

Heidelberg, Germany,

Dec. 27 1875.

My dear Sir,

I am very much obliged
to you for your analytical table
of the genus of *Ichneumonidae*,
which I received to-day.

According to your desire, I
enclose my photograph, on
condition that you send me
yours in return, because I
have a series of *P. A.* dipterