypopygium of the male longer and more dull; the lateral margins of the abdomen are clothed with long white or very dilate sordid yellow or whitish pile which greatly decreases toward the tip of the abdomen and changes its pale color to reddish. Venter grayish, clothed with long whitish pile. Femora polished black, with short black pile, both sides of the base with black bristles, but below more broadly clothed with long white pile, in the middle below near the apex with dense black pile. Tibiæ reddish, the extreme apex of all a little darker; the front pair with short

white pile and black bristles, except on the posterior side where the bristles are white; middle tibiæ white, pilose before the middle, below marked with a brush of dense black pile and then on both sides black-pilose; armed on the posterior side with white bristles, on the anterior side with black or black and white bristles; all the bristles of the hind tibiæ and the pile for the most part black. Tarsi reddish; the extreme apices of the several segments darker, the last segment almost wholly black; the bristles of the tarsi black, of the front metatarsi in part white; the pile of the tarsi black, but that of the front metatarsi above dense and white. Halteres yellowish. The anterior half of the wings hyaline, the lowermost base as far as the humeral vein, black, the apical half black; the base of the first submarginal cell, the apex of the first basal and of the discal cells and the fourth and fifth at base darkened, the transverse veins enveloped in a deeper black color.

♀.—Like the male, but covered with somewhat shorter pile over the whole body; the middle femora below near the apex have no black spines, the middle tibiæ lack the brush of black bristles and pile, and are wholly clothed with white pile; the white pile of the front metatarsi is shorter and much more sparse.

*Type*.—M. C. Z. Type series consists of two male and one female specimens.

*Habitat*.—Texas (type, Belfrage).

The above is a liberal translation from Loew with the insects before me. The white pile of the male abdomen is most dense and long on the sides of segments 1–3, and on the venter of the same; from thence on shorter and confined almost exclusively to the venter. The posterior angles of segments 2–4, and all the other segments with the same short reddish pile as found on the hypopygium.

### **Heteropogon rubidus.**

*Anisopogon rubidus* Coquillett, Can. Ent., XXV, 21, 1893.

“♂ ♀.—*Length* 14–17 mm.—Obscure brown; the following parts black: the third antennal segment, basal half of style, proboscis, palpi, scutellum except its base, first segment of abdomen, basal half of second, lateral margins of the others, seventh segment and genitalia largely, apex of venter and upper side of each femur, that on the first and second segments of abdomen with a strong bluish tinge, brown of abdomen more reddish than on other parts; thorax irregularly marked with grayish-black. Head gray pruinose, the pile yellowish-white; face evenly convex, the pile extending nearly to base of antennæ; first segment of antennæ slightly longer than the second; third segment slightly longer than the first two taken together, tapering grad-

ually to the apex, the style two-thirds as long as the third segment. Thorax gray and golden pruinose, the pile short, sparse, mixed black and white; pleuræ gray pruinose, its pile and that of the coxæ white, the fan-like pile in front of the halteres also white. Pile of abdomen sparse, microscopic, light colored; that on the lateral margins and venter whitish. Pile of legs sparse, whitish, that on tarsi and tips of tibiæ largely black. Wings smoky-gray, all posterior cells and the anal cell open.

The male is the same as the female except that the middle femora have each a cluster of black pile at its apex in front and two similar fringe-like clusters, one on the upper, the other on the lower, surface at its last third, and above the middle of each middle tibiæ are two long dense fringes of black pile on its inner and outer sides, connected with each other in front; front metatarsi destitute of appressed white pile."

*Type*.—U. S. N. M., Cat. No. 926. Type series consists of four female and one male specimen.

*Habitat*.—Los Angeles Co., Cal. (type).

I have no specimens of this species.

### **Heteropogon senilis.**

*Anisopogon senilis* Bigot, Annales, 1878, 423.

♂.—*Length* 13 mm.—*Translation*.—Blackish; antennæ black; face, hair of face, front and occiput grayish; beard white; mystax, hair of palpi and occipito-orbital bristles black. Thorax grayish; pleuræ, trochanters and femora beneath with white pile; venter with pale yellow pile. Abdomen and femora black; tibiæ reddish; middle tibiæ with a black brush, hind tibiæ annulate with black; the middle femora below toward the tip with a dense black tuft of hair; tarsi reddish-brown at apex; wings hyaline.

Dark brownish-black; antennæ black; pile of upper part of the mystax, face and hairs of the occiput, grayish; beard white; pile of palpi, oral margin, some of the bristles of the vertex and occiput, black. Thorax gray with grayish pubescence, the hairs white; long and thick on the pleuræ, coxæ and the outside of the femora. Abdomen black, glabrous above, with long yellowish hair beneath. Femora black, the middle pair with a tuft of short hairs, very compact, black on the outside near the tip; tibiæ tawny, with whitish pile and black bristles, the hind pair black near the middle as well as toward the tip, the middle pair on the front side near the middle with a brush of hairs similar and corresponding to those of the femora; tarsi tawny, brownish toward tip. Halteres pale testaceous. Wings hyaline, veins brownish. Genitalia of male very small.

*Type*.—Bigot collection.



*Habitat*.—California (type); Mt. Hood, Oregon, and Colorado (D. W. Coquillett); Florida (C. W. Johnson).

Dr. S. W. Williston has referred this species to *Pycnopogon*, but if Mr. Coquillett's determination is correct, it should remain under *Heteropogon*. There are two specimens at the National Museum. See note under *ludius*.

### **Heteropogon vespoides.**

*Anisopogon vespoides* Bigot, Annales, 1878, 423.

♂.—*Length* 24 mm.—*Translation*.—Black, with yellow markings; antennæ fuscous, brown at base; face yellowish, mystax and beard testaceous; thorax pale yellow; median stripe, two side spots, black; pleuræ black, variegated with yellow; scutellum pale yellow, halteres fuscous; abdomen yellow, the five stripes broad at base black; genitalia tawny; tibiæ tawny; femora above broadly black; wings pale yellow, veins tawny at base.

Varied with black and yellow; the black antennæ brownish at base; mystax, hair of palpi and the beard yellowish; pile of the occiput red; face pale yellow. Thorax yellow, a median band, and on each side two large trapezoidal spots, black; scutellum yellow; sides with varied reflections and blackish sutures, on the posterior margin with some red bristles. Halteres testaceous. Abdomen yellow; five large transverse bands at the base of the segments black. Coxæ black with yellow pile; legs of reddish-yellow; femora on the outside and above blackish; bristles yellow. Wings of a very pale yellowish color; veins brown, yellow at base.

*Type*.—Collection of Bigot.

*Habitat*.—California (type).

I do not believe that this species is known to recent collectors. As no structural characters are given, we rely upon Bigot for its generic position.

### **PYCNOPOGON.**

*Pycnopogon* Loew, Linnæa Ent., II, 526, 1847.

*Pycnopogon* Schiner, Fauna Austr., I, 136, 1862.

Species with broad hairy bodies. Head broad, not narrowed above, swollen but without gibbosity, the very thick mystax extending up to the antennæ. Antennæ very slender, nearly approximate, first two segments cylindrical, subequal, the third elongate, tapering and bearing distally a long, very slender, tapering style. Front somewhat broader above, on the vertex very much depressed with the ocellar tubercle well

projecting. Thorax broad, almost quadrangular, rather arched. Abdomen very broad, flattened, clearly punctate, on the tergum with much shorter pile, on the sides with hair in tufts, on the venter with longer and denser pile. Legs rather stout, with thicker longer hair and bristles intermixed; the metatarsi not much elongated; the pulvilli normal. Middle tibiæ of male sometimes with a brush of bristles and hair on the anterior sides; the fore tibiæ without a terminal claw-like spur. The anterior branch of the bifurcate third longitudinal vein with a supernumerary vein, not always present; fourth posterior cell wide open, narrowed, or closed; the other posterior cells wide open; the anal cell closed on the margin or narrowly open.

*Type*.—*Dasyopogon apifornis* Loew.

The differences between this genus and *Heteropogon* are very slight. The shape of the head, antennæ and venation are the same, but the abdomen in the typical species is broader, rather shorter and very densely pilose on the sides and venter. Schiner states that the species have somewhat of a "bee-like" appearance and this does seem to be the case with Osten Sacken's *cirrhatus*. The same tibial brush is found in some of the males of this genus as well as in some of those of *Heteropogon*. If Mr. Coquillett's determinations are correct, *senilis* Bigot is a good *Heteropogon*. Mr. Coquillett's *divisus* is an excellent example of this genus, as also is Dr. F. Hermann's *leucostomus*.

***Pycnopogon cirrhatus*** (Pl. X, fig. 8).

*Pycnopogon cirrhatus* Osten Sacken, Western Dipt., 293, 1877.

? *Pycnopogon cirrhatus* Williston, Trans. Am. Ent. Soc., XI, 15, 1884.

*Pycnopogon cirrhatus* Jones, Trans. Am. Ent. Soc., XXXIII, 279, 1907 (note).

"♂.—Length 8.5 mm.—Black; thorax with white hairs; abdomen with recumbent, golden-yellow pile, especially dense on its latter part; femora black; tibiæ red; middle tibiæ before the middle with a tuft of black pile.

"Head and face clothed with white pile; some black bristles above the mouth and also on the upper part of the occiput. Thorax black (the dorsum is greasy on my specimen), with long, soft, white pile; the usual bristles black. Halteres lemon-yellow; trichostical pile rather

dense, pale yellow. Abdomen black, polished, finely and sparsely punctate; segments, beginning with second, clothed with recumbent, silky, golden-yellow hair, growing gradually more dense on each subsequent segment; this hair is less dense at the bases of segments 2-5; sides and under side (venter) beset with long yellow hair. Femora black, with white pile; tibiæ red, with white pile and black and white bristles; the middle tibiæ on the anterior side, before the middle, are ornamented with a conspicuous tuft of black bristles, projecting on each side; hind tibiæ with a brownish ring a little before the middle; (fore tarsi above clothed with dense white pile, especially on segment 1.—E. A. B.). Wings feebly tinged with yellowish-brown on the proximal two-thirds, the rest hyaline; fourth posterior cell coarctate; anal cell slightly open."

*Type*.—M. C. Z. A single male specimen.

*Habitat*.—Type locality—"foot-hills of Mariposa County, Cal., on the road to Clark's Ranch, beginning of June."

Prof. C. W. Johnson possesses a female specimen from Los Angeles Co., Cal., which is 11-12 mm. long. The abdomen is more robust and the wings are tinged at the base and along the middle in front, much as in type male. The tibiæ and tarsi are wholly reddish, but as might be expected, there is no brush of black bristles and hair on the middle tibiæ. Prof. Johnson also possesses a male from the same locality, the wings of which are a clear hyaline. There is another specimen at the National Museum, also from California. I do not regard *cirrhatus* a good *Pycnopogon*; it agrees more closely with *Heteropogon*.

Mr. P. R. Jones (loc. cit.) states that two males from War Bonnet Cañon, Sioux Co., Neb., answer the description in all respects except that the tip of the abdomen is red and the specimens are larger, being about 12 mm. in length.

### STICHOPOGON.

*Stichopogon* Loew, *Linnaea Ent.*, II, 499, 1847.

*Stichopogon* Schiner, *Fauna Austr.*, I, 128, 1862.

Elongate species of from very small to medium size, and, for the most part, very bare; vertex extraordinarily widened (Pl. IV, fig. 7), evenly, but not deeply depressed, front rounded and hollowed out, saddle-shaped; ocellar tubercle but little projecting. Face short, without protuberance except at oral margin, of moderate breadth, and narrowed above; bristles

or pile of mystax mostly confined to a dense row on the dome-shaped oral margin, but sometimes extending upward on the face. Eyes swollen in front, the fore part with much larger facets; the facial and frontal orbits forming a distinct angle with each other. Antennæ (Pl. III, fig. 9) short, approximate, situated midway between the oral margin and the vertex: first two segments short, subequal; third, elongate, tapering, over one and one-half times the length of the first two taken together; style, distinct, a little less in length than the first two segments and composed of a long cylindrical basal segment, and a short bristle-like terminal appendage. Thoracic dorsum somewhat flattened, usually with but two or three distinct bristles on each side; one immediately before the transverse suture, and one or two post alar. Trichostical pile or bristles present. Abdomen rather elongate, flattened, with bristles on the sides of the first segments; male genitalia extremely small and often retracted within the last segment. Legs moderately robust, the femora sometimes quite robust and swollen; the anterior tibiæ without a terminal claw-like spur. Wings normal; the submarginal and posterior cells wide open, the anal cell closed a short distance before the margin, the fourth posterior cell petiolate, sessile, or open at its base.

*Type*.—*Dasyopogon elegantulus* Meigen.

#### SYNOPSIS OF SPECIES.

1. Scutellum with well-developed pile or bristles.....2.  
Scutellum without noticeable pile or bristles.....3.
2. Head and thorax blackish; abdomen and legs sordid yellow;  
length 3 mm.....**fragilis**.  
Wholly black; everywhere silvery-white pruinose; length 6-8 mm.  
**argenteus**.
3. Thoracic dorsum with anteriorly dilated geminate brown stripe,  
abdomen reddish .....**abdominalis**.  
Thoracic dorsum without a distinct geminate stripe; abdomen  
black, trifasciate with white..... **trifasciatus**.

#### **Stichopogon abdominalis** n. sp.

♂ ♀.—Length ♂, 6.7-7.5 mm.; ♀, 8 mm.—Head and thorax black; wholly grayish-white pruinose except two larger spots on the vertex confluent with the orbits and a moderately wide, anteriorly dilated,

geminate stripe on the dorsum which are rich velvety brown. Abdomen reddish-yellow; the tergum where not covered with whitish bloom, a rich reddish-brown. Wings hyaline; submarginal and posterior cells open; the fourth posterior at base petiolate in varying degree.

Antennæ normal, black, covered with whitish bloom. Mystax composed of white bristles confined to the oral margin; front with noticeable pile; occipital bristles white; as in *trifasciatus*, forming a row behind the vertex; beard white and very scanty. The median geminate stripe of thoracic dorsum narrowly divided by a fine line of white bloom; abbreviated anteriorly but posteriorly the two portions separate and becoming more narrow, extend to the scutellum. Microscopic hair of dorsum black, leaving the same two bare areas behind the transverse suture as in *trifasciatus*; two well developed bristles on each side, one presutural, the other on the posterior callosity. Pleuræ without noticeable pile; trichostical bristles white. Scutellum white pruinose; without long bristles or pile. Halteres white. Abdomen a rich reddish-brown above; the anterior and posterior margins of segments 1-4 narrowly white pruinose, the anterior margins of the segments 3-4 much more prominently so; tip of abdomen, venter and the sides of segments 1-4, broadly, of the remaining segments, slightly, whitish pruinose; tergum with microscopic black and white pile; the bristles on the sides of segment 1 white. Legs black, wholly, but not densely, white pruinose; the trochanters, tibiæ and tarsi for the most part reddish; claws black, reddish at base; pulvilli sordid.

The female differs from the male in that the tergum of the abdomen is darker and all the segments of the abdomen broadly whitish pruinose on the sides, this bloom extending narrowly upward onto the anterior border of each segment.

*Type*.—Type series consists of three males and one female, all of which are at the American Museum, except one male co-type, which is in the collection of the Massachusetts Agricultural College.

*Habitat*.—Gotha, Fla. (March, 1896, W. M. Wheeler); Winter Park and Orlando, Fla. (April-July, E. A. Back).

This is somewhat smaller species than *trifasciatus* and can be easily separated from it by the coloration of the abdomen and the anteriorly dilated geminate thoracic stripe. It more nearly agrees with the variety of *trifasciatus* mentioned from lower California and Kansas, but is distinct. It is very common in the vicinity of Orlando, Florida, during the last of April and in May, June and July, frequenting sandy spots, especially in and about gardens.

**Stichopogon argenteus.**

*Dasyopogon argenteus* Say, Jour. Acad. Sci. Phila., III, 51, 1822;  
Compl. Works, II, 65.

*Dasyopogon argenteus* Wiedemann, Auss. Zw., I, 409, 1828.

♂ ♀.—Length 6–8.5 mm.—Black, but wholly silvery-white pruinose; pile and weak bristles entirely white. This is a smaller insect than *trifasciatus* and much more pilose. The mystax is more abundant and extends upward somewhat on the face; the pile on the basal segments of the black antennæ and along the frontal orbits is very fine. Occipital bristles of *trifasciatus* are here reduced to fine hair and the beard is more abundant and longer in proportion. Palpi and proboscis black. Dorsum and pleuræ of thorax with fine pile much longer than that of *trifasciatus*; the presutural and postalar bristles reduced to hair and sometimes absent; scutellum with a fringe of fine long hair. Abdomen immaculate, with fine pile; particularly noticeable on the lateral margins of the segments. Legs wholly white pruinose with fine bristles and silky white pile; claws black; pulvilli sordid white. Wings pure hyaline, with violaceous reflections; fourth posterior cell decidedly petiolate at base. All the submarginal and posterior cells open; anal cell closed before the margin.

*Type*.—Lost.

*Habitat*.—Atlantic States; not rare on seabeaches; Avalon, N. J. (July 29, C. W. Johnson); N. J. (Aug. 15 and 27, E. Daecke); Lake Frost, Ill. (J. G. Needham); Los Angeles Co., Cal. (D. W. Coquillett).

Prof. C. W. Johnson, of whom I have received specimens of this species, says that he has taken specimens in goodly numbers on the sandy stretches of New Jersey. I have also seen it in sandy places at Bedford, Mass.

**Stichopogon fragilis** n. sp.

♀.—Length about 3 mm.—Head and thorax blackish, everywhere thinly dusted with a grayish bloom, which on the front is more brownish; abdomen and legs sordid pale yellow except the last tarsal segment, which is blackish; wings pure hyaline, in certain light slightly whitish, vioulescent; all five posterior cells present and wide open; anal cell closed and slightly petiolate; halteres cream-colored.

In structure like the larger species, but the third antennal segment is a little more swollen at the base. Mystax white, confined to the oral margin; the sparse weak bristles of the occiput white; dorsum of thorax with scant, short white pile and longer white bristles, one on either side before the transverse suture and two upon the posterior callosities; scutellum with a few similar bristles on its posterior mar-

gin; trichostical bristles long and fine. Pile of abdomen sparse, white. Legs, including the coxæ, thinly whitish pruinose with white hair and bristle.

*Type*.—Am. Ent. Soc. of Phila. A single female.

*Habitat*.—Alamagorda, N. M. (April 24, '02, H. L. Viereck).

This is one of the smallest Asilids known to me. It seems out of place beside *trifasciatus*, but is about the size of *tener* and *barbistrellus* of Europe, specimens of which I have for comparison.

**Stichopogon trifasciatus** (Pl. IV, fig. 9; Pl. X, fig. 7).

*Dasyopogon trifasciatus* Say, Jour. Acad. Sci. Phila., III, 51, 1822: Compl. Works, II, 64.

*Dasyopogon candidus* Macquart, Dipt. Exot., Suppl., I, 67, 1846.

*Thereva plagiata* Harris, Cat. Ins. Mass. (mss. name).

*Thereva plagiata* Walker, List, I, 223, 1848.

*Dasyopogon fasciventris* Macquart, Dipt. Exot., Suppl. IV, 69; Pl. VI, fig. 13, 1850.

*Dasyopogon gelascens* Walker, Trans. Ent. Soc. of London, n. s., V, 277.

*Dasyopogon candidus* Bellardi, Saggio, II, 78, 1861.

*Stichopogon trifasciatus* Williston, Trans. Am. Ent. Soc., XIII, 289, 1886.

*Stichopogon trifasciatus* Townsend, Proc. Cal. Acad. Sci., IV, 598.

*Stichopogon trifasciatus* Jones, Trans. Am. Ent. Soc., XXXIII, 279, 1907 (locality note).

♂ ♀.—Length 9.5–14.5 mm.—Grayish-white pruinose; the tergum of abdomen velvety black, trifasciate with white. Face, front and occiput, silvery-white pruinose; the front often being grayish-brown pruinose with a deep brown spot close to each orbit and with the orbits broadly clothed with fine white pile. Mystax composed of a row of sordid white bristles on the oral margin; vibrissæ very slight, hardly perceptible; occipital bristles whitish, short, stout, well separated, and arranged in a row just behind the vertex. Posterior orbits of eyes below with fine silky white pile forming a rather scant beard. Antennæ black, whitish pruinose. Thorax wholly grayish-white pruinose, the dorsum with microscopic black hair which is lacking on a triangular spot on each side just behind the transverse suture and before the posterior callosities. One presutural bristle just above the dorso-pleural suture and one postalar on the posterior callosity on each side are the only bristles on the dorsum. Scutellum with a very fine fringe of microscopic pile. Pleuræ nearly bare, the mesopleuræ and the sides of the prothorax with slight white pile; trichostical bristles long, slender, white. Halteres white. Abdomen whitish pruinose, with the exception of the base of the first segment, a large disc on segments 2 and 3

reaching nearly to the anterior and posterior borders, but not over the sides, and segments 5, 6 and 7 above, velvety black. In the female the seventh segment is usually whitish pruinose, while the posterior portion of the fourth is also velvety black; thus the tergum presents a trifasciate appearance. Venter of both sexes wholly grayish-white pruinose. Abdomen apparently bare, with fine microscopic pile and longer pile and bristles on the sides of segment 1. Legs wholly grayish-white pruinose with microscopic hair; the femora stout, swollen; the front and middle pairs with bristles only at their tips, the hind pair with a row before and behind; bristles of femora and tibiae white; of the tarsi black and white. Claws black; pulvilli whitish. Wings blackish hyaline; all the submarginal and posterior cells open, the anal cell closed before the margins, the fourth posterior cell sessile or open at base.

*Type*.—Say's type is lost.

*Habitat*.—Chicopee (July 10-26, F. Knab) and West Springfield (June 28, 1896, F. Knab), Mass.; Conn.; North Woodbury, N. J. (Aug. 1, 1901, C. W. Johnson); Lehigh Gap, Pa. (June 28, 1901, C. W. Johnson); Penington Gap, Va. (Osten Sacken); N. C.; Glen, Sioux Co., Neb. (P. R. Jones); Clark Co., Ks. (June, 1962 ft., F. H. Snow); So. Cal.; N. M.; Mexico.

This is rather a common species inhabiting sandy localities. The duskiess of the wings is variable, sometimes wholly lacking. Variable also is the amount and extent of the white bloom on the tergum of abdomen, although the trifasciate appearance is usually maintained. Two specimens from Kansas, belonging to Prof. F. H. Snow, are somewhat testaceous in color and the second, third, fifth and sixth abdominal segments are velvety opaque black except the narrow laterally widening anterior borders which are covered with the same silvery white bloom as the rest of the abdomen. These thus agree with four specimens from lower California which Prof. C. H. T. Townsend mentions. This is doubtless a variety. Dr. S. W. Williston states that he has seen typical specimens of *trifasciatus* from New England, Kansas, and lower California.



**WILLISTONINA** n. gen.

? *Habropogon* Williston, Trans. Am. Ent. Soc., XI, 10, 1884.

"In structure, except the head, throughout like species of *Stenopogon*, but less pilose. Head considerably broader than high, but scarcely as wide as the thorax. Face very narrow, the eyes separated by an extremely narrow interval from the antennæ; their inner margins above and below gently divergent, so that the distance between the angles below is a little greater than that above. Face in profile gently concave from antennæ to oral margin, nearly perpendicular, wholly bare, except a thin short row of bristles on the oral margin, which is projecting as in species of *Stichopogon*, *Deromyia*, and *Saropogon*; front only gently excavated, widened above. Antennæ (Pl. IV, fig. 5) short, first two segments of equal length, third a little longer than the first two taken together, broad, scarcely more than twice as long as wide, obtusely pointed at the tip and with a very small, almost microscopic style; beard short and thin. Thorax bare, except with very minute hairs, and moderately strong, no abundant bristles on the posterior portion; scutellum with four bristles. Abdomen slender, elongate, cylindrical, broad at the base. Fore and middle femora with two posterior preapical bristles, and the posterior femora with an anterior row of bristles. Fourth posterior cell nearly closed." Fore tibiæ without a terminal claw-like spur.

*Type*.—*Habropogon bilineatus* Williston.

In a recent exchange of insects with Dr. F. Hermann of Germany, I received a specimen of *Habropogon longiventris* Loew, and knowing that Dr. Williston of the University of Chicago, had described (loc. cit. above) a new species which he referred doubtfully to *Habropogon*, I took the liberty of sending him my specimen for comparison. Although his type was at the University of Kansas, he wrote in reply concerning the European *Habropogon* "it is generically very distinct from my *Habropogon bilineatus* in the structure of the face especially. I fear that the latter will require a new generic name. *H. bilineatus* is nearest to *Stichopogon* in structure of head, but differs chiefly in the front and the antennæ." Dr.

Snow has kindly loaned me the type and I find that Dr. Williston is quite right, and that there is little to add to his original generic description found above. The tarsal segments are rather stouter than those of *Stenopogon*, and in addition to the already mentioned preapical bristles there is a single bristle on the upper anterior side of the middle femora near the middle.

I have named this genus in honor of Dr. Williston, to whom belongs the credit for its discovery, and whose description I have compared with the type species and found entirely satisfactory.

**Willistonina bilineatus** (Pl. IV, fig. 5; Pl. VII, fig. 3).

? *Habropogon bilineatus* Williston, Trans. Am. Ent. Soc., XI, II, 1884; Pl. 1, fig. 8.

"♀.—Length 15 mm., of wings 9 mm.—Black, gray pruinose; mystax white; dorsum of thorax yellowish-gray, with two slender opaque black stripes; abdominal segments 1-5 with red borders; under side of all the femora and base of tibiae red.

"Face and mystax white, the former opaque; front a little yellowish-gray, the few short bristles black. Antennae and proboscis both short, black. Dorsum of thorax gray with a yellowish or brownish cast; the ground color of humeri, posterior callosities and scutellum appears to be yellowish-red; in the middle two slender narrowly separated, but very distinct, opaque black stripes, obsolete on posterior part; bristles wholly black. The ground color of the pleuræ apparently in large part reddish, but concealed beneath a dense, very light colored bloom, which also covers the coxæ. Abdomen black, rather thinly yellowish-gray pruinose, the terminal segments more polished, the sides and posterior margins of the first four segments and the sides of the fifth red; the pile is very short; fore and middle coxæ thickly clothed with white pile. Legs black; the under side of all the femora broadly red, the base of the posterior tibiae and the four anterior tibiae, except their tips, red, or yellowish-red. Wings nearly hyaline, veins black."

*Type*.—University of Kansas. A single female specimen.

*Habitat*.—Northern California (O. T. Baron).

There is almost nothing to add to the above description. The bristles on the dorsum of thorax are arranged as follows: a row extending from the lateral margin before the transverse suture upward and backward over the base of the wing, three on each posterior callosity, two on each side of the scutellar margin, and two rows of shorter bristles on the posterior por-

tion of the dorsum, well outside of and parallel to the median stripe.

So far as I know this is the only specimen of this species recorded. Both antennæ had lost the third segment and style before being sent to me for study.

### CALLINICUS.

*Callinicus* Loew, Cent., X, 32, 1872.

*Callinicus* is close to *Deromyia* in form of body, but is easily separated from it by the absence of the tibial spurs. Head moderately broad, face broad, the whole slightly convex; mystax of stiff hairs extending up to the antennæ, longer near the oral margin. Antennæ of moderate length, not approximate, the basal segments short, cylindrical, the first stouter and a little longer than the second, both well clothed with bristles and hair; third segment longer than the first two taken together, of nearly equal width throughout; style short, distinct, stout at base, tapering to a point, apparently two-jointed. Thorax moderately convex, with short hair on the dorsum and with well-developed bristles on the posterior margin of the scutellum, on the posterior callosities, and forming a double row over the base of the wing; there are also a varying number of scattered shorter bristles on the dorsum before the scutellum. Abdomen stout, moderately convex, toward the tip but little attenuated. Legs rather long, strong, lightly pilose; the hind tibiæ toward the apex not thicker. The fore femora on the hind side above, the middle pair on the anterior side and again on the upper posterior side at the tip, and the hind pair on the anterior side above and at tip, with scattering bristles; the tibiæ and tarsi with bristles as usual; the terminal bristles of the middle tibiæ on the inner side are directed inward, while in all the other genera of the *Dasyopogoninæ* except *Chrysoceria*, they are directed more downward; claws well developed, pulvilli normal. All the submarginal and posterior cells wide open; the wings when folded nearly equaling the abdomen in length.

*Type*.—*Callinicus calcaneus* Loew.

**Callinicus calcaneus** (Pl. VI, fig. 2).

*Callinicus calcaneus* Loew, Cent., X, 32, 1872.

*Callinicus calcaneus* Osten Sacken, Western Diptera, 291, 1877.

*Dasyopogon bilimatum* Bigot, Annales, 1878, 411.

♂ ♀.—Length 13.5–19 mm.—Reddish-brown, polished; bloom of head, humeri and pleuræ, deep golden; thoracic stripes black, legs wholly yellowish-red; wings dark yellowish-brown with purplish reflections; pile and bristles of entire body golden or reddish.

Reddish; the thorax and abdomen of a deep reddish-brown; the pleuræ even darker. Head everywhere, except on ocellar tubercle, thickly deep golden pruinose; basal segments of the antennæ reddish; the third segment black, sometimes reddish at base below; style black. Proboscis and palpi black, the latter well haired. The thoracic stripes black, somewhat obscured by a grayish bloom; the median stripe narrowly bisected by a line of short golden hair; the lateral stripes greatly abbreviated anteriorly and separated from the median stripe by a narrow line of pale ground color and a row of short hairs; the stripes themselves are bare. Humeri densely golden pruinose, the lateral margins of the dorsum more obscurely so; metanotum, and to some extent the pleuræ, blackish, but densely golden pruinose. Base of the first abdominal segment black; the posterior margins of the remaining segments for the most part narrowly black or blackish, the lateral margins more broadly so; posterior angles of the first segment rich golden pruinose, those of the second, third and fourth segments whitish pruinose. Venter polished red, the several segments black on extreme distal margin, and on the base with a pale pruinose fascia, sometimes not in evidence. Legs wholly yellowish-red; the hind metatarsi variable, concave on the inner side, on the outer side convex, this effect being strengthened by the arrangement of the hair; claws black; yellow at base. Pile of body short, on the thoracic dorsum and abdomen quite so, wholly golden; the bristles of the head, thorax and scutellum verging toward vulpinous; pleuræ with a varying amount of short pile; trichostical hair long. Wings brownish, toward the costa and axillary cell sordid yellow; veins blackish, the costa and subcosta brown; the veins bordered with black in varying degrees; wings in certain lights with deep purplish reflections.

*Type*.—M. C. Z. Two male and seven female specimens.

*Habitat*.—Cal.; Cisco (June, elev. 5,000 ft.), San Rafael (Marin Co., May 27, O. Sacken), Cal. Not rare in California.

**CHRYSOCERIA.**

*Chrysoceria* Williston, Jour. N. Y. Ent. Soc., XV, 1, 1907.

*Chrysoceria* Williston, Manual, 1907.

Species resembling *Callinicus* as regards general shape of head and wings, and in the possession by the middle tibiæ of

two spines situated at the tip on the inner side and directed inward at a distinct angle, but the abdomen is shorter, of nearly equal width throughout and more cylindrical.

Head a trifle broader in proportion than in *Callinicus*; face very broad, of nearly equal width throughout, without protuberance, somewhat swollen, distinctly visible in profile, everywhere clothed with sparse, short hair, on the oral margin with longer but not dense weak bristles. First two segments of antennæ short, the second a trifle shorter than the first; the third longer than the first two taken together, of nearly uniform width, tapering somewhat toward tip; style short, thick, tapering, two-jointed, the first segment very short, "collar-like," the second longer and bearing a minute distal spine. Basal segments of antennæ with bristly hair above and below. Front subequal in width to the face, not noticeably widened above, the vertex distinctly depressed, ocellar tubercle rather large, and bearing bristles. Thorax moderately well arched, with rather prominent bristles, especially on the posterior portion of the dorsum; on the anterior portion they are much shorter and arranged in an indefinite line on either side of the median stripe. Scutellum with two or three well-developed bristles on either side of the posterior margin. Abdomen elongate, but shorter in proportion than in *Callinicus*, more cylindrical, of nearly equal width throughout in the male, in the female, slightly tapering toward the tip; in both nearly bare; male genitalia very small, somewhat resembling those of *Ceraturgus* or *Dizonias*; female ovipositor with a circlet of spines. Legs moderately stout, the front tibiæ *not armed at tip with a true terminal claw as found in Deromyia*, but with one or two straight stout spines accompanied by several other slightly weaker ones; the middle tibiæ at tip on the inner side armed with two spines projecting *inward at a distinct angle*; hind metatarsi proportionately quite long; pulvilli normal. All the submarginal and posterior cells widely open, the anal cell narrowly so.

*Type*.—*Laparus* ? *pictitarsis* Bigot.

**Chrysoceria pictitarsis** (Pl. VI, fig. 6.)

*Laparus* ? *pictitarsis* Bigot, Annales, 1878, 417.

*Laparus* ? *pictitarsis* Williston, Trans. Am. Ent. Soc., XI, 25, 1884.

*Chrysoceria pictitarsis* Williston, Jour. N. Y. Ent. Soc., XI, 1, 1907.

♂ ♀.—Length 10–13 mm.—Black; head, thorax and abdomen almost wholly densely golden pruinose, except two median stripes and two large lateral spots on either side of the thoracic dorsum and the basal portion of the abdominal segments except the first, which are black. Legs yellow; the femero-tibial articulations above, tips of all the tibiæ and of the tarsal segments blackish; wings hyaline, tinged with yellow.

Antennæ, palpi and proboscis black, and clothed with the same golden pile and hair as found upon the face, front, occiput and thorax; occipito-orbital bristles numerous, short, stout; the hairs on the anterior portion of the thorax short and bristly; the bristles as in generic description; pleuræ with fine, sparse pile upon the meso- and sternopleuræ, and with longer trichostical hair. The two median black stripes on the thoracic dorsum are well separated by golden bloom, and greatly abbreviated behind; the two large black spots on either side are distinctly separated by golden bloom along the transverse suture. Scutellum golden pruinose, with two or three bristles on either side of the posterior margin. Abdomen both above and on venter wholly and densely golden pruinose except the last and sometimes the penultimate segment, which is polished black; also the bases of all the other segments excepting the first, more or less polished black; this polished black is greater in extent upon the second and third segments, but can be noticed on all the others, sometimes only as a line (this depends somewhat on how the abdomen is held); on all the segments the black area is narrow on the middle of the tergum, but widens posteriorly on the sides, so that it is in some specimens very prominent. Male genitalia polished black, with fine golden pile. Legs yellow; the coxæ, femero-tibial articulations above, tips of all the tibiæ and metatarsi, and the greater part of the remaining tarsal segments black; coxæ golden pruinose; bristles and hair of legs golden, those on the distal tarsal segments black; the spines on the tip of the front and middle tibiæ black. Wings hyaline, tinged with yellow, a little deeper colored along the costa toward the base; veins brown; venation normal.

*Type*.—Bigot collection.

*Habitat*.—California (type); Los Angeles Co., Cal. (D. W. Coquillett); near Lander, Wyo. (500 to 8,000 ft. elev., Sept., Roy Moodie).

The two specimens, a male and a female, collected by Mr. Coquillett are at the National Museum. The Wyoming specimen is a female in the possession of Dr. Williston; it is somewhat larger than the specimens taken by Mr. Coquillett, and has a crushed and greased thorax; its femora are black instead of yellow, and the hind pair are a trifle more bristly. However, the abdomen is the same except that the last two segments instead of the last segment, are polished black, and the polished black areas at the base of the segments are larger; the spines at the tips of the front and the middle tibiae are the same. Were several more specimens taken like the Wyoming one, and showed no variation, I should be inclined to believe them a new species.

I believe that Monsieur Bigot was quite right in placing *pictitarsis* doubtfully under *Laparus* Loew, and that Dr. Williston is wholly right in considering it as representing a new genus. Loew, in his *Bemerkungen über die Familie der Asiliden*, thus characterizes *Laparus* (now *Neoloparus* Williston), "da sie in der Körpergestalt und vor allem im Flügelgeader den *Dioctrien* sehr nahe steht, während sie sich freilich im Baue der Fühler von ihnen wieder sehr wesentlich unterscheidet." Of his typical species *Laparus tabidus*, from Brazil, Loew writes, "Kopf wie bei einer *Dioctria*; Gesicht sehr breit und flach; die Fühler stehen weder auf einem Höcker noch auf einem Wulst; die beiden ersten Gleider kurz, von gleicher Länge; das 3te Glied gestreckt, eiförmig, am Ende mit einem ganz kurzen Griffel, dessen Grundglied napfförmig ist und in seiner Endvertiefung das kaum bemerkbare griffelförmige Endglied tragt." And of the anterior tibiae, "mit einem gekrümmten Enddorn, welcher sich an einem Höcker anlegt, der sich unten an der Basis des ten Fussgliedes findet." As Dr. Williston says, there is no terminal claw-like spur at the end of the anterior tibiae in *pictitarsis*, and that this fact was the source of Monsieur Bigot's doubt I have no question for, in describing the tibial spine of his specimen, he placed "*a peu pres droit*" in italics.

**SAROPOGON.**

*Saropogon* Loew, Linnæa Ent., 439, 1847.

*Saropogon* Loew, Bemerk. über Asil., 5, 1851.

*Saropogon* Schiner, Fauna Austr., I, 125, 1862.

*Saropogon* Schiner, Verh. Zool.-Bot. Ges., XVI, 653, 1866.

Comparatively naked species. Head obviously broader than high; face bare, in profile slightly convex above, rather concave below, oral margin most prominent and bearing a row of stout bristles forming the mystax; face and front quite broad, the face scarcely narrowed above, the front hardly depressed, ocellar tubercle large. Antennæ well separated, segments 1 and 2 cylindrical, subequal, clothed with stiff hair, segment 3 longer than the first two taken together and usually with some short stiff hair above, and bearing a short thickened style of varying structure. Thorax moderately arched, dorsum with short stiff hair, and on the sides, posterior callosities, and before the scutellum usually with well-developed bristles; the scutellum, in all the following species except *abbreviatus*, with two or four well-developed bristles. Abdomen long, moderately robust, somewhat flattened in the female, more cylindrical in the male. Legs stout, hind femora not thickened, the front tibiæ with a prominent claw-like spur. First posterior cell of wing wide open, closed, or closed and petiolate; the fourth posterior open, or closed, but never, where closed, with a long peduncle.

Dr. Williston in Trans. Am. Ent. Soc., XII, p. 290, says, in speaking of *Saropogon* and *Deromyia*, that "there is absolutely no discovered character that will separate these genera. Still the multitude of species of *Deromyia* renders the retention of *Saropogon* imperative." This is true; the difference between the genera can be felt better than described. The species of *Saropogon* as a whole, have a proportionately much stouter abdomen; *luteus* is somewhat of an exception, being in this respect more like the *Deromyia* type. While the fourth posterior cell of *Saropogon* species is variable, that of *Deromyia* species is not, and in the latter is usually closed relatively quite distant from the margin, while in the former it is more often open, but when closed, with only a slight peduncle.



The tendency where the male is black, for the female to be reddish is quite marked in this genus, and furnishes interesting study, and in my own case, has led to the uniting of *adustus* and *combustus*, and *abbreviatus* and *bicolor*.

## SYNOPSIS OF SPECIES.

1. Scutellar bristles normal in length..... 2.
- Scutellar bristles reduced to denticles ..... **abbreviatus.**
2. Abdomen black..... 3.
- Abdomen reddish..... 4.
3. Bristles of coxæ white; femora with reddish stripe before. **dispar.**
- Bristles of coxæ black; femora wholly black..... **combustus.**
4. Venter black..... 5.
- Venter reddish..... 7.
5. Wings brown or blackish..... 6.
- Wings hyaline; *decoloratus*..... **coquillettii.**
6. All the femora with large black vittæ above..... **dispar.**
- All the femora without black vittæ above; usually wholly reddish. **combustus.**
7. Wings hyaline; fuscous along veins..... **luteus.**
- Wings entirely hyaline..... 8.
8. Dorsum of thorax densely grayish pruinose; length 10 mm.
- semiustus.**
- Dorsum of thorax yellowish-gray pruinose with three brown stripes; length 13 mm..... **hyalinus.**

**Saropogon abbreviatus.**

*Saropogon abbreviatus* Johnson, Psyche, X, 113, 1903.

|| *Saropogon bicolor* Johnson, Psyche, X, 113, 1903.

♂ ♀.—Length 9–12 mm.—Distinguished from all species here included by its rather short stout abdomen; the minute pustules bearing very short hairs upon the dorsum of the thorax and abdomen, and by denticles (about six) instead of long bristles upon the scutellar margin. The male is black; the female, as far as known, has the abdomen reddish.

♂.—Wholly black; face, front, occiput and the upper portion of the mesopleuræ and the dorsum of the thorax silvery white pruinose, the bloom of the dorsum, except on the humeri, lateral margins and scutellum, very thin and showing a trace of a faint median darker stripe; remainder of pleuræ, except a brownish pruinose area above the hind coxæ, polished. Antennæ wholly black; segment 3 seems a little more slender than in *combustus* or *dispar*. Thoracic dorsum and tergum of abdomen thickly covered with minute pustules bearing short stiff hairs which give the entire body, when viewed from above, a

punctate appearance. The bristles before the transverse suture of the thoracic dorsum much shorter than in the other species, upon the posterior callosities are very much reduced, and upon the posterior margin of the scutellum there are about six reduced to mere denticles; the remainder of the scutellum above bears the same short bristly hair as the thoracic dorsum. Halteres yellowish. Abdomen rather short and stout. Legs black. Mystax and short bristles and hair of entire body and legs black. Wings brown or black; veins black, the fourth posterior cell narrowly open.

♀.—Like the male in body structure and presence of bristly pustules, but as in *combustus* and *dispar*, the female is more reddish. Head, black; mystax and pubescence of face yellow; antennæ reddish, becoming dark brown toward the tip; proboscis black, slightly brownish at the base. Thorax black as in the male, but the lateral margins of the scutellum and the metanotum are brownish and the bloom is yellowish, not silvery-white. The first and seventh segments of abdomen black, the others red, with the lateral margins black; the posterior margin of the second segment is narrowly black, on the other segments the black of the lateral margins extends upward but slightly on the posterior margin. Halteres and legs reddish; coxæ, tips of hind femora and the bases of the tibiæ, with a very narrow black ring, the last segment of the front and middle tarsi also black; spines of tibiæ few in number, mostly white, those on the tarsi numerous and black. Wings light brownish, the veins on the basal half bright yellow; the fourth posterior cell closed and slightly petiolate or narrowly open.

*Type*.—The unique type of both *bicolor* and *abbreviatus* are in the collection of Prof. C. W. Johnson, Curator of the Boston Society of Natural History.

*Habitat*.—Near San Antonio (type), and Cotulla (J. C. Crawford, May 5, 1905), Texas. Mr. Crawford captured his specimen on *Coreopsis cardaminefolia*.

Because of the denticles of the scutellum, the bristly pustules and the rather "chunky" build, this species seems rather out of place with the other forms now included in this genus from the United States. Prof. Johnson hesitated in placing it in this genus and did so only after showing specimens to Mr. Coquillett, who at that time thought that the species did not possess sufficient characters to warrant its separation from *Sarapogon*. Mr. Coquillett, however, now is inclined to believe that it should be placed in a new genus. I agreed with him at first, but recently have seen, through the kindness of

Dr. Williston, his specimen of his Mexican *pulcherrimus*, and through that of Dr. Hermann of Germany, Loew's *notatus*, in both of which there are *no* bristles or denticles on the scutellar margin, and the abdomen of *pulcherrimus* is quite similar in shape to that of *abbreviatus*.

There are in the National Museum specimens of *abbreviatus* and *bicolor* pinned in *coitu*, thus proving that they are the same species. This is what one might expect in this genus (see notes on *combustus* and *dispar*.)

Prof. Johnson's *bicolor* is a female, not a male, as published. The specific name *bicolor* was used by Jaenicke in 1867 in his *Neue Exotische Dipteren*.

### **Saropogon combustus.**

*Saropogon combustus* Loew, Berl. Ent. Zeit., 1874, 373.

*Saropogon adustus* Loew, Berl. Ent. Zeit., 1874, 375.

*Saropogon combustus* Williston, Tr. Am. Ent. Soc., XI, 23, 1884.

*Saropogon adustus* Jones, Trans. Am. Ent. Soc., XXXIII, 279, 1907 (doubtful determination from Nebr.).

*Saropogon dustus* Howard, Insect Book, 1902, Pl. XIX, fig. 8.

♂ ♀.—Length 13.5-15 mm.—Male.—Black; legs and wings of the same color; head and dorsum pale golden pruinose; pleuræ reddish-brown pruinose; mystax white; coxæ black with black bristles. *Female*.—Head and abdomen reddish; segments 1-5 of latter black on the sides and with the posterior lateral margins whitish pruinose; wings yellowish.

♂.—Black; face, front, occiput, dorsum and scutellum light golden pruinose; the dorsum when viewed from before, nearly uniformly pruinose, when viewed from above, showing indistinct traces of a dark median geminate stripe and two lateral stripes greatly abbreviated anteriorly; pleuræ and coxæ dark brown pruinose. Mystax white; bristles of antennæ, frontal orbits, ocellar tubercle, upper occiput and on the thoracic dorsum and scutellum yellowish; the fine hair of the thoracic dorsum of same color, finer and longer than in *dispar*; clothing of rest of occiput, palpi, proboscis, prothorax, hypopleuræ, coxæ and abdomen wholly black, polished, the pile being very short on the tergum of abdomen, longer and thicker on the sides and venter. Hypopygium black. Legs black; all the bristles whitish except a few on the hind tibiæ; pile of femora black, short on the upper side, longer beneath; front and middle tibiæ appear less black than the hind pair, due to the nearly uniform paleness of their hairs; the short, almost rust-brown hair of the tarsi give them a pitchy-brown appearance in many specimens. The third antennal segment and the tibiæ and tarsi are sometimes pale.

♀.—Reddish-brown; antennæ, palpi and legs of same color; head and entire thorax light golden pruinose, on the thoracix dorsum nearly concealing the three usual stripes. Abdomen reddish; posterior lateral margins of segments 1-5 white pruinose; the extreme base of the first segment, the broad anterior portion of the following four, the remaining segments on the sides narrowly, and the venter black; on segments 2-4 the black band is much narrowed in the middle, on segment 5 usually interrupted. Halteres reddish. Legs usually without any traces of black on the femora. Wings yellowish hyaline, apex broadly blackish. Clothing of entire body pale yellow and reddish, the short fine hair of the abdomen often being black on the black areas.

*Type*.—Types of both *adustus* and *combustus* are at the M. C. Z.

*Habitat*.—Clarendon (C. R. Jones, Aug. 11), Tex.; Wallace, Grove, and Hamilton Counties (F. H. Snow, July, 3,000 ft.), Ks.; Ft. Collins (July 11), Col.

I have seen the types of both *adustus* and *combustus* and, with the small amount of material at Loew's disposal, they appear distinct enough. Nevertheless the examination of a considerable number of specimens of both species has led me to consider *adustus* the female of *combustus*. My reasons are that *combustus* is always represented by males and *adustus* by females; that they are collected at the same time and place; that *adustus* shows the same line of variation from *combustus* as does the female of *dispar*, a nearly related species, from its male, and as does *bicolor* from *abbreviatus* which I have recently seen in coitu. So while I have never seen *combustus* and *adustus* in coitu, or been able to form a complete gradation from one to the other as can be done with males and females of *dispar*, I feel confident that future collecting will bear me out in uniting the two.

#### **Saropogon coquillettii** n. sp.

♂ ♀.—*Length* 14-16 mm.—Thorax grayish-white pruinose, yellower on the dorsum; scutellum with four bristles: abdomen slender, reddish, with white pruinose and black spots on the sides; the black spots sometimes forming cross-bands over the tergum; hypopygium and venter black; wings hyaline, not black or brown.

♂.—Ground color of head and thorax black. Head wholly white pruinose; the dense row of bristles forming the mystax; the occipital and frontal bristles and beard white; antennæ, palpi and proboscis

black with white pile. Thorax densely grayish-white pruinose, tinged with yellow on the dorsum; the geminate and lateral stripes on the latter opaque, and appear but faintly. Pleuræ with no pile; the trichostical bristles long and fine. Scutellum with four bristles; bristles and pile of entire thorax whitish, the bristles on the whitish pruinose coxæ rather fine. Halteres dull yellow, knobs dark. Abdomen reddish, polished, the posterior lateral margins of segments 1-5 white pruinose; anterior to each of these pruinose spots on segments 3-5 is a black spot; on segment 3 small, but larger on segments 4 and 5; these sometimes extend upward along the anterior margin of their respective segments and meet on the tergum. There is a slight trace of a black spot between the white bloom on segment 1. Venter black; segments 1 and 2 reddish; the posterior margins of segments 2-4 whitish pruinose. Hypopygium black, with black and white pile; rest of abdominal pile fine, white, longer on the sides. Legs black; the distal portion of all the femora, the outer basal half of the tibiæ and the tarsi yellowish-red; the tarsi often brownish-red. Femora without bristles, with fine silky white pile, shorter above, longer below; the pile and bristles of the tibiæ more yellowish; those of the tarsi reddish-brown. Claws black, reddish at extreme base; pulvilli pale. Wings nearly hyaline, slightly darkened toward the tip; fourth posterior cell open.

♀.—Differs from the male in that the antennæ, except tip, and the legs except the tips of the tibiæ and of the tarsal segments, are yellowish-red. Segments 3-5 of the abdomen have the same black areas before the pruinose spots, but these are confined to the sides, and do not extend upwards to meet over the tergum.

*Type*.—U. S. N. M., Cat. No. 10329. One male and one female. There is also a male metatype at the American Museum.

*Habitat*.—Las Cruces, N. M. (C. H. Townsend, Aug. 23); Laredo, Tex. (Aug. 7).

In general appearance *coquillettii* more closely resembles *semiustus*, *hyalinus* and *luteus*, but can be at once separated from them by its possession of four, instead of two, scutellar bristles. It can be separated from *combustus* and *dispar* by its more slender build, smaller size, and nearly hyaline wings.

I take pleasure in naming this species in honor of Mr. D. W. Coquillett as an acknowledgment of my appreciation of the help which he has willingly given me.

**Saropogon dispar** (Pl. VII, fig. 4; Pl. VIII, fig. 2).

*Saropogon dispar* Coquillett, Jour. N. Y. Ent. Soc., X, 139, 1902.

♂ ♀.—Length 20-23 mm.—*Male*.—Black; face and front silvery pruinose; thoracic dorsum with three broad black stripes; femora with

a reddish vittæ on the anterior side, often connected at the apex with a shorter one on the posterior side; wings deep brown or blackish. *Female*.—Varies from a black form similar to the male, to one with thorax, abdomen and legs reddish, and with much lighter wings.

♀.—Black; face, front and occipital orbits silvery-white pruinose; palpi, antennæ and the proboscis black, hairs and bristles on these, the mystax, frontal and occipital bristles, clear or sordid white, Dorsum of thorax, pleuræ, scutellum and coxæ densely yellowish-gray or grayish pruinose; the dorsum with three broad blackish stripes, the median one divided by a fine grayish line. All the bristles of the thorax sordid white, the short hair on the anterior portion of the dorsum black; pleuræ bare, without pile or bristles except before the yellowish halteres. Abdomen robust, tinged with blue, the sides of the first segment and the posterior lateral margins of the three following grayish pruinose; genitalia wholly black. Hair of the abdomen longer on the sides and venter black, except on the pruinose areas, where it is often white. Legs black, the fine bristles of all the coxæ white; all the femora before with a narrow reddish stripe sometimes connected over the apex with a similar stripe behind; basal portion of the segments of the middle and hind tarsi reddish. Bristles on the fore tibiæ and on all the tarsi sordid white; on the middle and hind tibiæ black; the white hair-like pile on the hind femora very noticeable. Wings brownish or blackish, darkest along the costa and at the apex; fourth posterior cell closed at the margin or narrowly open.

♂.—Reddish-brown; antennæ, palpi and base of proboscis of same color. Bloom of head and thorax more golden and the stripes of the thoracic dorsum less distinct, and all the pile and bristles of the entire body yellowish. The posterior lateral margins of the abdominal segments 1-5 and the venter of segments 2-4 whitish pruinose; the pleuræ and lateral spots on all the segments and the venter black. Legs wholly reddish-brown; all the femora above with a black vitta not reaching the apex. Wings much paler than in the male.

*Type*.—U. S. N. M., Cat. No. 6313. Type series, seven males and seven females.

*Habitat*.—Cuero (June 6), Columbus (E. A. Schwarz), and Runge (J. C. Crawford, Aug. 14), Tex.; Ardmore (C. R. Jones, July 11), Okla. (I. T.).

I have seen the type series and also a series of three males and nine females belonging to the U. S. Bureau of Entomology and now also at the National Museum. While the male is nearly constant in color, I found a gradation in the female from a black form similar to the male to a reddish-brown form like the one described above. This gradation is best brought out in the Bureau material bearing the "Hunter" labels.

**Saropogon hyalinus.**

*Saropogon hyalinus* Coquillett, Proc. Ent. Soc. Wash., VI, 185, 1904.

♂ ♀.—“Length 13 mm.—Very similar to *luteus*, except that the mesonotum is rather densely yellowish-gray pruinose and marked with three brown stripes, and the wings are pure hyaline.” There are two scutellar bristles.

*Type*.—U. S. N. M., Cat. No. 8037. One male and one female.

*Habitat*.—Los Angeles Co., Cal. (Coquillett).

**Saropogon luteus.**

*Saropogon luteus* Coquillett, Proc. Ent. Soc. Wash., VI, 185, July, 1904.

*Saropogon rufus* Back, Can. Ent., XXXVI, 290, Oct., 1904.

♂ ♀.—Length 11–17 mm.—Reddish-yellow; apices of antennæ, tip and upper side of proboscis, front and occiput of head, a line on the distal margin of the trochanters and the claws black; all the hair and bristles yellow; mystax whitish. Head, except on the vertex, golden pruinose, pleuræ and thorax in front of the humeri also golden pruinose, but less densely so; scutellum with two bristles. Abdomen slender, polished, nearly bare; posterior lateral margins of segments 2–5 yellowish pruinose. Wings hyaline, slightly fuscous along the brown veins and in the costal cell; fourth posterior cell rather broadly open.

*Type*.—U. S. N. M., Cat. No. 8036. Type series consists of three males and three females. The type of *rufus*, the description of which was in press at the time of the publication of *luteus*, is in the collection of Prof. C. W. Johnson, Curator of the Boston Society of Natural History.

*Habitat*.—Los Angeles Co. (Coquillett, June), and Tehachapi (A. P. Morse, Aug. 2), Kern Co., Cal.

This species may be distinguished from the other species by its much slenderer abdomen and uniformly reddish color.

**Saropogon semiustus.**

*Saropogon semiustus* Coquillett, Proc. Ent. Soc. Wash., VI, 186, July, 1904.

*Saropogon albifrons* Back, Can. Ent., XXXVI, 291, Oct., 1904.

♂ ♀.—Length 10 mm.—Black, slender; the abdomen, except the first segments and the apices of the femora, reddish-yellow; all the hairs and bristles of entire body whitish. Head everywhere white pruinose; thorax densely grayish pruinose. Third segment of antenna tapering from the middle to the tip, one and one-fourth times as long as the first two; the style very small. Scutellum with two bristles;

halteres yellowish. Abdomen polished; segment 1, especially on the sides, and the posterior lateral margins of segments 2-5, whitish pruinose. Wings hyaline; fourth posterior and anal cells open. *In the female* the basal segments of the abdomen, the entire legs, the palpi, and often the antennæ are reddish, and the thoracic dorsum, upper pleuræ and scutellum more brassy-yellow pruinose, while the lower pleuræ and coxæ are whitish pruinose.

*Type*.—U. S. N. M., Cat. No, 7960. The two co-types of *albifrons*, the description of which was in press at the time of the publication of *semiustus*, are at the University of Kansas.

*Habitat*.—San Diego, Cal. (type, Coquillett); Bill Williams Fork, Ariz. (F. H. Snow, Aug.).

This species is similar in form to *combustus* and *dispar*, though not as robust. It will be easily separated from *hyalinus*, which it most closely resembles, by its smaller size and the dense grayish bloom of the head and thoracic dorsum, which is in sharp contrast to the reddish abdomen. In *hyalinus* the thoracic dorsum is a darker,—a yellowish-brown pruinose.

#### DEROMYIA.

*Deromyia* Phillippi, Verh. Zool.-Bot. Ges., XV, 705, 1865.

*Deromyia* Schiner, Verh. Zool.-Bot. Ges., XVI, 653, 1866.

*Diognites* Loew, Cent., VII, 36, 1866.

*Deromyia* Van der Wulp, Tijdsch. V. Ent., XXV, 92, 1882.

*Deromyia* Williston, Trans. Am. Ent. Soc., XI, 23, 1884; Psyche, 1889, 256; Biologia, Dipt., I, 310, 1901.

*Diognites* Osten Sacken, Biologia, Dipt., I, 173, 1887.

Species of moderate to large size with elongate bodies; front tibiæ with a claw-like spur. Head broader than high, disciform; face broad, bare (sometimes with inconspicuous hair), with bristles on the oral margin, in profile straight or slightly concave, the oral margin most prominent. Antennæ (Pl. III, fig. 10) of moderate length, first two segments subcylindrical, the second longer than the first, both with bristly hair; third segment as long as the first two taken together, fusiform, bearing on its depressed distal end a short spine-like style, clothed above on the basal half with stiff, forward directed, appressed hair. Front but little wider than face, not widened above; vertex but little depressed; ocellar tubercle with two long bristles; occiput with well-developed bristles. Thorax only

See Deromyia 1026  
 with 1027 & 1028  
 J.M.



moderately arched, almost always with three black or reddish stripes on the dorsum, which are destitute of the short stiff, sparse hair that covers the rest of the dorsum, except for a narrow line of hair which divides longitudinally the median stripe; bristles well developed on the humeri, posterior callosities, scutellum, a transverse row over the base of the wings, and two short rows before the scutellum, between the median and lateral stripes; scutellum always with two bristles. Abdomen elongate, stout or more slender, not contracted toward base (except in male of *ternata*), with short, appressed hair, and, on sides of first segment, with stout bristles. Legs long, quite slender, the front tibiæ with a terminal claw-like spur; coxæ with bristles, longest and most dense on the fore pair; rest of legs with short, appressed, rather sparse, stiff hair and bristles; pulvilli of all the legs equal in length, but little shorter than the claws. All the submarginal and posterior cells except the fourth wide open, the third very broadly so; the fourth always closed, usually at some distance from the wing margin; anal cell closed at the margin.

*Type.*—*Deromyia gracilis* Rond.—(Williston.)

*Saropogon* and *Deromyia* are much alike and to use the words of Dr. Williston, are separated by the "more elongate form, the more slender abdomen and legs of the latter, and by the fourth posterior cell being always closed and usually long petiolate." The fourth posterior cell of *Saropogon* when closed either is closed on the margin or with a very short peduncle.

*Type.*—M. C. Z.

SYNOPSIS OF SPECIES.\*

*highly variable*  
*very variable*  
 cc

- 1. Dorsum of thorax with three deep velvety black stripes†..... 8.
- Dorsum of thorax without the three stripes velvety black, though sometimes very dark..... 2.

\* This table does not contain the California species *pulchra*, for I am not certain whether the fresh specimens have velvety black stripes or not. This table is only a help toward the identification of this difficult genus. Considerable variation exists, especially in the color of the thoracic stripes.

† These thoracic stripes are three in number: one median and usually bisected longitudinally by a paler line; the lateral stripes are usually bisected or interrupted at the transverse suture so as sometimes to appear as two spots.

2. Wings altogether blackish or brown.....3.  
 Wings more or less hyaline, at least not as above.....4.
3. Wings and abdomen black; thorax brownish, legs yellowish.  
**platyptera.**  
 Wings brown or blackish, abdomen and legs yellowish (Mexican and southwestern species) .....**sallei.**
4. Abdomen reddish; last two segments and anterior margins of the other segments and venter black (Texan species).  
**hypomelas.**  
 Abdomen reddish or black, but never with the above combination of color.....5.  
 5. Bristles of pronotum black.....6.  
 Bristles of pronotum yellowish.....7.
6. Hair and bristles of coxæ rarely wholly, always partly, black; common rich reddish-brown, sometimes paler, species of the northern Atlantic States, with stout abdomen with black and pale golden spots on the sides of segments 2-5 or 6 .....**umbrinus.**  
 Hair and bristles of coxæ always pale; abdomen of male long, slender, black; posterior angles of segments 2-5 broadly white pruinose; female with two very narrow dark median lines on dorsum, abdomen reddish-yellow with segments 2-5 showing on sides a black and yellow pruinose area.  
**discolor.**
7. Length 30-33 mm.; see description of.....**bigoti.**  
 Length 15-17 mm.; palpi black, abdomen almost wholly pruinose without black spots (southwestern species) .....**perplexa.**  
 Length 16-25 mm.; palpi reddish-yellow; abdomen with black spots along the sides .....**symmacha, angustipennis, rufescense** and sometimes **bilineata.**
8. Abdomen long, cylindrical; in the male coarctate, the greatest constriction between the second and third segments.  
**ternata.**  
 Abdomen flattened, not at all coarctate in male.....9.
9. Length 19-23 mm.; the two median narrow stripes not merging into red anteriorly (Cuban and Florida species)..**bilineata.**  
 Length 14-17 mm.; the median dorsal stripe not geminate, but merging into red anteriorly.....**winthemi.**

### **Deromyia angustipennis.**

*Diognites angustipennis* Loew, Cent., VII, 41, 1866.

*Deromyia angustipennis* Williston, Trans. Am. Ent. Soc., XI, 25, 1884 (note).

*Deromyia angustipennis* Jones, Trans. Am. Ent. Soc., XXXIII, 280, 1907 (locality note).

♂ ♀.—Length 18-20 mm.—More grayish than the other species; head and thorax dull yellowish-gray pruinose, the thoracic stripes dis-

tinct, dull olivaceous, the median stripe narrowly divided and distinctly separated from the lateral stripes by a line of grayish bloom; abdomen when viewed from above yellowish-gray pruinose; when viewed from behind, reddish, the lateral margins and posterior angles of the segments only then appearing yellowish-gray pruinose with a small elongate black spot on the side above the grayish bloom. Wings nearly hyaline, toward the apex and posterior margins grayish.

Face and front pale yellowish-gray pruinose, the occiput more olivaceous with pale bristles. *Mystax* sordid white; hair of front along the orbits and on vertex, short, pale; ocellar tubercle with two black bristles. Antennæ yellowish, the basal segments above with black hair, below, with paler hair. Palpi reddish-yellow, with pale pile; proboscis black, yellowish at base below. Thorax dark chestnut; the pleuræ nearly black in places; wholly and densely covered with a dull yellowish-gray bloom. Dorsum with three distinct more or less olivaceous stripes; the median stripe not at all attenuated behind, narrowly bisected by a pale longitudinal line; the lateral stripes greatly abbreviated at both ends, subinterrupted at the transverse suture; on the median stripe often two black lines, and on the lateral ones two black spots may be seen. Bristles of the prothorax and before the halteres pale; of the dorsum and scutellum black. Abdomen rather slender, in certain lights appearing wholly grayish pruinose, though not always so; when viewed from behind and to one side it appears reddish, and then only the lateral and posterior margins of the segments appear pruinose, and segments 2-6 of the male and segments 2-5 of the female, display a small black spot on the anterior half. Last two segments of the female abdomen polished red; the male hypopygium polished red with pale pile. Legs yellowish-brown; tips of tarsi and all the bristles black. Coxæ like pleuræ, with wholly white bristles. Halteres yellowish. Wings narrow, hyaline, sometimes slightly tinged with yellow; toward the apex and the posterior margin rather grayish, the narrow borders of the veins running to the posterior margin, and the posterior margin itself hyaline and destitute of microscopic pubes; the third and fourth longitudinal veins not bordered at the apex.

*Type*.—M. C. Z.

*Habitat*.—Ks. (type); Colorado Springs, Col. (Osten Sacken); Col. (Morrison, July 30); Ill. (Forbes); Glen, Sioux Co., and Lincoln, Neb. (P. R. Jones).

As I interpret this species in eight specimens from Colorado, it can be separated from the other species by the more grayish thoracic bloom, the somewhat olivaceous dorsal stripes, and in certain lights the almost uniformly pruinose tergum of

abdomen. It is quite distinct from *symmacha*. Mr. P. R. Jones states that this is a common species in eastern and northern Nebraska.

**Deromyia bilineata** (Pl. III, fig. 10; Pl. IX, fig. 5).

*Diogmites bilineata* Loew, Cent., VII, 40, 1868.

*Deromyia bilineata* Van der Wulp, Tijdsch. v. Ent., XVII (Sep.) 2.

♂ ♀.—Length 19–23 mm.—Much resembling *symmacha* and the female of *discolor*, but differing from the latter in having, almost without exception, yellow prothoracic bristles instead of black, and, as a rule, in the possession of velvety black lateral thoracic stripes; in *symmacha* the dorsal lateral stripes as a rule are reddish; in *bilineata* they are, with few exceptions, black. For separation of *symmacha* and *bilineata*, and for the description of the wing of *bilineata*, see note under *symmacha*.

Brownish-yellow, the pleuræ more or less blackish; head, thorax and coxæ golden pruinose. Antennæ and palpi reddish, the latter sometimes dark brown, always with pale pile. Mystax, beard, pile on sides of prothorax and bristles of coxæ, before the halteres, and on sides of the first abdominal segments, whitish; bristles of the occiput and prothorax, as a rule, reddish-yellow; hair and bristles of antennæ, ocellar tubercle, thoracic dorsum, scutellum and abdomen black. The two narrow median thoracic stripes are usually velvety black, as also are the lateral ones; but occasionally they are brownish or even much more faded, and when so the specimen very much resembles *symmacha* and then can best be separated by means of the clouds in the wing. But the velvety black stripes are the rule; the median ones being abbreviated posteriorly and seldom as black stripes reach the pronotum; the lateral stripes are bisected at the transverse suture and are thus divided into two spots, the anterior one being somewhat oval, the posterior one being much attenuated posteriorly. The blackish color of the pleuræ is variable in extent and in good specimen does not show through the bloom. Abdomen reddish or brownish-yellow, the posterior angles and narrow posterior margins of the segments and the venter, whitish or pale golden pruinose; segments 2–5 of the female, and 2–6 of the male, each with an oblique black spot on the sides near the base above the whitish bloom of the posterior angles. Male hypopygium reddish or brownish. Legs brownish-yellow, with black hair and bristles; the tarsi toward tips blackish. Wings as in note under *symmacha*.

*Type*.—M. C. Z. Two female specimens.

*Habitat*.—Cuba (type); Florida.

Van der Wulp thinks that *bilineata* is a synonym of *basalis* Walker "without the least doubt," and records it from Connecticut. I am very confident that *basilis* is the female of

*discolor*. From the original description it would be hard to separate the female of *discolor* from *bilineata*; in fact, while studying the types at the M. C. Z., I made the note that I believed them the same species. That was when I had very little material. Now that I have a much larger series, I feel certain that they are distinct. Loew founded *bilineata* on two female specimens from Cuba, and I have never seen a female of *discolor* from farther south than North Carolina. Of the numerous specimens of *bilineata* before me, all from Florida, I find the males do not differ from the females, which could not be so were *bilineata* and *discolor* the same. For variation in the thoracic stripes, see note under *symmacha*.

### **Deromyia bigoti.**

*Saropogon bigoti* Bellardi, Saggio, II, 70, 1861.

"♀.—Length of body 30 mm.; spread of wings 54 mm.—Totus ferruginea-fuscus. Thorace obsolete nigro-maculato, dorso setuloso; abdomine ad basim ferrugineo-fusco, ad apicem——. Pedibus longis, multi spinosis; spines crassis, brevibus, nigris. Alis longis, flavis; cellula prima posteriore ad marginem sub angustata, quarta clausa."

*Type*.—Bigot collection.

*Habitat*.—Mexico, So. Ariz. (Aug.); Salt Lake City, Utah; St. Augustine and Ormond, Fla. (C. W. Johnson).

Bellardi made his description from a very poorly preserved specimen, and as it stands, might apply to any of several species. It is, however, a very large insect, and relying more upon this fact than the description, I have identified four specimens, three from southern Arizona and one from Utah. They have a very broad robust thorax and stout abdomen; the two dorsal stripes of two are reddish-brown, of another more blackish, and of the fourth, a greased specimen, hardly perceptible. The antennæ and palpi are wholly yellowish, the latter with pale hair, the former with black. Mystax rather thin, whitish. Bristles of occiput, before the halteres, and on the sides of the first abdominal segments yellowish; those on thoracic dorsum and scutellum black. In all my specimens I notice a small oblique black spot near the anterior lateral margins of segments 2-5 in the female, in the male on segments 2-6; behind which the segments are a pale golden pruinose.

There are three other specimens, two belonging to the National Museum and one to Prof. J. M. Aldrich, from Florida which are between 30-33 mm. long, and may be *bigoti*, although I believe them distinct from the above-mentioned specimens. They also are very robust specimens; on each of segments 2-5 is a broad blackish cross band, in one specimen interrupted in the center, the anterior and posterior margins being narrowly reddish and the posterior angles light golden pruinose. They look much like very large specimens of *refuscens*.

### **Deromyia discolor.**

*Diogmites discolor* Loew, Cent., VII, 37, 1866.

*Deromyia discolor* Williston, Tr. Am. Ent. Soc., XI, 25, oc. in Pa.

? *Dasyopogon basilis* Walker, Dipt. Saund., 95, 1856.

♂ ♀.—Length 17-22 mm.—Reddish-yellow; dorsum of thorax with two very narrow median stripes; abdomen narrow, that of the male, excepting the white pruinose posterior angles and lateral margins of the several segments, almost wholly black; that of the female yellowish-red, with small black spots in front of the white pruinose posterior angles; wings yellowish hyaline, toward the apex and posterior margin brownish.

♀.—Head and thorax reddish-yellow, the face and front with a densely whitish-yellow bloom; occiput golden-brown pruinose except on the extreme orbits. Antennæ reddish-yellow; palpi black or brownish-black. Bristles of the antennæ, front, occiput and palpi black; those of the last two often tawny; mystax sordid white. Dorsum of thorax with two narrow velvety black median stripes, much abbreviated behind; lateral stripes indistinctly defined, dark brown; the humeri and a broad stripe extending backward along the lateral margins and including the scutellum, and the pleuræ and coxæ, golden pruinose. Hair and bristles of dorsum and the trichostical bristles, black; the latter proportionately short. Bristles of coxæ pale. Abdomen narrow, for the most part black, except on the distal portion of the first segment and the anterior portion of the second, where it is reddish; segments 2-5 with their lateral margins and posterior angles white pruinose, on segments 2-4 the white bloom nearly meeting to form a cross-band over the tergum; abdomen everywhere with short black hair, except on the hypopygium, where it is longer. Wings yellowish-hyaline, the greater part of the marginal and first submarginal, the outer half of the first posterior, and the whole of the second submarginal, the second and third posterior cells, and a triangular area in the outer part of the fourth and fifth posterior cells, and a trace along the margin of the axillary cell brownish.

♂.—The female differs from the male most noticeably in that the abdomen is yellowish or brownish-red, and that on the anterior lateral margins of segments 2-5 in front of the white bloom is a black spot, sometimes indistinct. The trichostical bristles are only in exceptional cases yellow; but the bristles of the occiput are usually yellow and the dorsal stripes paler.

*Type*.—M. C. Z.

*Habitat*.—Mass., Conn., N. Y. (Long Island); N. J. (Aug. 26, E. Daecke); Caldwell and Merchantville (July 19, Smith Cat.); Pa. (Delaware Co., C. W. Johnson, Aug. 17-27); Del.; Washington, D. C. (Aug. 22, J. C. Bridwell); Md. (June).

Described from twenty males and fifteen females. There are sixteen specimens at the M. C. Z. The male of this species is most easily recognized by the very slender, long, black abdomen, with the white bloom on the lateral margins and posterior angles of the segments. In greased specimens these silvery white areas appear reddish. The female is less easily recognized from *bilineata* and *symmacha*, but, so far as I know, is quite unique in always possessing the two very narrow and narrowly separated velvety black stripes, reaching backward hardly beyond the transverse suture. In one female the dorsum, aside from the stripes, is nearly olivaceous. These two median stripes are characteristic in the male, but in some cases one finds the broader lateral stripes, which ordinarily are reddish, of a deep velvety black.

I have no account of this species farther south than North Carolina. The type females of *bilineata* are very close to the females of *discolor* (see note under *bilineata*). *Dasyopogon basalis* Walker, is, I believe, a female *discolor*; I do not believe that it is *umbrina*.

### **Deromyia hypomelas.**

*Diognites hypomelas* Loew, Cent., VII, 42, 1866.

♀.—*Length* 17.6-20.5 mm.—*Translation*.—Reddish-yellow, opaque; stripes of the thoracic dorsum, lateral spots of abdomen, apex and venter black; pile and bristles of entire body pale.

Reddish-yellow, opaque; pile and bristles of entire body pale. Head golden pruinose. Antennæ reddish-yellow, the third segment broader than in most species. Palpi reddish-yellow. Thoracic dorsum thinly covered with pale golden bloom, having three black stripes, the median one divided, the lateral ones very greatly abbreviated anteriorly.

Pleurae almost wholly black, lightly golden pruinose. The last three or four abdominal segments, the anterior angles (and sometimes the anterior margins) and the venter black. Legs reddish, femora above with black stripes. Wings subhyaline, tinged with a brownish-yellow color, toward the apex and posterior margin darker; the fourth posterior cell closed on the very margin itself, the third less broad than in related species. (Abdomen very stout.)

*Type*.—M. C. Z. Two female specimens.

*Habitat*.—Pecas River, N. M. (type).

I have never identified this species.

***Deromyia perplexa* n. sp.**

♂ ♀.—*Length* 15–17 mm.—Small, rather olive-gray colored species with black palpi and reddish antennae; mystax white. Thoracic dorsum with three somewhat olive colored stripes, narrowly separated from each other by a line of the same golden bloom that covers the humeral angles, scutellum and lateral margins and the upper portion of the pleurae; the lower portion of the latter paler, and the coxae almost whitish pruinose. Abdomen reddish-brown, light golden pruinose on the sides, and in certain lights on the posterior margin of the segments. Legs varying from brownish-yellow to blackish-yellow, all the hair and bristles black; the hind tibiae on the inner side with rather dense pale golden appressed pile. Wings tinged with fuscous, clearer toward the base.

Face and front pale golden pruinose; the occiput more brownish, on the lower orbits whitish pruinose; beard fine, white. Proboscis and palpi black. Antennae reddish, the third segment in one specimen blackish distally; all the segments with black hair. Bristles of thoracic dorsum, scutellum and ocellar tubercle black; of the upper occiput, prothorax, before the halteres and on sides of the first abdominal segment and on the coxae yellowish or white. Patches of black ground color may be seen beneath the bloom on the meso-, sterno- and by hypopleurae. Abdomen reddish-brown, with short pale hair; the lateral margins are blackish, but concealed beneath a grayish, in certain lights, golden bloom. Venter grayish pruinose. In the single female, two narrow black lines on the median stripe, and two black spots on the lateral stripes, may be seen.

*Type*.—The type series consists of three males and one female. Three males, co-types, deposited at the National Museum, Cat. No. 11,028. The one female at the University of Kansas. The female specimen is the property of the University of Kansas.

*Habitat*.—Rio Ruidoso, White Mts., N. M.



**Deromyia platyptera.**

*Diognites platypterus* Loew, Cent., VII, 36, 1866.

*Deromyia platyptera* Jones, Trans. Am. Ent. Soc., XXXIII, 280, 1907 (locality note).

♂ ♀.—*Length* 16–20 mm.—Black, the wings of the same color, the thorax, excepting the dorsal stripes, brownish, or brownish-black; antennæ and legs yellowish; face golden pruinose; mystax whitish; palpi black-haired.

Black; face and front pale golden pruinose, the mystax whitish; the face immediately above mystax with a few black inconspicuous hairs. Occiput brownish pruinose, and, together with the front, with black hair and bristles. Antennæ reddish-yellow, the second segments nearly twice as long as the first; both with black hair; third segment with blackish hair on the basal half; style black. Palpi black or brownish with black hair. Thorax, excepting the black dorsal stripes wholly brownish or brownish-black, rather more bare; the short hair and all the bristles black. Scutellum of like color with black bristles. Abdomen almost uniformly black, nearly opaque, toward the tip polished; the bristles on the sides of the first segment and the short hair of the entire tergum, black. Hypopygium polished black, black pilose. Coxæ of same color as pleuræ, with scant blackish hair. Legs sordid yellowish, the tibiæ reddish, tips of tibiæ and of the tarsi and the claws black; pulvilli yellowish-white; hair and bristles wholly black. Halteres brownish, the knob often yellowish. Wings broad, black or blackish, paler toward the posterior angle.

*Type*.—M. C. Z. Two male specimens; one with abdomen wanting.

*Habitat*.—Ill. (type); Carbondale, Ill. (Aug. 11, G. H. French); Peru and Union, Neb. (P. R. Jones); Ames, Iowa (J. M. Aldrich); Opelousa, La. (June, C. W. Johnson)· Miss. (Sept., D. W. Coquillett).

This species is most easily recognized by the contrast between the black head and abdomen and the brownish thorax. In some specimens the dorsum of the thorax is quite blackish-brown and shows almost no trace of the stripes, and in some greased specimens the stripes do not show. The wings vary in intensity of their color; one specimen has the wings very black with the centers of the discal, second, third, fourth and fifth posterior, anal and auxiliary cells clear.

**Deromyia pulchra.**

♂.—*Length* 26 mm.—Brassy-yellow pruinose, the golden pruinose lines separating the three blackish thoracic stripes extending from the humeri to the base of the scutellum; when viewed from above, all the

abdominal segments dark brownish with the posterior margins and angles broadly covered with golden bloom which, becoming gradually attenuated, reaches the anterior lateral angles, thus leaving the dark basal two-thirds of the segments semi-circular; still looking at the insect from above, there appears an interrupted golden line extending from base to tip of the abdomen along the middle.

Face and front, light golden pruinose; the occiput black, except at the vertex, but light golden pruinose; palpi and antennæ reddish, the proboscis so only at the base; mystax, pile of palpi, beard and the bristles on under side of the second antennal segment, occiput, prothorax, coxæ, before the halteres and on the sides of the first abdominal segment, whitish or yellowish. Remaining hair of antennæ, dorsum of thorax and legs black; the bristles of the last two and the scutellum black. Ground color of the pleuræ chiefly black. The median dorsal stripe is composed of two blackish lines extending from the prothorax to the base of scutellum, narrowly separated by a line of dull bloom as far as the transverse suture, thence united and soon becoming reddish. Lateral stripes broad, attenuated, constricted on the sides at the transverse suture but not bisected; the golden lines separating the median and lateral stripes reaching from the prothorax to the base of the scutellum. Abdomen stout, with blackish hairs on the black part, on the golden pruinose areas and on the distal portion yellowish; genitalia blackish above, reddish below, with long light colored pile; the dark areas of the abdomen become brassy-yellow pruinose in different lights, but when viewed from above, as described above. Legs reddish-yellow; the tarsi, distally, reddish-brown. Wings rather small, subhyaline, the veins blackish and broadly margined with fuscous; the fourth posterior cell with a comparatively short peduncle.

*Type*.—U. S. N. M., Cat. No. 11,027. A single male.

*Habitat*.—Los Angeles Co., Cal. (D. W. Coquillett).

This is one of the most striking species of *Deromyia* that I have seen.

The dorsal stripes are not now velvety black, though I half suspect that they may be in fresh specimens.

### **Deromyia rufescens.**

*Dasyogon rufescens* Macquart, Hist. Nat. Dipt., I, 295, 1834.

*Dasyogon rufescens* Walker, List, VI, 426.

*Dasyogon rufescens* Osten Sacken, Cat., 1878, 232 (note on type and syn.).

*Diognites rufescens* v. d. Wulp, notes from the Leyden Mus., IV, 76, 1882.

*Deromyia rufescens* Williston, Trans. Am. Ent. Soc., XI, 24, 1884 (note).

I have before me several specimens from southern Georgia which I take to be *rufescens* Macquart. They resemble somewhat the females of *discolor*, but run larger and are stouter; the thoracic dorsum does not show the two very narrow median black stripes unaccompanied by black lateral stripes, which is characteristic of the dorsum of *discolor* females; and the black of the abdomen, which in *discolor* is confined to the anterior half of the lateral margins of the segments, on these specimens extends upward and often meets on the tergum to form a blackish cross-band. A description of these specimens is as follows:—

♂ ♀.—Length 18–25 mm.—Yellowish-brown; dorsum of thorax with brownish to velvety-black stripes; the lateral and posterior margins of the abdominal segments narrowly, and the posterior angles more broadly, pale golden pruinose, the rest of each segment reddish except broadly on the lateral margins where it is blackish; this black of the sides extends upward upon the tergum thus giving the abdomen, as a whole, a blackish appearance.

Face, front, occiput, thorax except dorsal stripes, and the coxæ, pale golden pruinose; bristles of mystax and scattering hair of face just above whitish; palpi and antennæ reddish, the former with yellowish, the latter with black, hair. Bristles of occiput, coxæ, first segment of abdomen and before the halteres pale; of the thoracic dorsum and scutellum black. The three dorsal stripes reddish-brown, the median stripe very narrowly divided by a longitudinal pale line, and the lateral stripes as usual, bisected at the transverse suture; the stripes vary from wholly reddish-brown with traces of black along their middle, to wholly velvety black, and in the blackest the median stripe is but very faintly divided.

Abdomen quite stout, the lateral and posterior margins of the segments, narrowly, and the posterior angles more broadly, pale golden pruinose; the anterior margins sometimes narrowly likewise pruinose; last two segments of female polished. The anterior lateral margins of segments 2–5 black; this black in some specimens soon shades off into a rich reddish-brown in the middle of the tergum or, as in others, it may extend upward on either side to meet across the tergum, thus giving the abdomen a blackish appearance, broken only by the golden bloom. Genitalia of male reddish with pale pile. Legs brownish-yellow, hair and bristles black, tips of tibiæ and tarsi black. Halteres fuscous. Wings wholly yellowish hyaline.

*Habitat*.—Macquart records this species from Philadelphia, but his specimens may have come from one of several places in this country. Van der Wulp identified this species from Arizona, but my specimens belong to the National Museum and were collected in Georgia.

Prof. C. W. Johnson first called my attention to the validity of *rufescens*. There is no doubt that it is distinct from *discolor* with which it is associated in Aldrich's list.

***Deromyia sallei*** (Pl. VI, fig. 3).

*Saropogon sallei* Bellardi, Saggio, II, 70, 1861.

*Diogmites sallei* O. Sacken, Biologia, Dipt., I, 174, Pl. III, fig. 11.

*Deromyia sallei* Williston, Biologia, Dipt., I, 311; oc. in many Mexican localities.

♂ ♀.—*Length* 19–22 mm.—Rather slender yellowish species with deep yellowish-brown or blackish wings; thorax and coxæ rather thinly pale golden pruinose, leaving on the dorsum two narrow and two broader lateral stripes, besides other less distinct lines; bristles of palpi, antennæ, thorax and legs, except the coxæ, black.

Yellowish, sometimes tinged with a brownish color; the face and front densely golden pruinose, the thorax less thickly so; the occiput darker but concealed by a fairly dense golden bloom. Abdomen nearly unicolorous, without darker spots on the lateral margins; the extreme base, and sometimes the extreme lateral margins, pale golden pruinose, but only so in certain lights. Bristles of mystax not dense, yellowish or whitish, the remainder of the face without hair or pile of any sort; front with only a few short black hairs near the orbits on the vertex; ocellar tubercle with black bristles; upper occiput with brownish bristles, the lower portion with more numerous and yellow bristles and hair. Antennæ and palpi reddish-yellow, with short black hair; the first segment of the antennæ without noticeable hair below, and on all the segments the hair is comparatively short. Proboscis black, yellowish at base. Thorax and coxæ thinly golden pruinose. The dorsum shows two narrow well separated median, and two broader lateral stripes of the same brownish color; there are also spots of similar color lying between the anterior ends of the lateral stripes and the median stripes, and outside and confluent with the extreme anterior ends of the median stripes. The median stripes extend from the prothorax nearly to the base of the scutellum; the lateral ones, considerably abbreviated anteriorly, likewise extend backward nearly to the scutellum, becoming much attenuated behind and bisected by a line of pale bloom along the transverse suture. Scutellum thinly golden pruinose. Hair and bristles of dorsum black; pleuræ without hair, except sometimes on the upper part of the sternopleuræ, where it is very inconspicuous and black; trichostical bristles black, surrounded by pale pile. Legs yellowish, tarsi often darker; the coxæ rather sparsely clothed with pale bristles, the rest of the legs with short black hair and long black bristles; the hair on the lower posterior side of the front and middle femora pale. Claws black, pulvilli pale. Halteres sordid yellow. Wings brownish or blackish, the centers of all the posterior, discal, anal and axillary cells paler, but in varying degrees.

*Type*.—University, Turine, Italy.

*Habitat*.—Arizona (F. H. Snow); Huack Mts. (July 9. Brooklyn Inst.); N. M.; also several places in Mexico.

The specimens taken by Dr. F. H. Snow have the wings much more brownish; while those from the Huach Mountains have nearly black wings. They are alike in other respects, and the blackness of the wings is probably due to altitude. So far as I know, the coloration of the thoracic dorsum is unique. Described from six specimens.

### ***Deromyia symmacha*.**

*Diogmites symmacha* Loew, Cent., X, 26, 1872.

♂ ♀.—*Length* 16-22 mm.—Brownish-yellow; antennæ and palpi yellow; throacic stripes usually of the same reddish-brown color, sometimes darker or even black; bristles of pronotum and before the halteres yellow; abdomen yellowish-red, lateral margins golden pruinose with black spots on segments 2-5 or 6.

Brownish-yellow; face and front densely light golden pruinose. Antennæ and palpi yellow; the former with black hair, the latter with yellow pile; occipital bristles almost wholly yellowish. Thoracic stripes usually of the same reddish-brown color, sometimes blackish, the median stripe but indistinctly divided; the median and lateral stripes separated by bright golden, very distinct, pruinose stripes which gradually diverge anteriorly. As in the female of *discolor*, the lateral margins of the dorsum, the scutellum, pleuræ and coxæ, are bright golden pruinose; bristles of pronotum yellow, thus differing from those of the female of *discolor*, which are, almost without exception, black. Hair and bristles of dorsum and scutellum black; trichostical bristles yellow. Abdomen reddish, lateral margins and posterior angles of all the segments golden pruinose; segments 2-6 of the male, and segments 2-5 of the female, with a deep velvety, narrow, oblique, black spot on the side bordering the pruinose areas in front. The tergum in various lights shows a light golden bloom with black or yellowish hair; male hypopygium reddish, with yellowish pile; the last two segments of the female polished. Legs wholly yellowish, tips of tibiæ and tarsal segments darker; the short hair and bristles wholly black.

*Type*.—M. C. Z. One male and one female specimen.

*Habitat*.—Texas (type); Blanco Co., Round Mt., and Luling, Tex.

Loew says that *symmacha* is with difficulty separated from *bilineata*. They are very much alike and some specimens of the latter are hardly distinguishable from the former except

by the wing. However, I believe that Loew's type pair of *bilineata* are more an exception than the rule in regard to the color of the thoracic stripes. I have before me over twenty specimens from Florida which are undoubtedly *bilineata*, a few of them are as Loew says, but the greater part are at once separated by the velvety black stripes. I am aware that these are apt to be variable as to intensity of color, but the velvety black stripes are the rule in *bilineata*, while in *symmacha* they are not.

In considering the wing, I will here give a translation of Loew's description:—This species is with difficulty distinguished from *bilineata* unless it is smaller, and has less broad wings, otherwise colored with cinereous. This color in *bilineata* fills the entire submarginal cell of the wings and the first posterior cell, thence wholly covers the wing from the margin as far as the base of the second submarginal cell and the second and third posterior cells excepting the very base. In this species (*symmacha*) the cinereous color does not reach the posterior margin in the second submarginal cell, nor indeed both margins in the first and second posterior cells, excepting near the margin of the wing; in the third posterior cell, indeed, it is separated from all the margins by a hyaline border; in *bilineata* in the fourth posterior cell the cuneate spot is seen subcoherent with the apical margin; in *symmacha* the oblong border is separated everywhere alike from all the margins by the hyaline border; in the former, the large triangular spot in the fifth posterior cell is observed coherent with the margin of the wing, in the latter, the triangular spot of this cell is separated from the margin of the wing by a hyaline border; the axillary angle of *bilineata* shows no (or slight) trace of a cinereous picture, that of *symmacha* shows a border parallel with the margin of the wing. The third posterior cell of *symmacha*, on account of the more narrow wing, is less broad than that of *bilineata*.

#### **Deromyia ternata.**

*Diognites ternata* Loew, Cent., VII, 38, 1866.

♂ ♀.—Length 19–22 mm.—Wholly reddish-yellow, except the three velvety black stripes of the thoracic dorsum. Abdomen cylindrical,

in the male noticeably contracted toward the base, this constriction being greatest between the second and third segments.

Face and front light golden, sometimes nearly white, pruinose; antennæ and palpi yellowish. Hair of antennæ black; of the palpi yellowish or black; bristles of the occiput behind the vertex brownish or black, lower down and along the outer orbits reddish. Thoracic stripes velvety black, the median one but indistinctly divided by a reddish stripe and abbreviated posteriorly behind the transverse suture; separated from the lateral stripes by a clearly defined light golden pruinose stripe. Lateral stripes narrowly bisected at the transverse suture, much attenuated posteriorly; lateral margins of dorsum broadly golden pruinose. Hair and bristles of entire dorsum and before the halteres black; scutellum reddish with two marginal bristles black. Abdomen elongate, more cylindrical, rather slender; in the male distinctly contracted toward the base, the constriction being greatest between the second and third segments; the female abdomen is a trifle stouter, but is not contracted as in the male; in both sexes the abdomen is wholly reddish, without black or golden spots of any sort, but sometimes darker on the distal half; the short hairs black, golden on the distal portion and on the reddish hypopygium. Wings rather broad, yellowish hyaline; the entire half and the posterior margin brownish. Legs wholly yellowish-red, long, with black and reddish hairs, and black bristles.

*Type*.—M. C. Z.

*Habitat*.—Cuba (type); St. Augustine, Fla. (C. W. Johnson); Round Mt., Tex.; Las Cruces, N. M. (Aug. 19, C. H. T. Townsend); Garden City, Ks. (Aug.); Mo.; Rocky Ford, Col. (Aug. 7).

I have before me eight specimens of this species representing both sexes. They are easily separated from the other species by the long cylindrical abdomen, which in the male is decidedly contracted toward base, and in this regard somewhat resembles *Blepharepium coarctatum*. The legs are very long and "scraggly." It is much larger than *winthemi*.

### **Deromyia umbrina.**

*Diogmites umbrinus* Loew, Cent., VII, 43, 1866.

? *Dasyopogon herennius* Walker, List, II, 339, 1849 (query by J. M. A.).

*Diogmites umbrinus* Osten Sacken, Cat., 233, 1878; note on type of *D. basalis* Walker.

*Deromyia umbrina* Williston, Trans. Am. Ent. Soc., XI, 25, 1884 (note).

*Deromyia herennius* Howard, Insect Book, 1902, Pl. XIX, fig. 18.

♂ ♀.—*Length* 17–26 *mm.*—Robust, rich reddish-brown species. Thoracic dorsum with or without faint traces of the usual black stripe; abdomen wholly reddish-brown, the sides of the segments adorned with a black and white pruinose spot; clothing of the palpi, thorax and legs wholly black; hair and bristles of coxæ rarely wholly, always partly, black; wings tinged with brownish.

Face, front and occiput densely pale golden pruinose; mystax dense, yellowish-white; the face above clothed with a few scattering inconspicuous black hairs; front along orbits and before the ocellar tubercle with black hairs. Antennæ reddish-brown; second segment nearly twice as long as the first, both covered with black hair; third segment clothed above on the basal half with black hair more dense than in many of the other species; style black. Palpi brownish with black hair, sometimes intermixed with paler hair; proboscis black, brownish at base below. Ocellar tubercle and upper occiput with black bristles; the occiput below with paler bristles and hair. Thoracic dorsum obscurely adorned with three black stripes; the median stripe greatly abbreviated posteriorly (usually before the middle of the dorsum), geminate, the two parts being separated by a distinct interval; lateral stripes abbreviated anteriorly, strongly bisected at the transverse suture (see note). The short hair and the bristles of the dorsum black; on the pleuræ short hair is present on the posterior portion of the mesopleuræ and on the upper portion of the sternopleuræ; trichostical and scutellar bristles black. Abdomen very robust, much stouter than in *discolor* and *platyptera*, wholly reddish-brown or reddish-yellow; above, on the sides of the segments, especially distinct on segments 2–5, are two spots, the anterior one is black and extending from the anterior angle of the segment backward and upward, and ending a trifle beyond the middle of the segment; the second spot is yellowish-white, sometimes quite white, and extends backward to the posterior margin covering the rest of the lateral margin. Venter brownish. Abdomen clothed with very short black hair, the bristles on the sides of the first segment black; genitalia of male reddish-brown, with longer black hair. Legs blackish-brown, varying to a lighter color, the base of the tarsal segments often paler; all the bristles and hair black; the coxæ of the same color as the pleuræ, the front pair usually with numerous brownish, as well as black, hairs, the two posterior pairs usually almost wholly with black shorter hair. Claws black, pulvilli yellowish-white. Wings yellowish hyaline, inclined to be slightly variable; the anal cell and posterior angle much clearer and nearly destitute of microscopic pubes.

*Type*.—M. C. Z.

*Habitat*.—Vt.; Hanover, N. H.; Amherst (July 20–Aug. 22), and Wareham (July 29, H. J. Franklin), Mass.; Conn.; N. Y. (July); N. J. (July 14); Pa.; Ill.



I have no record of this species farther south than New Jersey. It is very abundant here in Massachusetts and Connecticut during the latter part of July and August in pastures and open fields. The species is subject to numerous small variations; the thorax may not show any sign of the black dorsal stripes or these may be quite distinct; the color of the abdomen may be dark, or nearly yellow. Specimens are very apt to become greasy and the white spots of the sides of the abdomen are then lost.

### **Deromyia winthemi.**

*Dasyopogon winthemi* Wiedemann, Dipt. Exot., 223, 1821.

*Dasyopogon winthemi* Wiedemann, Auss. Zw., I, 387, 1828.

*Dasyopogon winthemi* Schiner, Verh. Zool.-Bot. Ges., XVI, 678, June, 1866.

*Diogmites misellus* Loew, Cent., VII, 39, July, 1866.

*Deromyia winthemi* Van der Wulp, Tijdsch. v. Ent., XXV, 93, 1883; XXVII (Sep.), 2; oc. in Conn., notes.

*Deromyia winthemi* Williston, Trans. Am. Ent. Soc., XI, 24, Pl. II, fig. 6, synonymy, 1884.

*Diogmites misellus* Osten Sacken, Biologia, Dipt., I, 177, 1901; doubts identity of *misellus*.

♂ . ♀—Length 14.5–17 mm.—A much smaller yellowish species, with three velvety black stripes on the thoracic dorsum, and the abdominal segments darker above, except on the margins, where they are pale yellow pruinose.

This species is more easily recognized by its small size and the three velvety black stripes on the dorsum. Face, front and occiput pale golden pruinose; the antennæ and palpi reddish-yellow; the proboscis black, yellowish only at base below. Mystax, beard and bristles of coxæ whitish; hair of palpi and bristles of prothorax, first abdominal segment and before the halteres reddish-yellow. Hair and bristles of the thoracic dorsum black, the hair longer than usual. Thorax, including the coxæ, wholly light yellow pruinose, the three black dorsal stripes distinctly separated from each other; the median stripe merges into reddish-brown anteriorly; the black of the lateral stripes is also abbreviated anteriorly and bisected at the transverse suture. The segments of the abdomen, excepting all the margins, sometimes blackish-brown, sometimes hardly darker than the rest of the body, and occasionally almost yellow; the margins and the venter, light golden pruinose, and some specimens show traces of black spots along the sides of the abdomen. Legs yellowish-red; the apices of the tibiæ and tarsi and all the bristles black. Wings clear hyaline, toward the apex and posterior margin grayish.

*Type*.—The type of *misellus* is at the M. C. Z.

*Habitat*.—Mass. (July 10–Aug. 30); Conn.; N. Y.; N. J. (July 12–Aug. 18); D. C. (type, *misellus*); Raleigh, N. C. (July 15); Ga.; Fla.; Tex.; Ill.

Loew states that this species (i. e. his *misellus*) is easily distinguished from *ternata* by the smaller body, by the longer thoracic hair, and by the median stripe being always reddish anteriorly, and, finally, by the anal cell of the wing being wholly destitute of microscopic pubes. I do not put any faith in the presence or absence of microscopic pubes in the anal cell in this species, for of the twenty-four specimens before me representing captures from Massachusetts, Florida and Texas, I find that this is variable, the females being more apt to possess these pubes than the males. Loew's type is of the male sex.

#### LESTOMYIA.

*Lestomyia* Williston, Trans. Am. Ent. Soc., XI, 19, 1883.

*Clavator* Phillippi, see Osten Sacken, West. Dipt., 292, 1878.

Front tibiæ with a terminal curved spur. Head similar to that of *Cyrtopogon*, but smaller and narrower (narrower, also, than that of *C. punctipennis* as figured by Phillippi, l. c., pl. XXVII, fig. 29); mouth larger and more oblique; sides of the face only a little diverging below, gibbose, the pile or hairs in the middle of the gibbosity not reaching the antennæ or eyes. First joint of the antennæ subcylindrical, short, the second yet shorter, the third longer than the first two taken together, narrow at the base, and then expanded to twice or three times as wide, gently narrowed and then rounded at the tip; at the end with a minute cylindrical style, ending in a microscopic bristle. Ocellar tubercle, dorsum of thorax and edge of scutellum with stout bristles. Abdomen subcylindrical, narrow, somewhat broader at the base, male hypopygium not stouter than the abdomen; female ovipositor with a star of short spines. Legs rather strong; tibiæ and tarsi spinose; front and middle femora with a single spine on the hind side a short distance from the tip. Claws and pulvilli long. Wings like those of *Cyrtopogon*; anal cell very little open, sometimes closed; anterior cross-vein about the middle of the discal cell:

second submarginal cell considerably longer than the second posterior. All the posterior cells open, the fourth sometimes coarctate or nearly closed.

*Type*.—*Lestomyia sabulorum* Osten Sacken.

The above is Osten Sacken's description amended by Dr. Williston.

The most striking feature of the North American species of this genus is the tuft of bristles on the ocellar tubercle and the four longitudinal rows of bristles on the thoracic dorsum, one on either side of the median line and one over each lateral margin.

### ***Lestomyia fraudigera*.**

*Lestomyia fraudigera* Williston, Trans. Am. Ent. Soc., XI, 21, Pl. II, fig. 5, 1884.

♂.—“Length 10 mm.—Head below only gently oblique; face distinctly longer than the front; from the ocellar tubercle to the antennæ less gibbose on the lower part; third segment of the antennæ longer, elongate, less distinctly clavate, gradually widening from the base, not three times as wide as on its widest portion. Abdomen uniformly covered with whitish-gray pubescence, leaving a row of small black spots on segments 3–6. Legs red, with broad black rings on femora and tibiæ.

Gray; face and front whitish; the mystax, pile on the inner side of the front near the eyes, and the bristles of the ocellar tubercle, all nearly white; a single black bristle on the second segment of the antennæ. Antennæ black; the first segment somewhat yellowish at the base; the third segment begins to widen from very near the base, the under surface is nearly straight, the upper side gently convex except near the base, the tip obtuse. Beard long and abundant, occipito-orbital bristles chiefly yellowish. Dorsum of thorax yellowish-gray with four brownish stripes, the middle one narrowly separated, the lateral ones consisting of two oval spots, the one before, the other behind, the suture; there are four rows of rather stout black bristles nearly equidistant from each other, the lateral ones more irregular. Scutellum in the single specimen with black bristles. Pleuræ wholly purely grayish; the fan-like row of hairs before the halteres yellowish-white. Abdomen wholly and nearly uniformly whitish-gray; on each side of the third, fourth, fifth and sixth segments near the front a small circular polished black spot; pile of the hypopygium yellowish-white. Coxæ and legs red; anterior femora with a small ring, intermediate with a broader, and the posterior pair except the base and tip, tibiæ except the broad base, tip of the posterior pair broadly, and the middle pair narrowly, black; bristles of legs white; of the tarsi chiefly black. Wings as in *sabulorum*, hyaline.”

*Type*.—University of Kansas. A single male specimen.

*Habitat*.—Mendocino Co., Cal. (O. T. Baron).

I have seen a specimen of this species that agrees perfectly with the above description except that several of the occipito-orbital bristles are black.

***Lestomyia sabulonum*** (Pl. X, fig. 1).

*Clavator sabulonum* Osten Sacken, West. Dipt., 292, 1877.

*Lestomyia sabulonum* Williston, Trans. Am. Ent. Soc., XI, 20, Pl. II, fig. 4, 1884.

♂ ♀.—*Length* 7–11 mm.—“Yellowish-gray; thorax with a geminate blackish stripe; abdomen with a row of longitudinal blackish spots; wings hyaline.

Yellowish-gray; face whitish, with a tuft of white pile on the gibbosity; in the female with a few (I count six) black bristles above the mouth, which I do not perceive in the male; ocellar tubercle, in the female, with a tuft of stiff black bristles (I count eight); in the male these bristles are white, and the front shows on each side a similar, but smaller, white bristles; in the female the latter bristles are very thin and small. Antennæ black; the first segment with white pile beneath; second segment on the under side with a couple of black bristles; occiput with yellowish bristles above, and with long soft white hair below. Thoracic dorsum with a geminate brown stripe in the middle, and two broader stripes on the sides, abbreviated long before the humeri; the fan-like fringe of pile before the yellow halteres is white in the male, black in the female. Abdomen yellowish-gray, with whitish-gray reflections; an ill-defined, elongated, darker spot almost reaching the posterior margin, in the middle of each segment; a similar dark spot on each side of segments 2–6; the last segment of the female polished brownish-black; in the male the hypopygium black, polished, with long white pile. Wings hyaline, with hardly perceptible vestiges of brown; brown clouds on the cross-veins. Legs black; femora at the base and tip, and base of tibiæ red; tarsi brownish; the spines on the tibiæ in the male are mostly white; some black bristles are perceptible on the upper side, especially on the anterior tibiæ; in the female, the bristles are black; very few white ones are visible.”

*Type*.—M. C. Z. The type series consists of a male and female in coitu, and a second male with the body badly eaten out.

*Habitat*.—Crafton, near San Bernardino, Cal., March, on dry, gravelly soil—type; Kern Co., Cal.

The most striking feature of this species is the tuft of long bristles on the ocellar tubercle, and those on the thoracic

dorsum, where they are arranged in four rows; one on either side of the geminate stripe, and one on each side of the lateral margins. The bristles of the scutellar margin, and the red bases and apices of the femora, and the bases of the tibiæ. are also striking.

Specimens in the National Museum, and in the collection of Prof. C. W. Johnson, do not have the bases of any of the femora red, thus agreeing with six females and four males from Kern County, mentioned by Dr. Williston. One of the specimens from northern California has the base of the femora and the tip of the tibia red. In the two females before me, there are no black bristles in the mystax, and the bristles before the halteres are white, and not black. Dr. Williston states that the number of scutellar bristles ranges from six to ten, so their number is of no specific value; and that the bristles of the tibiæ of the male are white, while those of the female are mostly whitish, but in part black.

### TARACTICUS.

*Taracticus* Loew, Cent., X, 24; note, 1872.

*Diectrodes* Coquillett, Proc. Ent. Soc. Wash., VI, 181, 1904.

Form of head as a whole similar to *Diectria*, especially as regards the mystax and antennæ, but the front tibiæ with a terminal claw-like spur. Head nearly twice as broad as high: face gently convex, the oral margins not at all as prominent; mystax composed of a few weak bristles, for the most part confined to the oral margin. Antennæ (Pl. III, fig. 6) slender, elongate, segment 3 sometimes three times the length of segments 1 and 2 taken together, microscopically pubescent, beyond its center on the upper side with an emargination at the proximal end of which there is a short forward directed spine. Facial and frontal orbits nearly parallel, the latter slightly emarginate; ocellar tubercle of good size. Body of male slender, of female more robust; in each the abdomen is very convex, punctate and nearly bare. Genitalia hardly noticeable. Scutellum with two marginal bristles. Legs slender: hind tibiæ incrassate, hind tarsi very robust; front tibiæ with a terminal, though weak, claw-like spur. Marginal, submarginal, posterior, and anal cells open.

*Type*.—*Dioctria octopunctata* Say.

Mr. Coquillett agrees with me that *Dioctrodes flavipes*, the type species of his genus *Dioctrodes*, is a rather small specimen of *Taracticus octopunctatus*. The tibial spurs in this genus are very small, slender, and not always easily detected. I agree with Dr. Williston, who states in *Trans. Am. Soc.*, XI, page 22, the improbability of *Ceraturgus niger* Macquart belonging to *Taracticus*.

**Taracticus octopunctatus** (Pl. III, fig. 6; Pl. XI, fig. 7).

*Dioctria 8-punctata* Say, *Jour. Acad. Sci. Phil.*, III, 49, 1823;  
Compl. Works, II, 63.

*Dioctria octopunctata* Wiedemann, *Auss. Zw.*, I, 365.

*Dioctria octopuncta* Schiner, *Verh. Zool.-Bot. Ges.*, 1866, 675;  
1867, 369.

*Taracticus octopunctatus* Loew, *Cent.*, X, 24, 1872.

*Taracticus octopunctatus* Williston, *Trans. Am. Ent. Soc.*, XI,  
22, Pl. II, fig. 2.2a.

*Dioctrodes flavipes* Coquil., *Proc. Ent. Soc. Wash.*, VI, 181, 1904.

*Dioctria rufipes* Jones, *Tr. Am. Ent. Soc.*, XXXIII, 276, 1907.

♂ ♀.—*Length* 6–8.5 mm.—Black; halteres, femora, tibiae except apices of hind pair, and the bases of all the tarsal segments yellow; abdomen punctate with eight white pruinose spots; all the posterior cells of the hyaline wings open. Head whitish, sometimes golden pruinose, the ocellar tubercle and sometimes the center of the face polished. Antennae distinctly longer than the height of the head; segment 1 about one and one-half times the length of segment 2; segment 3 more than twice the length of segments 1 and 2 taken together, slender, microscopically pubescent, beyond the center on the upper side with an emargination at the proximal end of which is a short forward-directed spine; style hardly distinguishable. Thoracic dorsum with three golden pruinose stripes, the outer ones being dilated before and inclosing a dusky spot upon the humeri; pleurae bare, together with the coxae, grayish-white pruinose, somewhat browner immediately below the dorso-pleural suture. Abdomen black, polished, punctate, with a silvery-white spot on the posterior lateral angles of segments 2–5; tip of male abdomen, including the genitalia, red. Legs slender, the hind femora with two long slender bristles beneath near the base, the tibiae with more numerous but similar bristles. Hind femora are sometimes in part black. All the bristles and pile of the entire body and legs pale. Wings hyaline, violaceous, all the posterior and anal cells open.

*Type*.—Lost. The type of *Dioctrodes flavipes* Coquillett is at the U. S. N. M., Cat. No. 7953.

*Habitat*.—Atlantic States (Osten Sacken); White Mts., N. H.; Mass.; Conn.; N. Y. (June 20); N. J. (Aug. 23); Pa. (July 20); Fla.; Mo. (June 19); Ohio.

This is a small species of rather variable size; the female is often noticeably larger than the males. It is the only representative of this genus now known from the United States.

### COPHURA.

*Cophura* Osten Sacken, *Biologia*, Dipt., I, 181, 1887.

|| *Blax* Loew, *Centur*, X, 24, 1872.

|| *Blacodes* Loew, *Berl. Ent. Zeit.*, 1874, 377.

|| *Locwiella* Williston, *Manual N. A. Dipt.*, p. 57, 1896.

*Cophura* Williston, *Biologia*, Dipt., I, 314, 1901, note and list of species.

“Head as in *Nicocles*, disciform, with prominent eyes; face very slightly convex, almost flat; mystax composed of a row of a few bristles placed at a short distance above the oral edge, and a second, still smaller, row upon the edge itself; the rest of the face microscopically pubescent; ocellar tubercle salient, and with four moderately long bristles, the front pair the shortest; occipital bristles rather weak. Antennæ: first segment subcylindrical, the second subconical and nearly of the same length, the third segment about the length of the first two taken together, or a little longer, sublinear or elongate-elliptical, with a short subfusiform style ending in a short, bristle-like point. Thorax gibbous, like that of *Nicocles*; the usual bristles present—three præsutural, and a number of weak præscutellar, but none on the scutellum (in *Nicocles* there are two). Abdomen rather flat, smooth, without punctures; ending in the male in a protruding forceps, and in the female in the ovipositor, bearing a coronet of spinules. Legs as in *Nicocles*, of moderate length and strength, with rather weak femora and straight tibiæ. Wing shorter and broader than in *Nicocles*; first and fourth posterior cells broadly open, anal cell closed near the margin.”

“This new genus belongs to the group of *Dasypogoniæ* with a hook at the end of the front tibiæ, and is allied to *Nicocles*, which it resembles in the coloration of the thorax and the legs. The abdomen, however, is flatter, and not expanded in

the male as in that genus; the third joint of the antennæ is shorter, less linear and with a stouter and shorter style; the wings are comparatively shorter and broader, the venation similar and the scutellum without macrochætæ.

"*Cophura* has something of a *Holcocephala* in its general appearance and coloring and might, at first sight, be mistaken for a species of that genus, but the head is much narrower and the eyes less projecting."

Dr. Williston in the *Biologia*, in commenting upon this genus says:—

"In his remarks on *Cophura* (i. e., the above) Osten Sacken says that 'the description of the antennæ and of venation proves *Blacodes* (*Blax olim*) to be a different genus;' the only difference in the venation is the more coarctate fourth posterior cell, which certainly is not a character of generic value. The antennæ of *Blacodes* have slender elongate style—'stylo terminali lineari, acuto, anticulis duobus primis simul sumtis brevior;' in the three species before me the style is short, but it may be slender, ending in a bristly point. The characters of *Cophura*, pretty nearly as Osten Sacken defines them, are brought out in my remarks on *Nicoles scitulus* Williston, and *Apharmartania fur* Williston; apparently Osten Sacken overlooked the description and figure of these species. *Blacodes cristatus* Coquillett, moreover, has the style 'slender, slightly over one-half as long as the third segment.' Taking all these facts into consideration, the differences between *Cophura* and *Blacodes* wholly disappear. Furthermore, the type of coloration is markedly alike in *Blacodes bellus* and *Cophura humilis*, which has a short style. On the other hand, there is a distinct type observable in the remaining forms—a blue-black abdomen, with white pollinose markings.

"The following species belong to the genus *Cophura* as understood by me:—*C. bella* Loew, Texas; *C. scitula* Willst., Washington; *C. fur* Willst., Arizona; *C. clausa* Coquillett, California; and *C. pulchella*, Willst.; *C. humilis* Willst., and *C. sodalis* Osten Sacken, Mexico. *Taracticus brevicornis* Willst. also agrees in all respects save that the abdomen is lightly punctate."



I have included both Osten Sacken's and Dr. Williston's remarks because I firmly believe that the genus *Cophura* as it stands, is more or less of a repository for small Asilids of this subfamily that have the front tibiæ armed with a terminal claw-like spur and do not fit into any of the other genera. There is a vast difference between *sodalis*, for which Osten Sacken erected this genus, and *cristata*, which looks quite like some species of *Cyrtopogon*. Osten Sacken is quite right when he says that *sodalis* has somewhat the appearance of *Holcocephala*. None of the other species now contained in *Cophura* have such a look. Until more material is in collections, I believe that less harm will be done by leaving the genus as it now is. Personally I believe that *sodalis* is distinct from the other species now in the genus. To my knowledge, the only material of this genus in American collections is the type specimens except in the case of *cristata* and *fallei*.

SYNOPSIS OF SPECIES.

- 1. { Thoracic dorsum with a very pronounced crest of hair (Pl. VIII, fig. 5) extending along the median line ..... 2.
- 1. { Thoracic dorsum without such a crest ..... 3.
- 2. { Scutellum with four marginal bristles ..... **cristata.**
- 2. { Scutellum with many marginal bristles ..... **fallei.**
- 3. **brevicornis, clausa, fur, scitula, trunca.**

**Cophura cristata.**

*Blacodes cristatus* Coquillett, Can. Ent., XXV, 33, 1893.

*Cophura cristata* Jones, Tr. Am. Ent. Soc., XXXIII, 280; 1907.

“♀.—Length 11 mm.—Wholly black, the tibiæ slightly piceous. Head light gray pruinose, that in the middle of the front dark brown; face moderately convex, mystax black and white, very dense and extending nearly to the antennæ; first segment of antennæ slightly longer than the second; third segment lanceolate, three times as long as the second segment; style slender, slightly over half as long as the third segment. Thorax very convex, gray pruinose and marked with a broad blackish-brown geminate median stripe, which is considerably dilated outwardly behind the middle; on each side of the stripe is a broad, irregular blackish-brown stripe extending but little in front of the middle of the dorsum; the median brown stripe bears numerous black and light yellow pile, which, on the anterior portion, forms a nearly erect crest; bristles of thorax black and light yellow; pleura mottled light gray and dark brown pruinose, the pile white; the fan-like row of bristles in front of the halteres is white. Scutellum brown

pruinose and densely white pilose, the four marginal bristles black. Metanotum polished black, a large silvery-white spot on each side. Abdomen polished, bluish-black, marked with light gray bloom, as follows: a spot on the sides of the first segment, a transverse anterior and two posterior lateral oblique spots on each remaining segment, the anterior spot obsolete on the last two segments, the posterior spots uniting with the gray lateral margin except on the second segment, each extending obliquely inward from the posterior angle of the segment, and reaching at least a third of the distance across the segment, those on the sixth segment united; pile of dorsum very short, sparse, depressed, mostly light yellowish, that of the sides and venter longer and white. Pile of legs white, the bristles light yellow; front and hind tibiæ and their metatarsi densely bright yellow pubescent within, spur of front tibiæ rather slender, middle tibiæ also furnished with a strong, nearly straight black spur at the tip within. Wings pure hyaline, the extreme apex gray, a large brown cloud on veins at bases of the first and second submarginal cell, of each posterior cell and on the discal cell. All the posterior and anal cells open, second submarginal cell destitute of a stump of a vein. Halteres black."

*Type*.—U. S. N. M., Cat. No. 10,426. A single female specimen.

*Habitat*.—Ventura Co., Cal. (April).

***Cophura fallei*** n. sp. (Pl. VIII, fig. 5).

♂ ♀.—*Length* 10–12 mm.—Wholly black; face and occiput grayish; front and thorax more brownish pruinose; abdomen polished black, segments 2–6 with posterior lateral angles grayish pruinose. Wings mainly hyaline with brown clouds at the furcation of the second and third longitudinal veins, furcation of third vein, at base of the discal cell and base of the second and third posterior cells. *Thoracic dorsum along the middle from prothorax to scutellum with a very prominent crest of long black hair; scutellum above clothed with fine whitish pile and on the margin with a fringe of many long black hair-like bristles.*

Face rather weakly gibbose, mystax deep black, reaching nearly to antennæ; pile of front long, erect, sparse; of the ocellar tubercle more abundant, longer and prominent; on both, black or brownish. Pile of occiput brown, the beard grayish. Proboscis and palpi small. Antennæ wholly black, the basal segments with brownish hair and bristles: segments 1 and 2 cylindrical, segment 3 elongate, but hardly twice as long as the basal segments, style slender, hardly more slender at base than tip of third segment, about one-half as long as the third segment and terminated by a fine bristle. Weak bristles on sides of thoracic dorsum brownish, the pile scarce and grayish; pile of pleuræ long, fine, located in tufts on the posterior portion of the mesopleuræ and before the halteres. Halteres blackish. Abdomen polished, the

posterior angles of segments 2-6 grayish pruinose; the grayish pile confined chiefly to the sides and venter. Legs wholly black, wholly grayish pilose and with weak bristles; fore tibiæ with a terminal claw-like spur; the middle tibiæ with a stout spine at tip, claws black. Wings nearly hyaline, with clouds as above mentioned. All the marginal and submarginal cells wide open, the anal cell open; the anterior vein beyond the middle of the discal cell.

*Type*.—Type series consists of three females and three males, co-types, located as follows: two females in the collection of Prof. C. W. Johnson; two males in the collection of Massachusetts Agricultural College, and one male and one female in the collection of the Colorado Agricultural College.

*Habitat*.—Denver (Apr. 29), and Ft. Collins (March 22, April 30), Col.; Montclair, Cal.

Mr. Coquillett's *cristata* and *fallei* are very similar, but the bristles of the scutellar margin will at once separate them, as *cristata* is described as having four, while *fallei* has many bristles. I believe that it is to this species that Mr. Jones refers in Trans. Am. Ent. Soc., Vol. XXXIII, page 280.

### **Cophura bella.**

*Blax bellus* Loew, Cent., V, 24, 1872.

♂ ♀.—Length 6-9.8 mm.—♂.—Reddish species; the face and front and two large spots (when viewed from before) on the thoracic dorsum between the geminate stripe and the humeri, silvery-white pruinose. Abdomen and legs reddish; wings dark, with a clear spot on the outer costal margin.

Face and front as above, wholly bare; mystax, pile on basal segments of the black antennæ, ocellar tubercle and occiput, yellowish-white. Occiput grayish-yellow pruinose except on occipital orbits, where it is white. Proboscis black; first segment of antennæ cylindrical, second segment shorter, more rounded, third segment some longer than the basal segments taken together, fusiform; style rather thick, tapering to a point, about one-half the length of the third segment. Thorax obscured with brownish bloom; dorsum with geminate median stripe, indistinctly divided, and the two lateral stripes broad, much abbreviated before and behind and subdivided by bloom at the transverse suture, brownish-black; two silvery spots on anterior portion of the dorsum as mentioned above, very distinct when viewed from before. Pleuræ densely brownish pruinose; front coxæ and spot above and a similar spot above the hind coxæ, whitish pruinose. The very sparse pile and bristles reddish-yellow. There are two scutellar bristles. Halteres yellow. Abdomen polished red, rather slender; from

the second segment to tip, the lateral margins and venter are white pruinose. Legs reddish; all the femora dark on the outer posterior side; the front and middle pairs more so. All the tibiæ and tarsal segments darker toward tips, with pale yellowish pile and reddish bristles. Wings narrower than in *C. sodalis* Osten Sacken, brownish, much darker on costal margin than on outer margin; toward the apex on the anterior margin is a small white spot.

♀.—Like the male, but face is grayish-white pruinose; front deep brownish; there are no silvery-white spots on thorax, and the wings are not as uniformly brown but present a more mottled appearance. The costal margin is still much darker and the white spot is present, but all the posterior, anal, axillary and discal cells, and the base of the second submarginal and second basal cells are also much paler.

*Type*.—M. C. Z.

*Habitat*.—Texas (Belfrage).

### ? *Cophura brevicornis*.

*Taracticus brevicornis* Williston, Trans. Am. Ent. Soc., XI, 22, Pl. II, fig. 3. 1884: XII, 54, refers to *Aphamartania*.

? *Cophura brevicornis* Williston, Biologia, Dipt., I, 314, refers here with a doubt.

“♂ ♀.—Length 7–9 mm.—Antennæ short, about as long as the distance from antennæ to oral margin; style distinct, acute, terminating in a microscopic bristle; legs brownish-red, blackish toward the tips of tarsi; abdomen polished black, with a white spot on the posterior angles of the second, third, fourth and fifth segments.

Front and face silvery-white, the bristles on the oral margin, ocelli and the finer ones along the lateral margins of the front black. Face broader than in *octopunctatus*, being very nearly square, the distance from antennæ to oral margin scarcely greater than that between the eyes. Antennæ black, the first two segments with black bristles below; short, not as long as the height of the head; first segment a little longer than the second; third segment slender, not more than twice the length of the first two taken together; style rather slender, not as long as the second antennal segment, terminating in a microscopic bristle. Dorsum of thorax thickly covered with brownish ochraceous bloom, with two very indistinct darker, brownish median stripes in front. Pleuræ gray pruinose. Abdomen of equal width, gently convex above, black, polished, lightly punctate, the posterior angles of the second, third, fourth and fifth segments with a small quadrate silvery spot, the narrow anterior margins of the same segments less distinctly whitish-silvery. Legs brownish-red, all the tarsi reddish-brown, blackish at tips. Wings like those of *T. octopunctatus*, nearly pure hyaline.”

*Type*.—University of Kansas. Two specimens.

*Habitat*.—Washington.

At the time of publication of this species, Dr. Williston adds the following remarks:—This species is, I believe, a *Taracticus*, although it has some of the characters of *Blacodes*. In size and appearance it is strikingly like *T. octopunctatus*, and with the exception of the head, the structure is almost precisely the same, and the coloration nearly so. The head and antennæ, however, appear to be those of *Blacodes* or *Nicoles*. The small cross-veins of the wings in one specimen is nearer the end of the discal cell, as it is in *Blacodes*; unfortunately in the other specimen it is near the middle, as in *T. octopunctatus*. The only characters that I can understand for *Blacodes* now, are: Abdomen smooth, not clavate, thorax a little more gibbose, third segment of antennæ perhaps more fusiform, fourth posterior cell of wing nearly closed and the wings with dark markings.

**Cophura clausa** (Pl. XI, fig. 7).

*Blacodes clausus* Coquillett, Can. Ent., XXV, 34, 1893.

“♂ ♀.—Length 7–9 mm.—Differs from *truncus* only as follows: In the female the bloom on the abdomen is much more extended, covering nearly the entire dorsum, but in the male it is confined to the anterior end of the sides of each segment, that on the sides being greatly dilated inward at the posterior corner of each segment. Base of second submarginal cell destitute of a stump of a vein; anal cell closed and short petiolate; brown clouds of wings obsolete or wanting.”

*Type*.—U. S. N. M., Cat. No. 929. Three males and six females.

**Cophura fur** (Pl. XI, fig. 6).

*Aphamartania fur* Williston, Tr. Am. Ent. Soc., XII, 53, 1885.

“♂.—Length 6–5 mm.—Small, black, thickly white pruinose. Head and antennæ in structure like those of the species of *Nicoles*, except that the vertex is not so deeply excavated on the sides of the ocelli. Face and front with a silvery-white pubescence, the former otherwise bare, except a thin row of white hair on the oral margin and the latter with a few white hairs. Antennæ black, slender. Thorax thickly white pruinose, bare, except the weak white bristles; dorsum with two slender brown median stripes, and two small, less definite brown spots on each side, the one before, the other behind the suture. Abdomen rather short and slender, a little broader at the base, not flattened or expanded distally, polished bluish-black; the venter and posterior angles above, not reaching quite across behind on the pos-

terior segments, white pruinose like the thorax; hypopygium thickened, of moderate size, white pruinose. Legs black, rather thinly clothed with white pile and bristles; hind tibiæ rather stout, in structure like those of *Nicocles scitulus* Williston. Wings hyaline, faintly yellowish tinged on outer half; first longitudinal vein and costa, beyond the tips of the axillary, a little thickened."

*Type*.—University of Kansas. A male specimen.

*Habitat*.—Arizona (Prof. Comstock).

The type specimen, which I have photographed, had already lost a portion of its antennæ before loaned me by the University of Kansas.

### **Cophura scitula.**

? *Nicocles scitulus* Williston, Trans. Am. Soc., XI, 19, Pl. II, fig. I, Ia, 1884.

"♀.—Length 5.5 mm.—Wings hyaline with small brown spots; abdomen polished black with a pruinose spot on the posterior angles of segments 1-5; posterior tibiæ scarcely thickened at the tip.

"Black. Head and antennæ black; face rather thickly whitish pubescent with sparse, obscure, yellowish pile, black on the oral margin. Third segment of antennæ a little broader at its base. Front more polished, a little yellowish pruinose. Lateral orbits white pruinose; beard white. Dorsum of thorax and scutellum but little polished, rather thickly brownish pruinose, with two linear median indistinct stripes, one each in front a whitish pruinose spot and more exteriorly in front of wings a larger more yellowish spot. Pleuræ, coxæ and sides of metanotum thickly whitish pruinose; disk of metanotum polished. Abdomen bare, smooth, polished, bluish-black, in structure and markings like *Nicocles*; broadest at tip of fourth segment; on the posterior angles of the first segment with a small whitish pruinose spot, which becomes successively a little larger on the second, third and fourth segments, but smaller on the fifth. Legs black; thinly whitish pilose and with light colored bristles; hind legs only a little elongate, of equal thickness throughout; the tibiæ not thickened at tip, but gradually, and only moderately so, from the base; the tarsi only slightly thickened. Wings not elongate, fourth posterior cell wide open; hyaline, at distal ends of the first and second basal and discal cells, and base of the submarginal cells with small brownish clouds."

*Type*.—University of Kansas. A single female.

*Habitat*.—Washington (H. K. Morrison).

Placed at first by Dr. Williston under *Nicocles* with the following remarks:—This species will require the male to determine its correct place. I doubt that it is a *Nicocles*. The wings are like *Taracticus*, the hind legs are shorter, stouter,

and not clubbed, the tarsi but slightly thickened; the abdomen is quite smooth, as in *Nicocles*. With *T. brevicornis* it forms a connection between *Taracticus*, *Blacodes*, and *Nicocles*, and they both might perhaps be better placed under *Blacodes*, which would then be distinguished from *Taracticus* by the presence of a terminal style, and from *Nicocles* by the structure of the male abdomen, should this species be found not to possess the silvery markings, as I suspect.

### **Cophura trunca.**

*Blacodes truncus* Coquillett, Can. Ent., XXV, 34, 1893.

“♂ ♀.—Length 9 mm.—Same as *cristatus* with these exceptions: Tibiæ, extreme apex of femora and base of each segment of tarsi yellow. Bloom of front, light gray; mystax very sparse, white; third segment of antennæ almost linear, nearly four times as long as the second. Thorax destitute of a median crest of pile, scutellum not densely pilose, bearing only two marginal bristles; metanotum uniformly gray pruinose, destitute of silvery spots. Bloom of abdomen, consisting of an anterior cross-band on each segment, dilated each side so as to reach the posterior angle of the segment. Brown clouds on wings very faint; base of second submarginal cell furnished with a long stump of a vein. Halteres yellow.”

*Type*.—U. S. N. M., Cat. No. 930. Two male and two female specimens.

*Habitat*.—Los Angeles Co., Cal.

### **NICOCLES.**

|| *Pygostolus* Loew, Cent., VII, 28; 1866; X, 24, 1872 (note.)

|| *Pygostolus* Schiner, Verh. Zool.-Bot. Ges., XVI, 846, 1866.

*Nicocles* Jaennicke, Neue Exot. Dipt., 57, 1867.

*Nicocles* Loew, Berl. Ent. Zeit., 1874, 377 (note.)

*Nicocles* Williston, Trans. Am. Ent. Soc., XI, 16, 1884.

*Nicocles* Coquillett, Can. Ent., XXV, 119, 1893; table of species.

Front tibiæ with a terminal claw-like spur, all the posterior cells of the wing open, and the abdomen (Pl. I, fig. 8) of the male long, unusually depressed, with only six segments apparent when viewed from above. The male abdomen from the base of the third segment to the tip of the fifth gradually expanding in width; the fifth and sixth segments very flat, always silvery-white pruinose, and on each side with about five more or less distinct punctures arranged in oblique rows

of two or three each; the seventh and eighth segments very obscure, retracted within the sixth segment and, together with the small hypopygium, not visible from above. Head very much broader than high, face and front broad, of nearly equal width, the front not widening above, the face only gently convex, and but with little protuberance below. Oral margin clothed with not dense bristly hair, the face above with fine sparse pile reaching nearly to the antennæ. Antennæ (Pl. IV, fig. 4) rather short; first two segments very short, the first always a trifle longer than the second, the third usually slender, about twice as long as the basal segments, and bearing a terminal more or less bristle-like style which is of variable length. Vertex moderately depressed, ocellar tubercle large. Thoracic dorsum strongly arched; the scutellum much as in *Dioctria*. Thoracic dorsum clothed in all the species with sparse, inconspicuous hair on the middle, on the lateral and posterior portions with weak bristles. Scutellum with two very weak, almost hair-like bristles, on the posterior margin. and above clothed with fine silky pile directed backward. Abdomen in both male and female much depressed; in the female more convex, and the eight segments appear normal, the last bearing the ovipositor with its terminal circlet of spines; in the male as above described, the fifth and sixth segments are always very broad and flat, the fifth being subject to some variation in proportion between its width and length. Hind tibiæ thickened at tip, and the hind tarsi considerably stouter than the anterior pairs; pulvilli normal. Wings rather long, more or less marked and spotted with brown or black; all the posterior and submarginal cells wide open, the anal cell only slightly so.

*Type*.—*Pygotolus argentifer* Loew, now a synonym of *Dasygogon politus* Say.

I regret that I have had so little material of this genus with which to work and make descriptions.



## SYNOPSIS OF SPECIES.\*

1. Third and fourth abdominal segments wholly black .....3.  
Third and fourth abdominal segments largely or wholly red.....2.
2. Body red, a black spot on the second abdominal segment . . . **rufus**.  
Body black, abdominal segments 3-6 largely red... **abdominalis**.
3. Antennal style one-half as long as the third segment.....4.  
Antennal style only one-fourth as long as the slender third segment; Eastern species ..... **pictus**.
4. Fifth abdominal segment in the male more than three times as wide as long.....5.  
Fifth abdominal segment in the male less than three times as wide as long; California species..... **6**.
5. Inhabits the Atlantic States ..... **politus**.  
Inhabits California ..... **dives**.
6. Brown spot at tip of wing not crossing the first and second posterior cells; hind tibiæ and tarsi of the male densely silvery within..... **argentatus**.  
Brown spot at tip of wing crosses the first and second posterior cells; hind tibiæ and tarsi of the male not silvery. **amulator**.

**Nicocles abdominalis.**

*Nicocles abdominalis* Williston, Trans. Am. Ent. Soc., XI, 17, Pl. I, figs. 14, 14a, 14b, 1884.

“♂.—Length 11-12 mm.—Black, moderately polished; the third, fourth, fifth and sixth abdominal segments, except the narrow lateral margins, yellowish-red; fifth segment about four times broader than long. Wings variegated with dark brown.

“Head much broader than high, much flattened, the face scarcely more than one-fourth the entire width, the inner margins of the eyes nearly parallel throughout. Face flattened, but very slightly projecting in profile below, black, somewhat polished, whitish dusted below, a row of brown bristles along the oral margin, intermixed with sparse long whitish pile, which extends upon the face nearly to the antennæ. Front more opaque black; the bristles on the ocellar tubercle brown or blackish. Antennæ black; the first two segments with blackish hairs; first segment a little longer than the second, the latter short; third segment nearly twice as long as the first two combined, slender, of nearly equal width throughout; style divergent, rather slender, acuminate, less than half as long as the third segment, terminating in a microscopic bristle. Occipito-orbital bristles brown; pile below soft, white, rather long and abundant. Dorsum of thorax black, with two broad, velvety opaque black stripes, narrowly separated by a slightly

\* As I have had very little material in this genus for study, I am using Mr. D. W. Coquillett's key, partially modified, which appeared in the *Canadian Entomologist*, vol. XXV, 119; 1893.

grayish stripe in front, confluent behind; the rather short and weak bristles above the wing, in front of, and on the suctellum, dark brown. Pleuræ thickly gray pubescent. Abdomen: first two segments polished black; third and fourth bright yellowish-red, very narrowly black along the lateral margins; fifth and sixth of the same color, but more broadly black on the sides, brilliant silvery when viewed from in front, less intense and finally not apparent when seen from behind. The first three segments are parallel on the sides, of nearly the same width as the thorax; from the beginning of the fourth to the tip of the fifth, the sides are nearly straight, but divergent, so that at the tip the abdomen is fully one-fourth wider; sixth segment convex behind. The abdomen is bare, except the sparse, very short, recumbent hairs, very much flattened, especially at the tip, the sixth segment projecting eave-like much beyond the hypopygium, which is small and retracted. Legs rather slender, the tibiæ and tarsi spinose, but not strongly so; hind femora slender, elongate, a little thickened just before the tip; hind tibiæ elongate, slender on the basal two-thirds, much thickened, club-like at the end; hind tarsi much thickened, especially the first segment, which in length is little less than the three following together. In color the legs are deep pitchy black, on the under side of the femora, and sometimes the tibiæ, also deep red; bristles and pile mostly white, wings elongate, all the posterior cells open; blackish, the third, fourth and fifth posterior cells chiefly, the anal cell wholly, the basal cells in part, the costal cell except the tip, and slender spots along the veins opposite the distal part of the first vein, hyaline."

*Type*.—University of Kansas. Two males.

*Habitat*.—California (type).

I have never seen this species.

### **Nicocles æmulator.**

*Pygostolus æmulator* Loew, Cent., X, 25, 1872.

*Nicocles æmulator* Howard, Insect Book, 1902, Pl. XIX, fig. 4.

♂.—*Length about 9 mm.*—Translation.—Black; the last two abdominal segments silvery-white pruinose, the fifth segment twice as broad as it is long; wings beautifully variegated with black, the third basal hyaline; third segment of the antennæ hardly twice the length of the style.

Very much like *dives*, but distinguished by a longer abdomen, less dilated toward the apex, so that while the fifth segment of *æmulator* is double the length of its breadth, that of *dives* is four times as wide as long. Besides the mystax is denser, longer, and more obscure (probably refers to color) than in *dives*. It differs from *pictus* in having the third antennal segment less slender and the terminal style longer.

*Type*.—M. C. Z.

*Habitat*.—California (type).

The wings are less black than in *dives*. The black areas are not as extensive and not as dense. The female differs from the female of *dives* in not possessing the pronounced broad whitish pruinose bands along the lateral margins of the dorsum which are so noticeable in *dives*.

***Nicocles argentatus*.**

*Nicocles argentatus* Coquillett, Can. Ent., XXV, 119, 1893.

“♂.—Length 8-10 mm.—Black; the tibiæ and apex of the sixth, and sometimes of the fifth, abdominal segment, red. Front grayish-brown pruinose; face nearly flat, white pruinose and sparse whitish pilose; mystax on oral margin consisting of a few long yellowish hairs interspersed among about fourteen stout yellow bristles; pile of palpi and of occiput white, bristles of the latter yellow. First segment of antennæ slightly longer than the second, the third one and three-fourths times as long as the first two taken together, of nearly equal width, the style nearly half as long as the third segment. Thorax marked with a broad median black stripe not extending on the posterior fourth, and on each side of it is a large brown pruinose spot divided by the suture and bounded in front by a black spot, also a brown spot on the humeri; elsewhere the bloom is grayish-white; the pile very sparse, white; the bristles brown; pleuræ brown pruinose in front, grayish-white pruinose behind; the fan-like row of hairs in front of the halteres white. Scutellum brown pruinose, a black spot at the base on each side; bearing two brown bristles. Abdomen smooth, sparse grayish-black pruinose, that at the base and sides of segments 2 to 4 gray, the fifth and sixth segments wholly silvery pruinose; second segment longer than wide, others wider than long, the fifth being two and one-half times as wide as long; venter gray pruinose and with median brown pruinose stripe, its pile and that of the legs white, the bristles of the latter white and yellowish; hind tibiæ within, and the under side of their tarsi, densely silvery-white pruinose and pubescent. Wings hyaline; an indefinite pale brown spot extends from the tip of the axillary vein to the base of the fifth posterior cell, darkest in the marginal and interrupted in the first submarginal cell; a second brown spot covers the veins at bases of the first, second and third posterior cells; a scarcely apparent brown spot at base of second submarginal cell, and a large one filling apices of the marginal, first and second submarginal, and of the first posterior cell, extending from one-half to three-fourths the distance from the tip to the base of the second submarginal cell, and sometimes connected with the first-mentioned brown spot by a brown streak extending through the middle of the marginal cell; all the posterior cells open, the anal cell closed.”

“♀.—Same as the male, except that the apices of the fifth and

sixth abdominal segments are never red, the bloom covering these segments is never silvery, and the hind tibiae and tarsi are destitute of silvery bloom and pubescence."

*Type*.—U. S. N. M., Cat. No. 928. Type series consists of nine males and eight females.

*Habitat*.—Los Angeles and San Bernardino Counties, Cal. (April).

### **Nicoles dives.**

*Pygostolus dives* Loew, Cent., VII, 29, 1866.

♂ ♀.—*Length* 8.4–13 mm.—*Translation*.—Black; last two segments of abdomen of male silvery-white pruinose; wings beautifully variegated with black, third basal cell hyaline; third antennal segment a trifle more than twice as long as the style. Fifth abdominal segment of the male about four times as wide as it is long.

♂.—Black; head of uniform color; lower margins of the face whitish pruinose; mystax thin, white, the bristles on the oral margin stout, reddish-brown. Antennae black; terminal style almost equal to half the length of the third segment. Thoracic dorsum black, opaque, with obsolete stripes. Abdomen metallic black, polished, the spots on the lateral margin very small, whitish pruinose; the fifth and sixth segments wholly silvery-white pruinose. Legs brown or reddish-brown, femora largely black. Wings varied with black, the basal third excepting the extreme base and the anal cell, hyaline.

♀.—Thoracic dorsum brownish-black pruinose, the (indistinct) median line abbreviated (posteriorly and divided by a line of light bloom), the lateral margins broadly grayish, and the scutellum grayish. Lateral spots of the abdomen larger than in the male, the last segment not pruinose. Wings hyaline with the transverse veins bordered with black, so that the posterior median fascia is more dilutely marked, the broad border of the apex, and the four spots between are black. In other respects the female agrees with the male.

*Type*.—M. C. Z.

*Habitat*.—The Geysers, Cal. (Osten Sacken, May 5–7); Seattle, Wash. (June 4).

The female wing is black, as follows:—Extreme base, middle of costa and becoming less so in a band extending across to the posterior margin, the tip of wing broadly, and four spots, one on the anterior, and two on the posterior cross-veins, and one at the furcation of the third longitudinal cell. These spots show up well in the hyaline space between the median and apical black bands. The anal cell of the male wing is blackish, and the bristles of the body are reddish-brown.

**Nicocles pictus.**

*Pygostolus pictus* Loew, Cent., VII, 30, 1866.

? *Dasytoga amastris* Walker, List, II, 362, 1849.

♀.—Length 10.6 mm.—Translation from Loew.—Black; wings beautifully variegated with black, basal and third hyaline; third segment of antennæ slender, brownish, four times as long as the style.

From a female of *Pygostolus (Nicocles) dives*, to which it is very much alike, the female *pictus* is distinguished by the following marks. The antennæ are a little longer, the third segment is much more slender, brownish, toward the apex mostly reddish, and the style much shorter. The thorax is much more convex, more broadly bordered with gray on the dorsum. The wing-picture is very much the same, but less obscure.

The description of Walker's *amastris* is as follows:

"Black, polished, clothed with white pile, abdomen fulvo-pilose, the apex obscurely reddish; antennæ black; legs reddish, tarsi darker, hind tibiæ subarcuate, hind tarsi broad, wings subcinereus, and subfasciate with fuscous.

"Body black, polished; head a little broader than the thorax, dull and punctured above, with a row of tawny bristles on the clypeus; clothed behind and beneath with white hairs, a little broader than the thorax: there are a few tawny hairs on the ocellar tubercle; proboscis black, its tip clothed with short tawny hairs. Antennæ black, not longer than the head; segments 1 and 2 short, of equal length, clothed with short tawny hairs; segment 3 red, linear, darker at the tip, full twice the length of the first two segments taken together; style spine-shaped, dark red, slender, black at tip, about one-third the length of the third segment. Eyes red, divided into two regions; the inner part small, flat, composed of large facets, which, however, successively decrease in size as they diverge to the outer part, which is convex, composed of small facets, and much larger than the inner part, which it half encircles. Chest and breast finely punctured, thinly covered with white hairs; the former having also a few long tawny hairs on its posterior part. Abdomen thin, increasing in breadth, from base to the tip, full twice the length of the chest; segments 1-2 very short, the third and following to the sixth, long; the seventh and eighth dull, flat, large, very finely punctured, with no hairs; the seventh slightly red on the hind border and on the side borders, having on each side five large punctures disposed by twos and threes in two oblique rows: on the eighth segment the red overspreads more of the surface and it has on its side three more indistinct punctures which are arranged in a more oblique row; venter dull, punctured; segments with a rim on

each side; the last segment with red on the hind border, and more slightly so on each side border. (I believe that Walker has counted the first two segments of the abdomen as four; the seventh and eighth in this description really refer to the fifth and sixth.) Legs red, clothed with short tawny hairs, hips black; tibiae beset with some longer tawny hairs; feet pitchy, and armed with bristles; hind tibiae slightly curved and club-shaped; hind tarsi rather broad. Wings narrow, slightly gray; each with two large brown spots, one on the middle of the fore-border, the other at the tip of the wing, and they descend into the disk along the borders of the cross-veins, the hind border about the tip is brownish-gray, with a colorless streak on each areolet; wing-ribs and veins black; poisers tawny. Length of body  $4\frac{1}{2}$  lines; of wings, 9 lines."

*Type*.—M. C. Z. (*pictus*). That of *Dasygogon amastris* is at the British Museum.

*Habitat*.—N. J. (Smith Cat.); D. C. (type, *pictus*); Ga. (type, *amastris*); St. Augustine, Fla. (C. W. Johnson).

According to Prof. Johnson, this is a fall species. He has taken it in Georgia in October. The male wing is much as in *dives* and *æmulator*. Legs almost wholly reddish, but the tarsi darker toward the tip. The female has a velvety black stripe on the thoracic dorsum divided by a distinct, rather golden pruinose stripe. This is less distinct in the male and female of *dives* and *æmulator*.

### **Nicoles politus.**

*Dasygogon politus* Say, Jour. Acad. Sci. Phil., III, 52, 1822; Compl. Works, II, 65.

*Dasygogon politus* Wiedemann, Auss. Zw., I, 405, 1828.

*Dasygogon politus* Walker, List. VI, 421, 1854.

*Pygostolus argentifer* Loew, Cent., VII, 28, 1866.

♂ ♀.—Length 8–10 mm.—Black; fifth and sixth abdominal segments silvery-white pruinose; tibiae and tarsi usually reddish; wings hyaline on basal third, the outer two-thirds darkened in various degrees. Female like male, only the abdomen is normal and the lateral margins of all the segments are whitish pruinose, the fifth and sixth segments without the silvery bloom found in the male. Atlantic States species, usually appearing in the spring of the year.

♂.—Face grayish pruinose, the front brown; the fine bristles of the mystax on the oral margin yellowish-brown, the pile higher up on the face and the beard, very fine and white; hair of ocellar tubercle and the occipito-orbital bristles yellowish. Antennae black, the third segment sometimes with a reddish tinge; the first segment slightly longer than the second; the third not quite twice as long as the first

two taken together, of nearly equal width throughout; style a trifle over one-half as long as the third segment. Palpi and proboscis black. Thoracic dorsum more or less velvety black, showing only traces of stripes; however, this is variable, as in one specimen there are two rather ill-defined dark median stripes, separated by a grayish line anteriorly, and abbreviated without coalescing behind the transverse suture; the lateral and posterior margins of the dorsum, the scutellum and the pleuræ and the coxæ, grayish-white pruinose, the pile of pleuræ and scutellum fine and white; the weak bristles before the halteres, on the sides of the dorsum and the two on the scutellar margin, yellow or brownish. Abdomen polished bluish-black, sparsely clothed with inconspicuous appressed yellowish hair above, and on the sides of first two segments with longer white pile; the fifth and sixth segments silvery-white pruinose, showing on their sides rather indistinctly two short rows of two or three punctures each; lateral margins, especially the anterior portion, of the segments, grayish pruinose; venter brownish pruinose, spotted or streaked with white bloom. In shape the abdomen is nearly of equal width to tip of the second segment; thence evenly increasing in width to tip of the fifth; the sixth segment is indistinctly narrower than the fifth, and from above wholly conceals the small seventh and eighth segments and the hypopygium, which are retracted more or less within it. The fifth segment is fully three times as wide as long. Femora usually black, though sometimes tinged with red; tibiæ and tarsi reddish-brown with white or yellowish hair and brownish bristles. Basal third of wings, except extreme base, pure hyaline, the outer two-thirds blackish in varying degree, darkest along the costa, on the veins at the bases of all the posterior cells and at the furcation of the third longitudinal vein; on the costal margin near the middle of the outer two-thirds there is usually a hyaline spot. All the posterior and the submarginal cells open; anal cell narrowly open or closed on the margin. The black of the wings is variable and sometimes extends over into the basal third.

♀.—Similar to male, but the abdomen not expanded distally; all the segments on the lateral margins grayish pruinose; the fifth and sixth segments without the silvery bloom present in the male.

*Type*.—Lost (Say). The type of *Pygostolus argentifer* is at the M. C. Z.

*Habitat*.—Atlantic States, being reported from Mass. (Osten Sacken); Clementon (Apr. 15, C. W. Johnson), N. J.; Pa.; Md.; and Tifton (C. W. Johnson), Ga.

Prof. C. W. Johnson says that this is a spring species, while *pictus* appears in the fall of the year.

**Nicoles rufus** (Pl. X, fig. 2).

*Nicoles rufus* Williston, Trans. Am. Ent. Soc., XI, 18, Pl. I, fig. 15, 1884.

"♀.—Length 10–11 mm.—Yellowish-red; the second segments of abdomen with a small semioval black spot at base. Wings hyaline on basal third, on distal part variegated with brown.

Face dark red, slightly polished, on the sides and upper angles and on the lower parts with pubescence; bristles like the face, yellowish on outer part; pile short, very sparse. Antennæ yellowish-red, the basal segments a little darker; first segment scarcely at all longer than the second, style comparatively longer than in *abdominalis*, nearly half as long as the third segment. Front opaque. Dorsum of thorax opaque brownish-red, on each side of the middle in front a small spot, and back of the suture above the wings a larger spot of a darker, more reddish-brown color; in front of the scutellum in the middle, a small, oval polished space, on either side of which the color is golden-yellow; along the suture on each side a slender, yellowish-gray stripe. Pleuræ thickly reddish-yellow and grayish pubescent. Abdomen polished red; the second segment at the base with a narrow, transverse, semioval polished black spot; on the anterior and posterior angles of the second segment with a small, on the posterior angles of the third and fourth, with a smaller silvery spot; the fifth segment on the sides with a large triangle, narrowly separated from one of the opposite side, and the sixth and seventh segments wholly opaque yellowish. In shape the abdomen has parallel sides to the tip of the second segment, thence widens to the tip of the fourth, thence on the sides more rapidly convergent. Legs wholly red, the coxæ yellowish opaque, the bristles light colored. Wings a little broader than in *abdominalis*, the anterior cross-vein near the middle of the discal cell; on basal third (except extreme base) hyaline, beyond variegated with brown, darker across the middle, the cross-veins and along the veins at tip."

*Type*.—University of Kansas. A single female.

*Habitat*.—Washington (type); Seattle, Wash. (C. W. Johnson, May 10).

Through the kindness of Prof. C. W. Johnson I have the loan of a male specimen of this species. It agrees very well with the above description; the abdomen, however, is typical of this genus in shape, and the fifth and sixth segments are silvery white pruinose. On each side of these two segments there are four or five distinct punctures arranged in two rows of two or three punctures each. The fifth segment is a little more than twice as wide as long.



**DASYPOGON.**

*Dasypogon* Meigen, Illig. Mag., II, 270, 1803.

In the restricted sense this genus does not occur in North America. Several species have been described under this genus in the old sense, and have never been identified. The only ones recorded from the United States are:—

*Dasypogon quadrinotatus* Bigot, Annales, 1878. Cal.

*Dasypogon (Seilopogon) rubinosus* Bigot, Annales, 1878. N. A.

## EXPLANATION OF PLATES.

The figures on the Plates III, IV, V, were made with the camera lucida; those on Plate II are free-hand sketches. The photographs were taken in the Insectary of the Massachusetts Agricultural College. A Dallmeyer lens was used. As the photographs are not equally enlarged, the magnification will be stated in the following list. The author regrets that many of the finer details of antennæ, bristles and hairs have been lost in the necessary reduction of the original plates VI to X.

The plates are by the author.

## PLATE II.

FIG. 1—Asilid wing.

- 1—costal vein.
- 2—axillary vein.
- 3—first longitudinal vein.
- 4—second longitudinal vein.
- 5—anterior branch of the third longitudinal vein.
- 6—third longitudinal vein.
- 7—fourth longitudinal vein.
- 8—anterior intercalary vein.
- 9—fifth longitudinal vein.
- 10—posterior intercalary vein.
- 11—sixth longitudinal vein.
- 12—anal vein.
- 13—anterior cross vein.
- 14—portion of anterior intercalary referred to in *Leptogaster*.
- 15—posterior cross vein.
- a—costal cell.
- b—sub-costal cell.
- c—marginal cell.
- d—first sub-marginal cell.
- e—second sub-marginal cell.

- FIG. 1.—f—first posterior cell.  
 g—second posterior cell.  
 h—third posterior cell.  
 i—fourth posterior cell (closed).  
 j—fifth posterior cell.  
 k—anal cell (closed).  
 l—axillary cell (sometimes called the anal angle).  
 m—discal cell.  
 n—first basal cell.  
 o—second basal cell.

- FIG. 2.—Thorax of an Asilid.  
 pn—pronotum.  
 n—neck of prothorax.  
 msn—mesonotum.  
 sc—scutellum.  
 hu—humerus, or humeral angle  
 tr—transverse suture.  
 dp—dorsopleural suture.  
 mp—mesopleural suture.  
 sp—sternopleural suture.  
 msp—mesopleura.  
 mst—mesosternum.  
 ptp—pteropleura.  
 hyp—hypopleura.  
 mtu—metanotum.  
 mtst—metasternum.  
 mtp—metapleura.  
 hl—halter.  
 w—wing.  
 spl—spiracles.  
 c—prothoracic coxa.  
 e—mesothoracic coxa.  
 c—metathoracic coxa.  
 1—first abdominal segment.  
 2—second abdominal segment.

- FIG. 3.—Tip of front tibia of *Deromyia*, showing terminal claw-like spur and its relation to the front metatarsus.  
 “ 4.—Diagrammatic, showing the usual direction of spines at tip of middle tibia.  
 “ 5.—Diagrammatic, showing direction of spines at tip of middle tibia of *Chrysoceria* and *Callinicus*.  
 “ 6 and 7.—Portion of wing of *Leptogaster*.  
 “ 8.—Abdomen of male *Nicocles politus*.

## PLATE III.

- FIG. 1.—Antenna of *Stenopogon latipennis*.  
 “ 2.— “ “ *Stenopogon inquinatus*.  
 “ 3.— “ “ *Stenopogon helvolus*.  
 “ 4.— “ “ *Stenopogon modestus*.  
 “ 5.— “ “ *Dizonias pilatei*.  
 “ 6.— “ “ *Taracticus octopunctatus*.  
 “ 7.— “ “ *Ospriocerus abdominalis*.  
 “ 8.— “ “ *Dioctria albus*.  
 “ 9.— “ “ *Cyrtopogon plausor*.  
 “ 10.— “ “ *Deromyia bilineata*.

## PLATE IV.

- FIG. 1.—Antenna of *Laphystia opaca*.  
 “ 2.— “ “ *Ceraturgus cruciatus*.  
 “ 3.— “ “ *Ceraturgopsis cornutus*.  
 “ 4.— “ “ *Nicocles politus*.  
 “ 5.— “ “ *Willistonina bilineatus*.  
 “ 6.— “ “ *Holcocephala abdominalis*.  
 “ 7.— “ “ *Holopogon*.  
 “ 8.— “ “ *Lasiopogon opaculus*.  
 “ 9.— “ “ *Stichopogon trifasciatus*.  
 “ 10.— “ “ *Leptogaster pictipes*.  
 “ 11.— “ “ *Psilocurus nudiusculus*.

## PLATE V.

- FIG. 1.—Head of *Deromyia*.  
 “ 2.— “ “ *Micostylum*.  
 “ 3.— “ “ *Stenopogon*.  
 “ 4.— “ “ *Holcocephala*.  
 “ 5.— “ “ *Holopogon*.  
 “ 6.— “ “ *Laphystia*.  
 “ 7.— “ “ *Stichopogon*.  
 “ 8.— “ “ *Teracticus*.  
 “ 9.— “ “ *Leptogaster*.

## PLATE VI.

- FIG. 1.—*Leptogaster badius*, ♀, enlarged about  $3\frac{1}{2}$  X.  
 “ 2.—*Callinicus calcaneus*, ♀, enlarged about 3 X.  
 “ 3.—*Deromyia sallei*, ♀, enlarged about  $1\frac{2}{3}$  X.  
 “ 4.—*Microtylum morosum*, ♀, enlarged about  $1\frac{2}{3}$  X.  
 “ 5.—*Plesiomma unicolor*, ♀, enlarged about  $2\frac{1}{2}$  X.  
 “ 6.—*Chrysoceria pictitarsis*, enlarged about  $3\frac{1}{2}$  X.

## PLATE VII.

- FIG. 1.—*Ceraturgus cruciatus*, ♀, enlarged about 3 X.  
 “ 2.—*Dizonias pilatei*, ♀, enlarged about  $2\frac{2}{3}$  X.  
 “ 3.—*Willistonina bilineatus*, ♀, enlarged about  $3\frac{1}{2}$  X.  
 “ 4.—*Saropogon dispar*, ♂, enlarged about  $2\frac{1}{2}$  X.  
 “ 5.—*Ospriocerus abdominalis*, ♀, enlarged about 3 X.  
 “ 6.—*Ceraturgopsis cornutus*, ♀, enlarged about  $2\frac{2}{3}$  X.

## PLATE VIII.

- FIG. 1.—*Cyrtopogon callipadillus*, ♂, enlarged about  $3\frac{1}{2}$  X.  
 " 2.—*Saropogon dispar*, ♀, enlarged about  $2\frac{1}{2}$  X.  
 " 3.—*Dizonias tristis*, ♂, enlarged about  $2\frac{2}{3}$  X.  
 " 4.—*Microtylum morosum*, ♂, enlarged about  $1\frac{2}{3}$  X.  
 " 5.—*Cophura fallci*, ♀, enlarged about  $3\frac{1}{2}$  X.  
 " 6.—*Ecthodopa pubera*, ♂, enlarged about  $3\frac{1}{2}$  X.

## PLATE IX.

- FIG. 1.—*Cyrtopogon nebulo*, ♀, enlarged about  $3\frac{2}{3}$  X.  
 " 2.—*Dicolonus sparsipilosum*, ♂, enlarged about  $4\frac{1}{2}$  X.  
 " 3.—*Triclis tagax*, ♀, enlarged about  $4\frac{2}{3}$  X.  
 " 4.—*Psilocurus nudiusculus*, enlarged about  $3\frac{1}{2}$  X.  
 " 5.—*Deromyia bilineata*, ♀, enlarged about 2 X.  
 " 6.—*Lasiopogon opaculus*, ♀, enlarged about  $3\frac{1}{2}$  X.  
 " 7.—*Cyrtopogon dasyllis*, ♂, enlarged about  $2\frac{1}{2}$  X.  
 " 8.—*Dioctria albius*, ♀, enlarged about  $4\frac{2}{3}$  X.

## PLATE X.

- FIG. 1.—*Lestomyia sabulonum*, ♂, enlarged about 4 X.  
 " 2.—*Nicocles rufus*, ♂, enlarged about  $3\frac{1}{2}$  X.  
 " 3.—*Myclaphus melas*, ♂, enlarged about  $3\frac{1}{2}$  X.  
 " 4.—*Heteropogon johnsoni*, ♀, enlarged about  $3\frac{1}{2}$  X.  
 " 5.— " *macrinus*, ♂, enlarged about 3 X.  
 " 6.—*Cyrtopogon nugator*, ♀, enlarged about 4 X.  
 " 7.—*Stichopogon trifasciatus*, ♀, enlarged about  $3\frac{2}{3}$  X.  
 " 8.—*Pycnopogon cirrhatus*, ♀, enlarged about  $4\frac{2}{3}$  X.

## PLATE XI.

- FIG. 1.—*Holopogon atripennis*, ♂, enlarged about 5 X.  
 " 2.— " *snowi*, ♀, enlarged about 7 X.  
 " 3.—*Taracticus octopunctatus*, ♂, enlarged about 5 X.  
 " 4.—*Holcocephala abdominalis*, ♀, enlarged about 6 X.  
 " 5.— " " ♂, enlarged about 6 X.  
 " 6.—*Cophura fur*, ♂, enlarged about 5 X.  
 " 7.— " *clausa*, enlarged about 4 X.

## PLATE XII.

- FIG. 1.—*Stenopogon (Scleropogon)*, ♂, enlarged about  $3\frac{1}{2}$  X.  
 " 2.— " *longius*, ♂, enlarged about  $3\frac{2}{3}$  X.  
 " 3.— " *breviusculus*, ♂, enlarged about  $3\frac{1}{2}$  X.  
 " 4.—*Ablautus rubens*, ♀, enlarged about  $5\frac{1}{2}$  X.

## INDEX TO NAMES.

Names of subfamilies are in small capitals; generic names begin with a capital; specific names are in small type, and synonyms and preoccupied names are in italics.

	PAGE		PAGE
abbreviatus.....	345	bella.....	379
abdominalis (Holocephala).....	309	<i>bicinctus</i> .....	219
abdominalis (Nicoles).....	385	<i>bicolor</i> .....	345
abdominalis (Ospricerus).....	185	bigoti.....	354, 357
abdominalis (Stichopogon).....	332	<i>bilinatum</i> .....	340
<i>Ablautatus</i> .....	178	bilineata.....	354, 356
Ablautus.....	151, 178	bilineatus.....	338
<i>adustus</i> .....	347	bimacula.....	258, 262
<i>æacides</i> .....	185	bivittatus.....	297, 298
æacidinus.....	193, 201	<i>Blacodes</i> .....	375
<i>æacus</i> .....	185	<i>Blax</i> .....	375
æmulator.....	385, 386	brevicornis (Leptogaster).....	158, 161
<i>æta</i> .....	310	brevicornis (Cophura).....	377, 380
albibasis.....	192, 197	breviusculus.....	192, 196
<i>albifasciatus</i> .....	219	calcaneus.....	340
<i>albifrons</i> .....	351	californiæ.....	192, 194
albius.....	251	Callenicus.....	154, 339
alleni.....	258, 261	callipedilus.....	259, 260, 268
<i>amastris</i> .....	389	calva.....	309
angustipennis.....	354	<i>candidus</i> .....	335
<i>Anisopogon</i> .....	318	capnopterus.....	217
annulatus.....	157, 159	<i>carolinensis</i> .....	173
<i>Aphamartania</i> .....	381	Ceraturgopsis.....	152, 239
apiformis.....	330	Ceraturgus.....	153, 233
<i>Archilestes</i> .....	216	cerussatus.....	259, 260, 291
Archilestris.....	152, 216	chalcoproctus.....	212
arenicolor.....	297	Chrysoceria.....	154, 340
argentatus.....	385, 387	<i>chryso-pogon</i> .....	263
argenteus.....	332, 334	cinerascens.....	193, 208
<i>argentifer</i> .....	390	cirrhatus.....	330
<i>Asicyia</i> .....	225	clausa.....	377, 381
ASILINÆ.....	151	<i>Clavator</i> .....	370
Asilus.....	137	combustus.....	345, 347
atridorsalis.....	157, 159	consanguineus.....	193, 204
atripennis.....	312	Cophura.....	155, 375
aurifex.....	259, 261, 272	coquillettii.....	345, 348
aurulentus.....	243	cornutus.....	235, 240
badius.....	158, 160	cretaceus.....	259, 261, 287
<i>basalis</i> .....	358	cristata.....	377

	PAGE		PAGE
cruciatus.....	234, 235	<i>gibbus</i> .....	323
cymbalista.....	259, 260, 269	gilvipes.....	304
Cyrtopogon.....	153, 257	<i>Gonypes</i> .....	155
dasyllis.....	259, 277	gracilis.....	353
dasyloides.....	259, 277, 278	gratus.....	192, 193
Dasyopogon.....	393	guttula.....	312, 313
DASYPOGONINÆ.....	151, 174	<i>Habropogon</i> .....	337
<i>Daulopogon</i> .....	296, 300	helvulus.....	193, 208
Deromyia.....	154, 352	<i>herennius</i> .....	367
Dicolonus.....	153, 246	Heteropogon.....	318
Diocetria.....	153, 250	hirtipes.....	157, 158, 164
<i>Diocetodes</i> .....	373	<i>histrio</i> .....	159
<i>Diognites</i> .....	352	Holocephala.....	153, 308
dimidiatus.....	236	Holopogon.....	153, 311
<i>Discocephala</i> .....	309	hyalinus.....	345, 351
discolor.....	354, 358	hypomelas.....	354, 359
dispar.....	345, 349	incisularis.....	158, 165
Dizonias.....	152, 218	indecora.....	307
dives.....	385, 388	inquinatius.....	192, 198
dubius.....	259, 283	johnsoni.....	319, 320
Echthodopa.....	153, 248	jubatus.....	192, 195
elegantulus.....	332	Laparus.....	341
Erax.....	139	Laphria.....	139
Euarmostus.....	257	LAPHRINÆ.....	151
eudicranus.....	158, 162	<i>Laphyctis</i> .....	228
eutrophus.....	185, 186	Laphystia.....	152, 225
evidens.....	260, 288	Lasiopogon.....	153, 257, 296
fallei.....	377, 378	<i>laticeps</i> .....	310
falto.....	258, 263	latipennis.....	193, 205
<i>fasciatus</i> .....	235	lautus (Heteropogon).....	319, 321
<i>fasciventris</i> .....	335	lautus (Holopogon).....	312, 314, 321
<i>favillaceus</i> .....	162, 163	Leptogaster.....	151, 155
<i>flavicornis</i> .....	163	leptogaster.....	307
flavipes (Ablautus).....	179, 180	LEPTOGASTRINÆ.....	151, 155
<i>flavipes</i> ( <i>Diocetodes</i> ).....	374	Lestomyia.....	154, 370
flavipes (Laphystia).....	227, 229	leucozonus.....	259, 260, 282
flavipes (Leptogaster).....	158, 163	limatula.....	227, 229
flavipilis.....	232	lineata.....	307
formosa.....	248	lobicornis.....	243
fragilis.....	332, 334	longimanus.....	259, 260, 278
fraudigera.....	371	longulus.....	193, 203
funesta.....	307	<i>Loewiella</i> .....	375
fur.....	377, 381	ludius.....	319, 322
galactodes.....	213	lutatius.....	258, 265
<i>gelascens</i> .....	335	luteus.....	345, 351
giber.....	259, 293	lyratus.....	258, 265

	PAGE		PAGE
macerinus	319, 323	opaculus	297, 299
maculosus	283	<i>Orthoncuromyia</i>	222
magnificus	217	Ospriocerus	151, 183
manicatus	318	parvula	251, 253
marginalis	258, 267	patruelis	319, 325
<i>Megapollyon</i>	212	perplexa	354, 360
<i>melanopleurus</i>	262	phænotus	312, 315
melas	243, 244	<i>philadelphicus</i>	313
Metapogon	153, 303	<i>phanicurus</i> (Dizonias)	219
Microstylum	152, 212	phœnicurus (Heteropogon)	319, 326
minus	179, 181	picticornis	193, 209
minos	184, 187	pictipes	157, 168
minuta	176	pictitarsis	342
<i>miscellus</i>	369	pictus	385, 389
modestus (Psilocurus)	223	pilatei	221
modestus (Stenopogon)	192, 200	<i>plagiata</i>	335
morosum	213, 214	platyptera	354, 361
morosus	192, 199	plausor	259, 260, 270
montanus	259, 260, 280	Plesiomma	153, 305
murinus	158, 166	politus	385, 390
Myelaphus	152, 241	<i>pollens</i>	214
nebulosus	258, 294	positivus	259, 261, 290
Neolaparus	341	præpès	259, 260, 271
Nicocles	155, 383	princeps	259, 261, 273
niger (Taraticus)	239	profusus	259, 260, 286
niger (Townsendia)	175	Psilocurus	152, 222
nigricolor	259, 284	pubera	248, 249
nigripes (Ceraturgus)	238	pulcher	259, 261, 274
nigripes (Heteropogon)	319, 325	pulcherrima	177
nigritulus	192, 197	pulchra	361
nigritus	192	pumilus	193, 206
nitens	193, 202	punctipennis	304, 305
nitida	251, 253	pusio	251, 254
nitidiventris	314	Pycnopogon	154, 329
<i>nitidus</i>	173	<i>Pygostolus</i>	383
<i>notata</i>	228	<i>quadrinaculatus</i>	219
nudiusculus	223, 224	quadrivittatus	302
nugator	259, 260, 289	rattus	259, 260, 285
obscuripennis	158, 167	rejectus	259, 260, 289
<i>obscuriventris</i>	192, 194	resplendens	251, 255
ochraceus (Leptogaster)	168	rhadamanthus	185, 187
ochraceus (Stenopogon)	207	rubens	179, 181
octopunctatus	374	rubida (Dioctria)	251, 255
oculatus	309	<i>rubida</i> (Leptogaster)	172
celandicus	251	rubidus (Heteropogon)	319, 327
opaca	227, 229	<i>rubidus</i> (Leptogaster)	172

	PAGE		PAGE
rufescens .....	354, 362	<i>subfasiata</i>	228
<i>rufipes</i> .....	374	<i>subulatus</i> .....	193, 202
rufithorax .....	309	<i>symmacha</i> .....	354, 365
<i>rufiventris</i> .....	309	<i>tagax</i> .....	231
rufotarsus .....	259, 260, 275	<i>Taracticus</i> .....	154, 373
rufotibialis .....	179, 182	<i>tenebrosus</i> .....	193, 206
rufus ( <i>Myelaphus</i> ) .....	243, 245	<i>tenuipes</i> .....	158, 172
rufus ( <i>Nicocles</i> ) .....	385, 392	<i>ternata</i> .....	354, 366
<i>rufus</i> ( <i>Saropogon</i> ) .....	351	<i>terricola</i> .....	297, 300
sabaudus .....	190	<i>testaceus</i> .....	157, 172
sabulonum .....	372	<i>tetragrammus</i> .....	297, 301
sackeni .....	251, 255	<i>tibialis</i> .....	285
sallei .....	354, 364	<i>tipuloides</i> .....	155
<i>Saropogon</i> .....	154, 344	<i>Townsendia</i> .....	151, 174
scapularis .....	169	<i>Tricilis</i> .....	152, 230
schæfferi .....	157, 170	<i>trifarius</i> .....	179, 183
scitula .....	377, 382	<i>trifasciatus</i> .....	332, 335
<i>Scleropogon</i> .....	189	<i>tristis</i> .....	219
semiustus .....	345, 351	<i>trunca</i> .....	377, 383
seniculus .....	312, 315	<i>umbrina</i> .....	367
senilis .....	319, 328	<i>umbrinus</i> .....	312, 317, 354
sexfasiata .....	227, 228	<i>unicolor</i> .....	307
simplex .....	247	<i>univittatus</i> .....	193
similis .....	209	<i>varipennis</i> .....	259, 295
snowi .....	312, 316	<i>varipes</i> .....	168
sparsipilosum .....	247	<i>ventralis</i> .....	185, 188
<i>spathulatus</i> .....	185	<i>vera</i> .....	251, 256
<i>Sphageus</i> .....	152, 211	<i>vespoides</i> .....	318, 329
<i>Stenopogon</i> .....	151, 189	<i>virgatus</i> .....	157, 158, 173
<i>Stichopogon</i> .....	154, 331	<i>Willistonina</i> .....	154, 337
sudator .....	259, 261, 291	<i>winthemi</i> .....	354, 369

### ERRATA.

Page 137, line 19, read *to the* for *of*.

" 137, line 27, read *Willistonina* for *Willistonina*.

" 139, line 6, read *Meigenian* for *Schiner*.

" 139, line 11, read *from* for *for*.

" 139, line 34, insert *Dioctria* between *Dasyopogon* and *Leptogaster*.

" 140, line 6, omit first *r*.

" 140, line 8, read *der* for *de*.

" 140, line 8, read *Sudafrika's* for *Suda Africas*.

" 140, line 10, read *oder* for *order*.

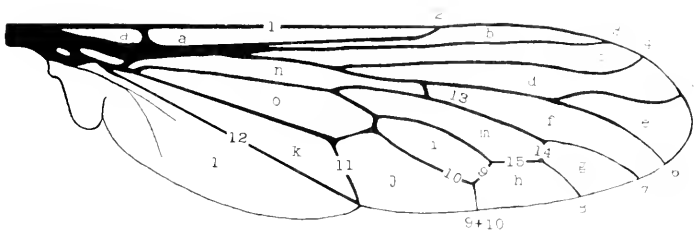
" 140, line 11, read *Hofcabinets* for *Hofcabinits*.

" 142, line 4, read *these* for *the*.

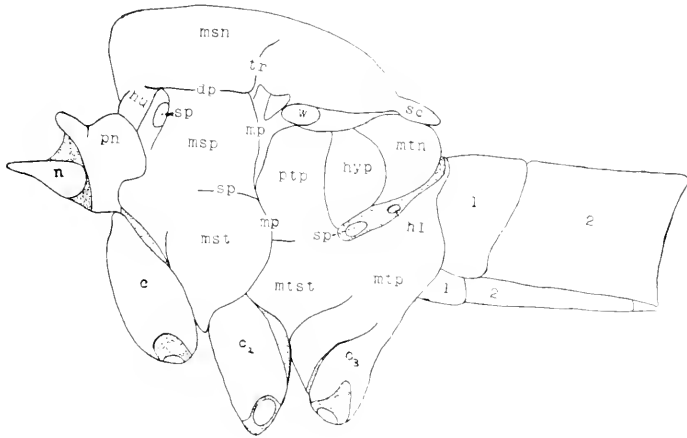
" 143, line 25, read *Ceraturgus* for *Ceraturgis*.

" 148, line 5, omit *the* before *Laphystia*.

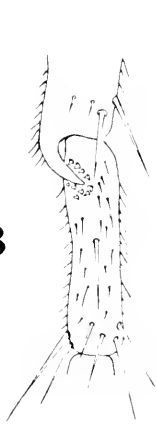




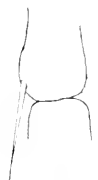
1



2



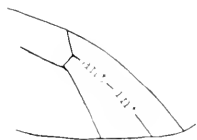
3



4



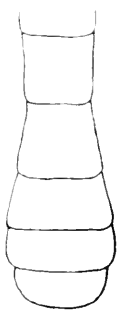
5



6



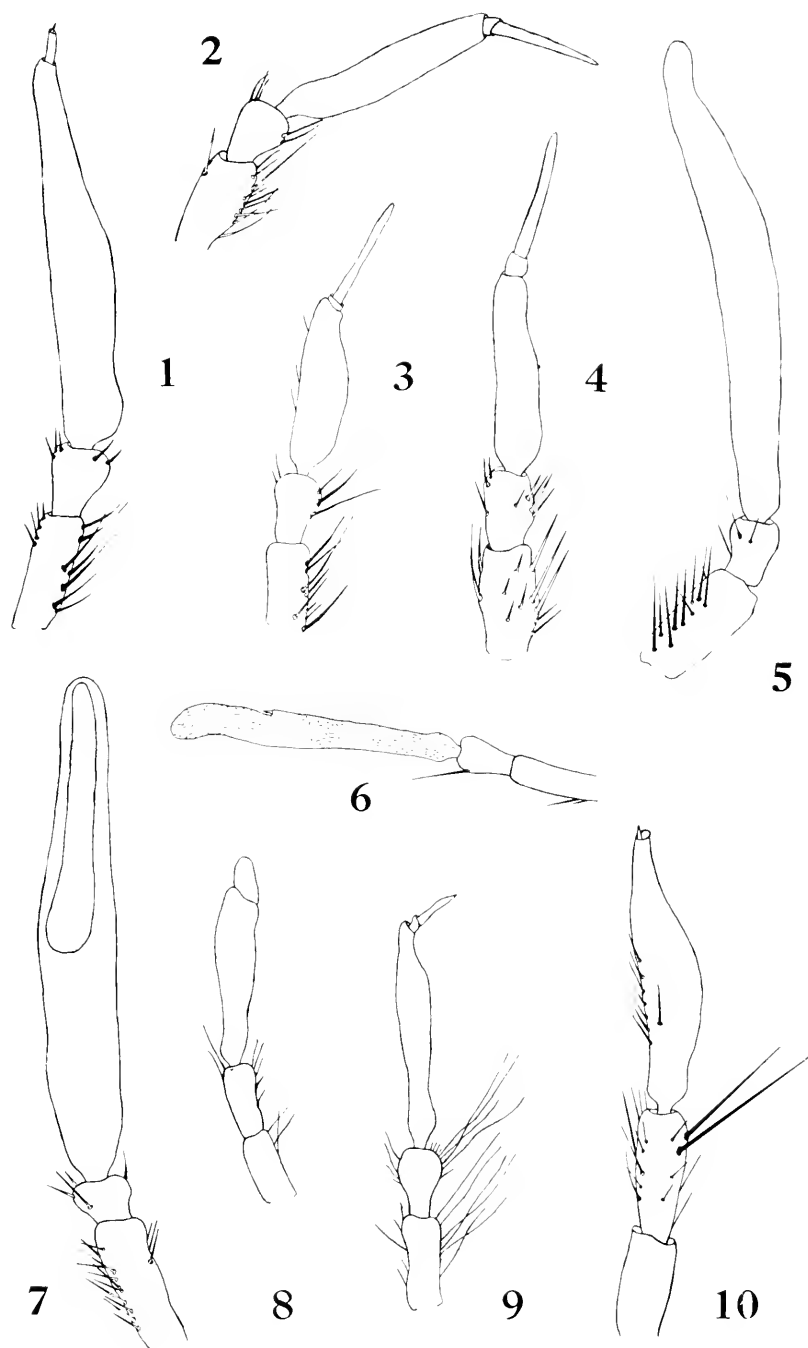
7



8

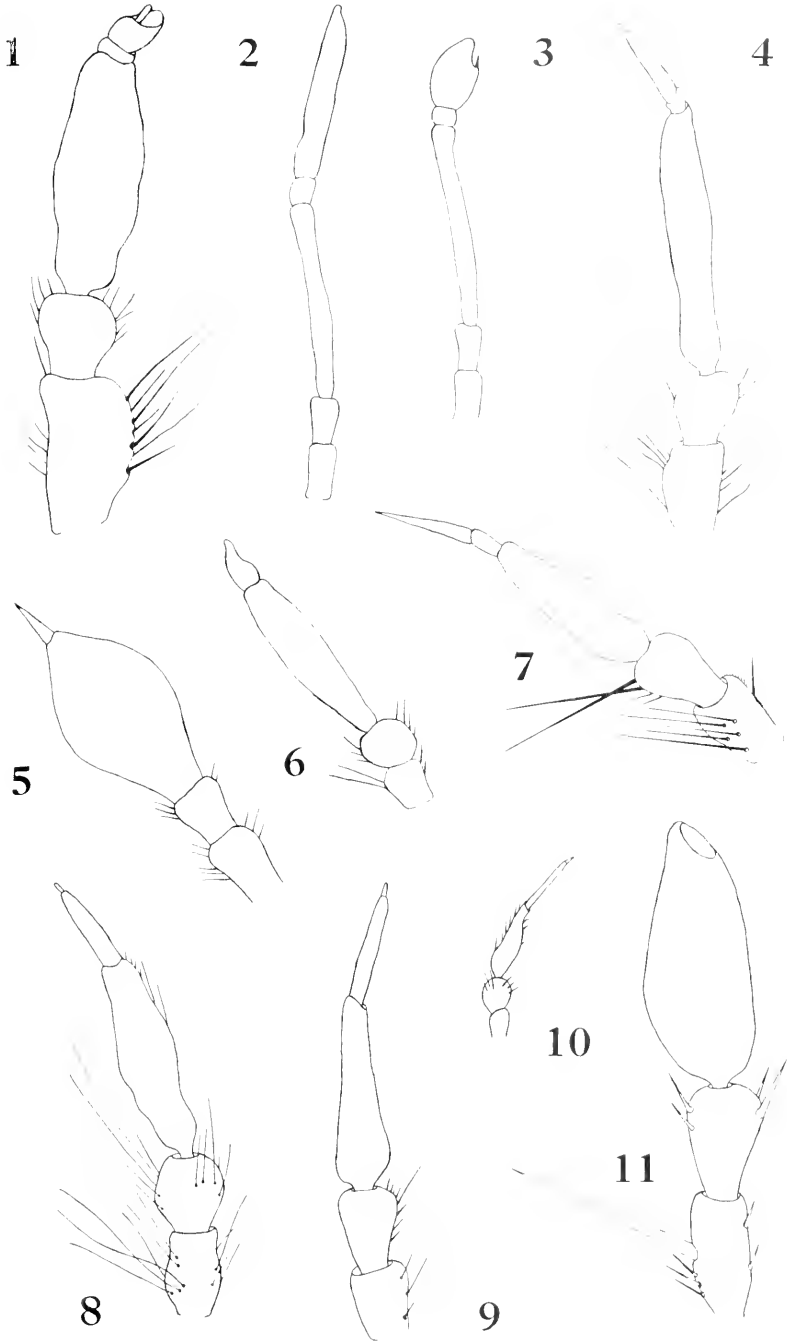
BACK ON DIPTERA.





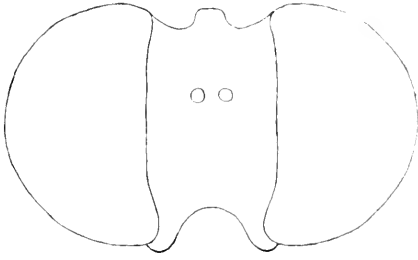
BACK ON DIPTERA.



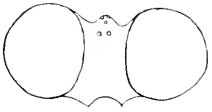


BACK ON DIPTERA.

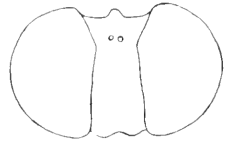




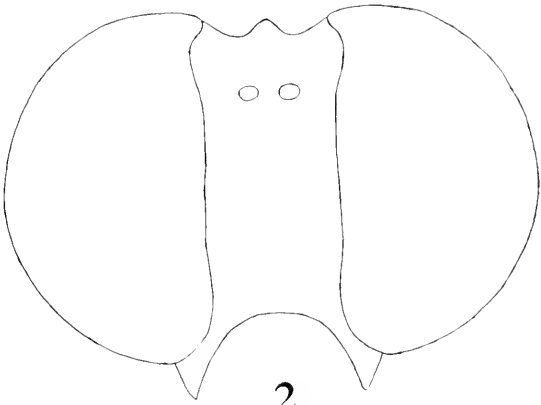
1



4



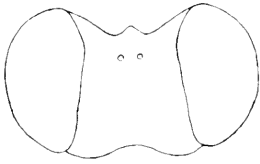
5



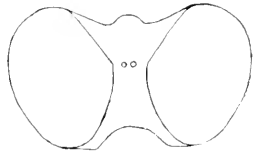
2

6

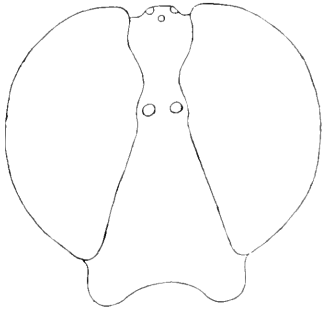
7



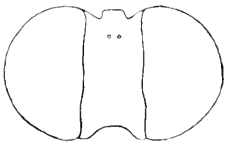
8



9

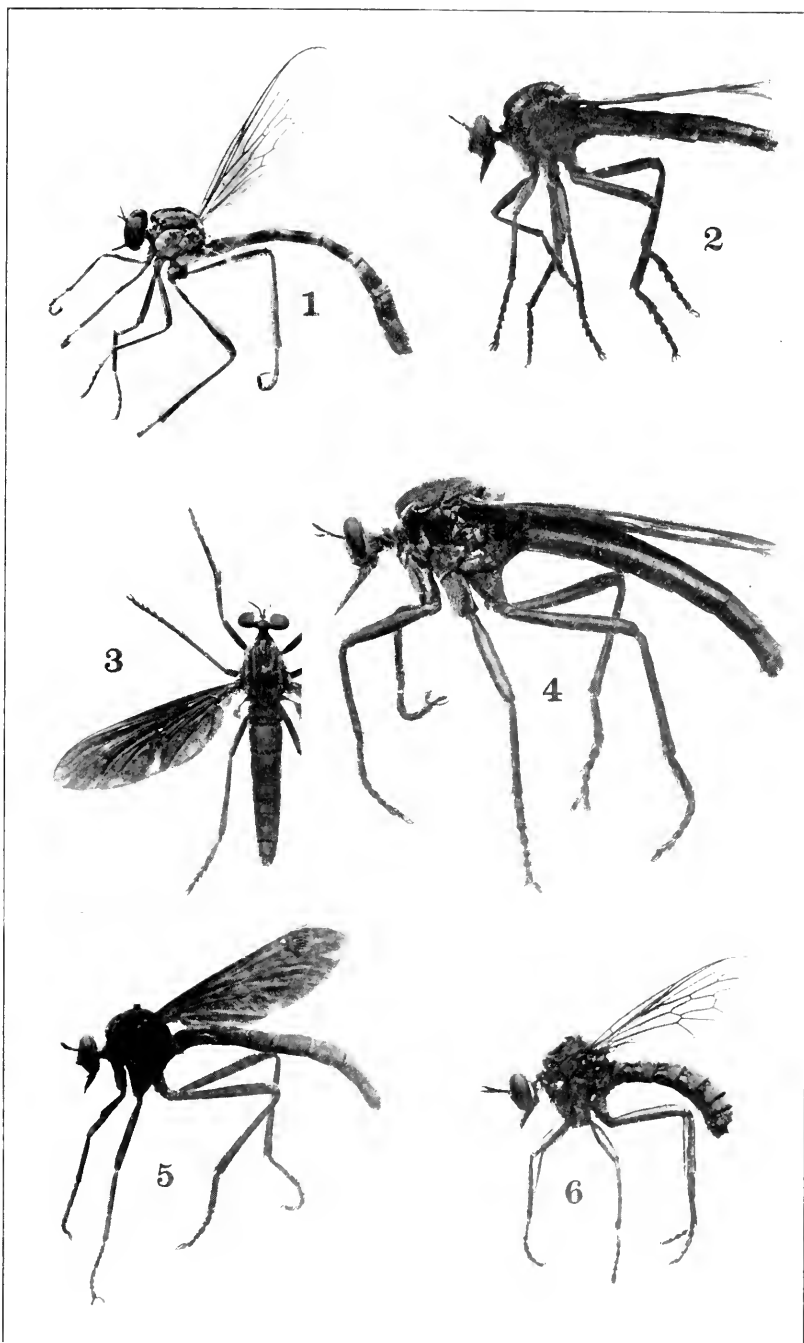


3



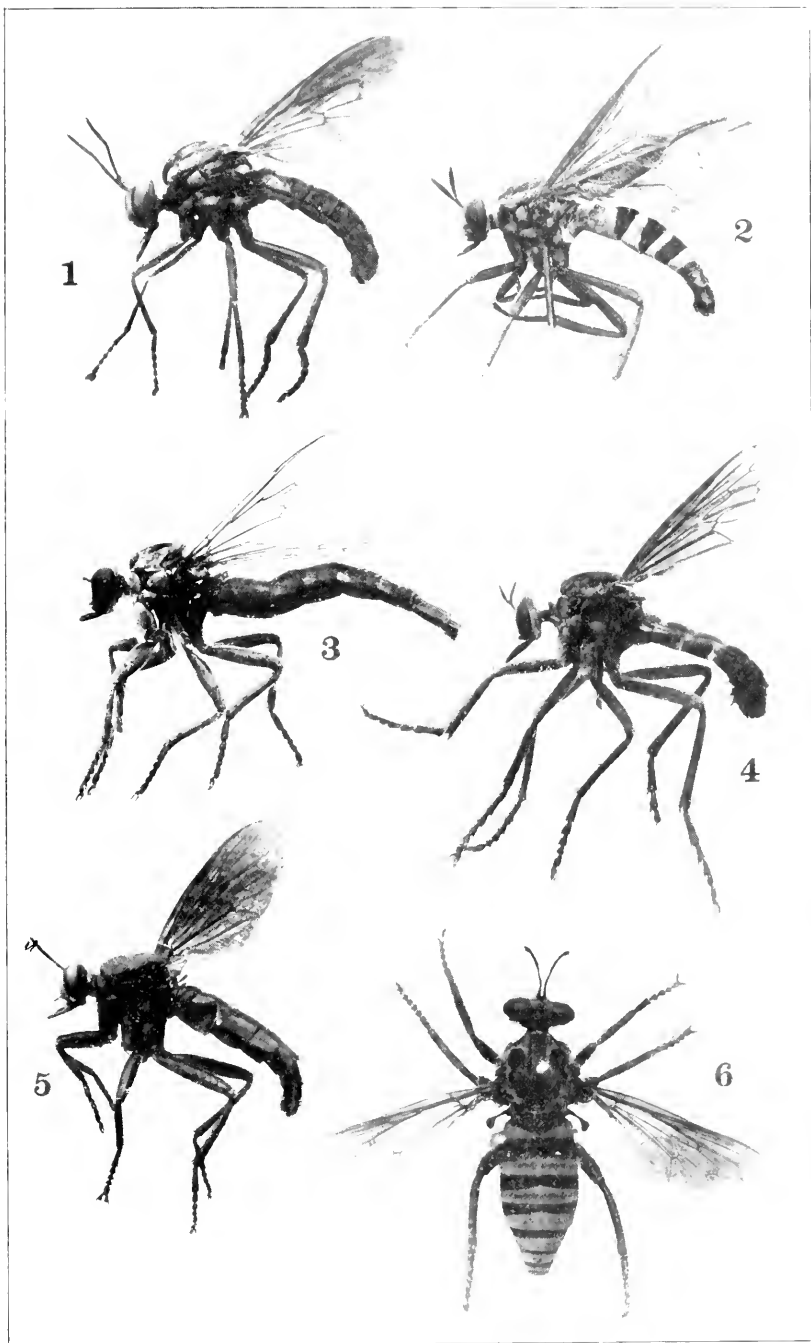






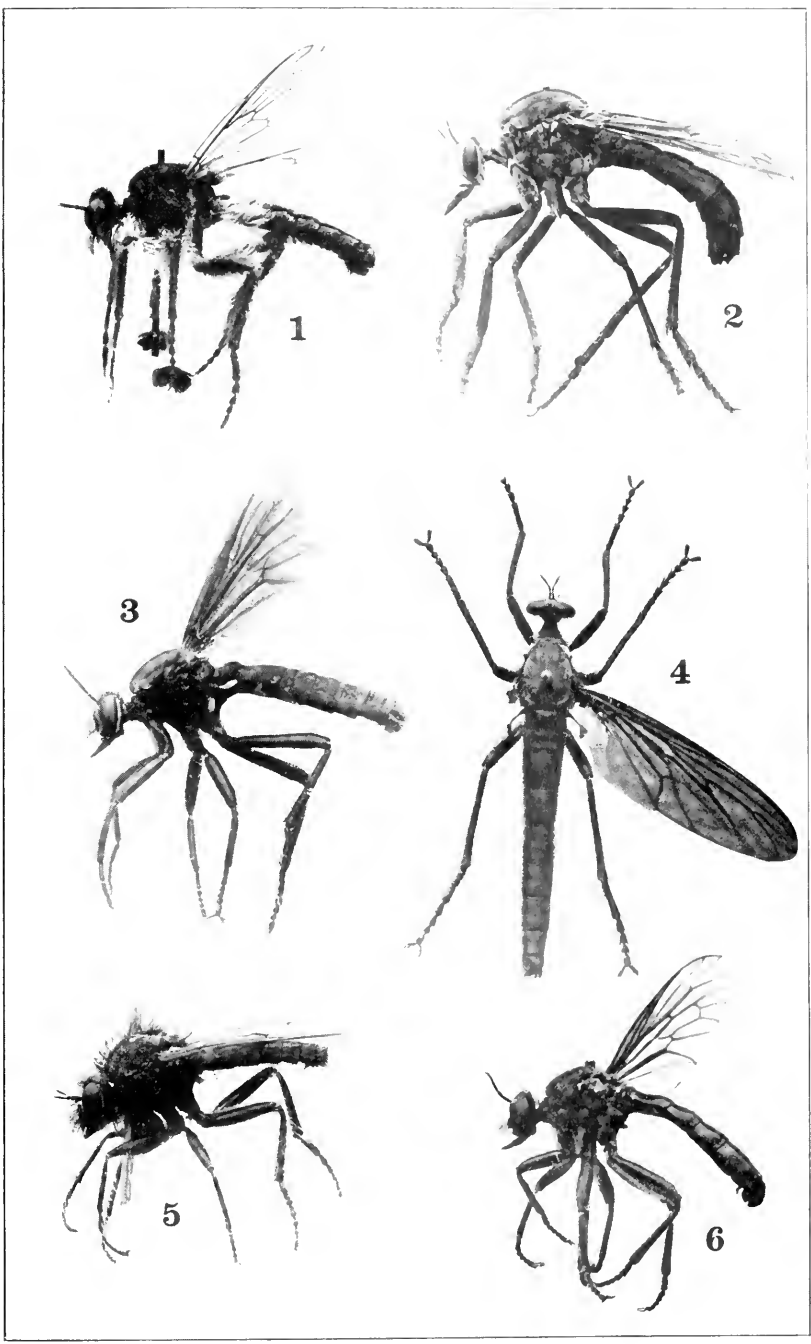
BACK ON DIPTERA.





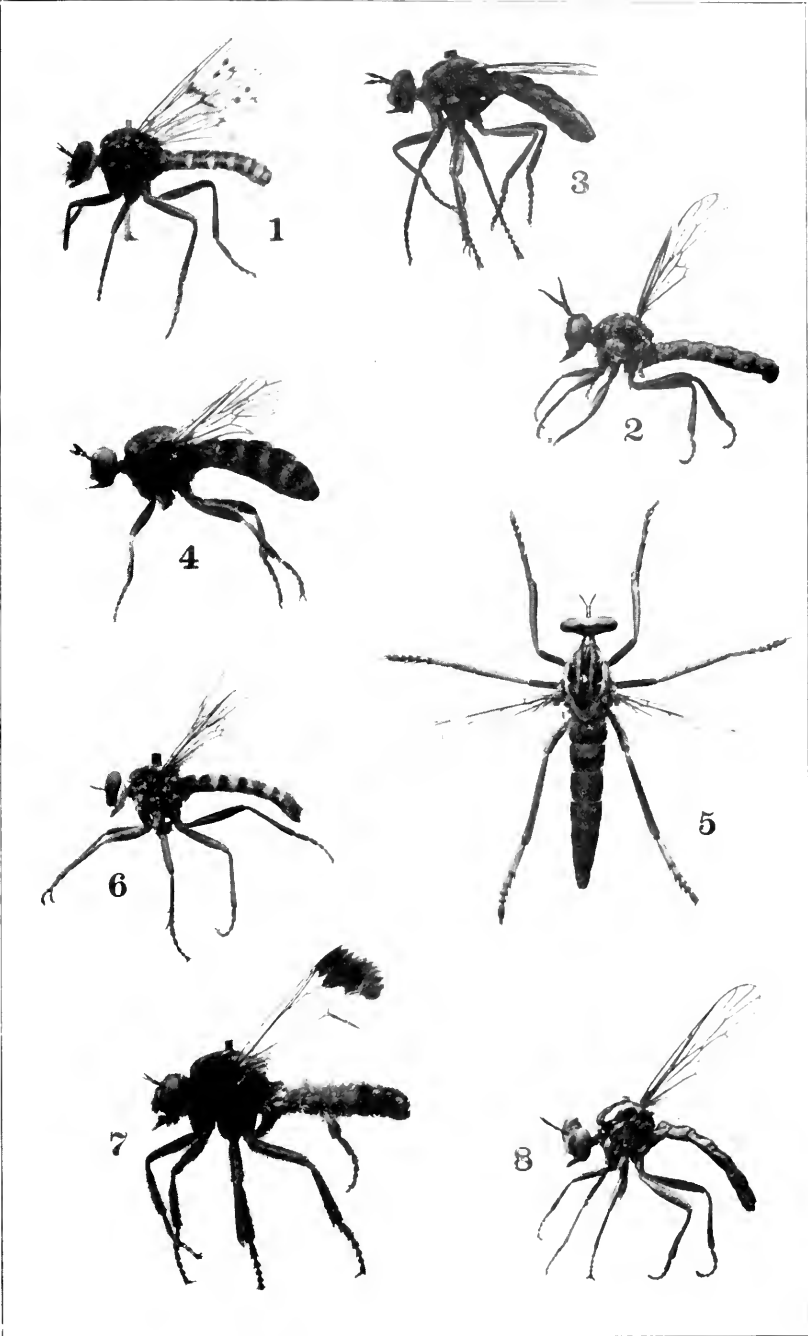
BACK ON DIPTERA.





BACK ON DIPTERA.

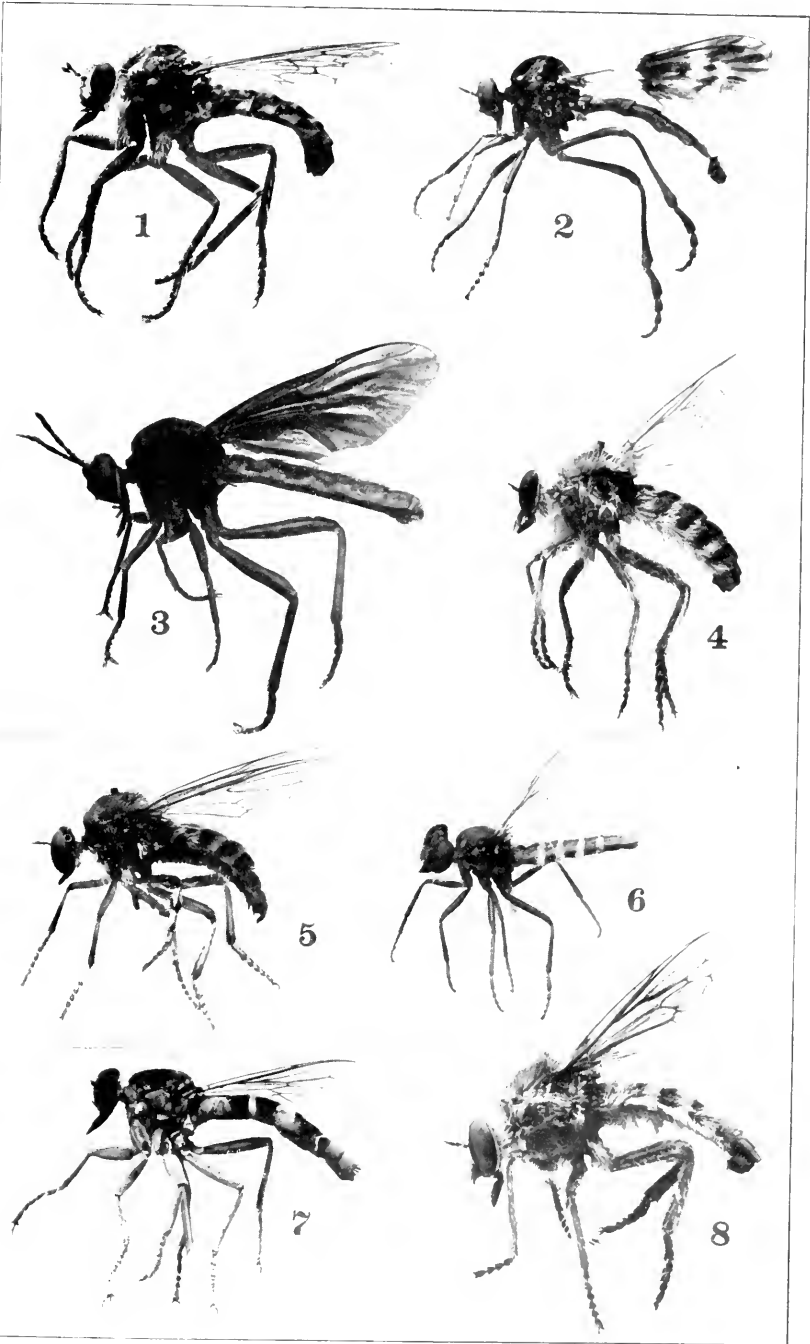




BACK ON DIPTERA.

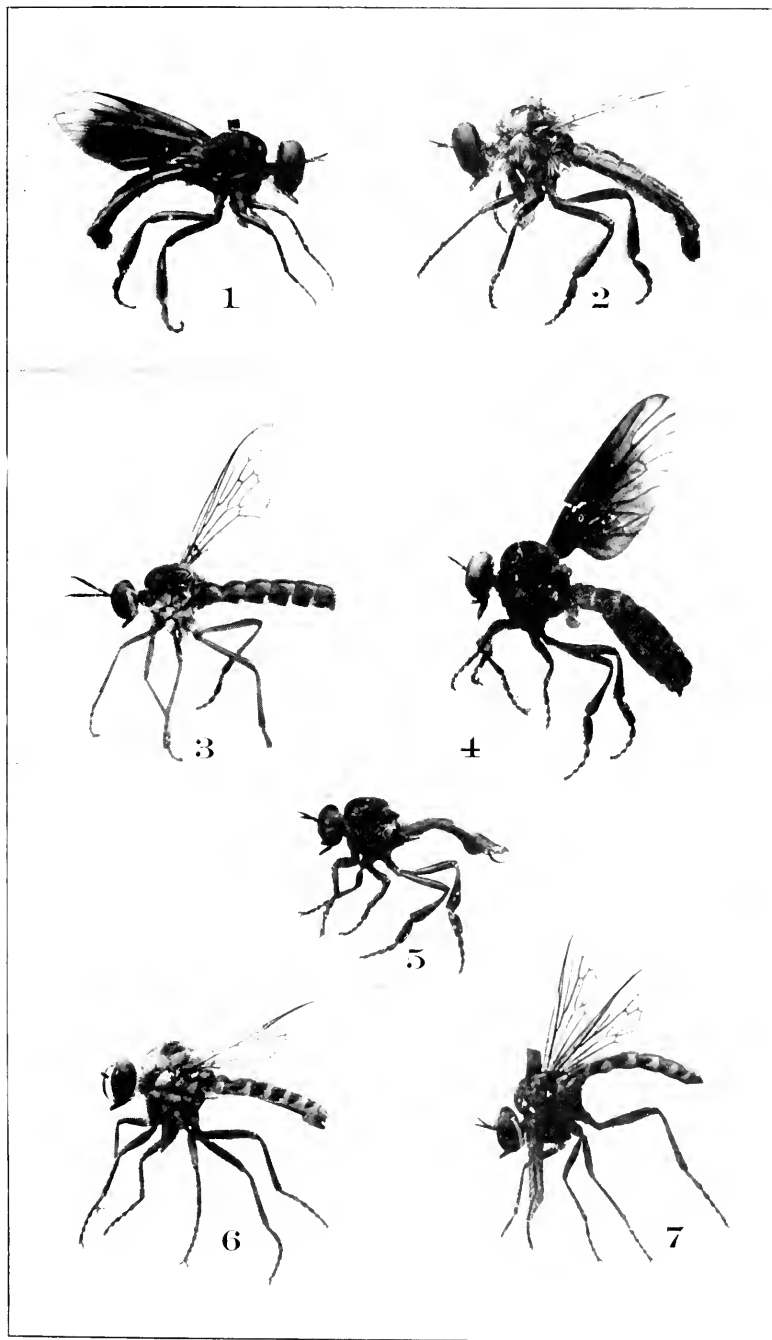






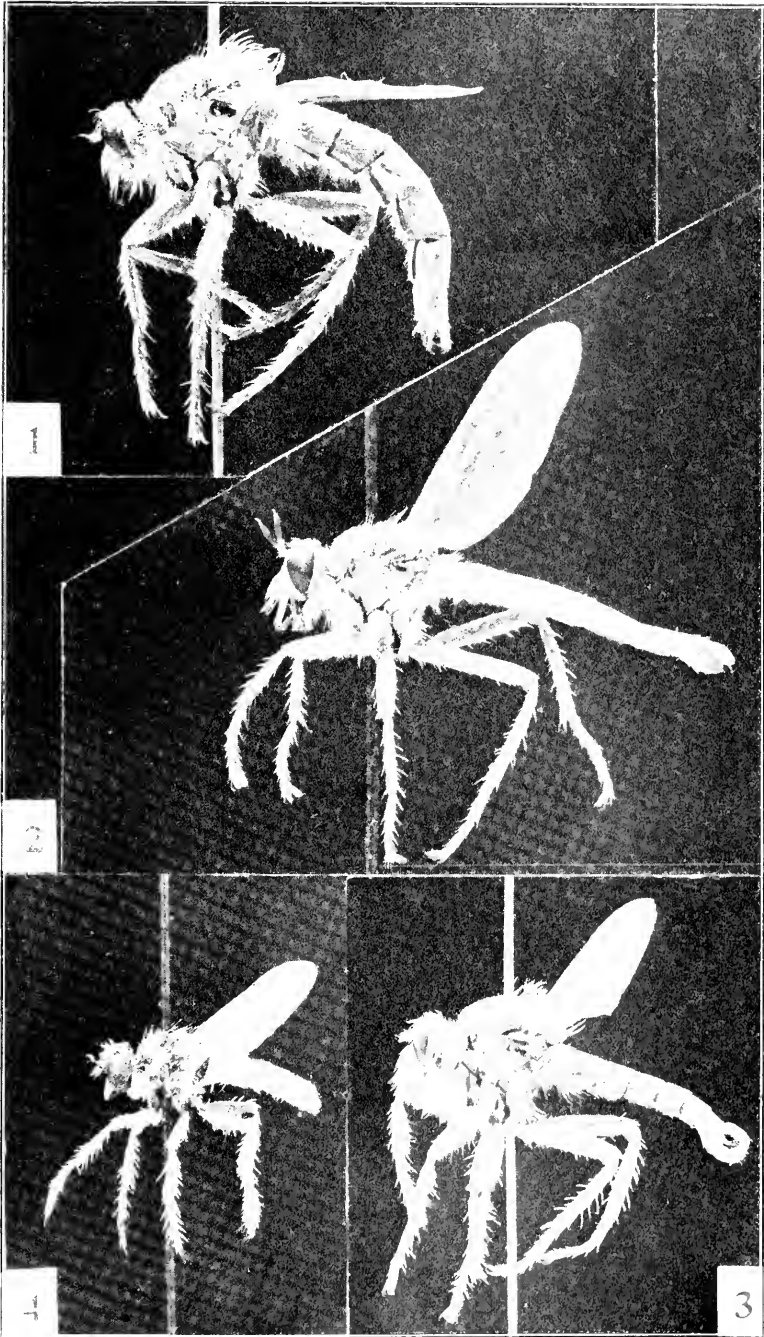
BACK ON DIPTERA.





BACK ON DIPTERA.





BACK ON DIPTERA.





## CONTENTS.

---

The Robber-flies of America, north of Mexico, belonging to the Subfamilies Leptogastrinæ and Dasypogoninæ. By Ernest A. Back, Ph.D. . . . .	1
---	---













SMITHSONIAN INSTITUTION LIBRARIES



3 9088 00586 6876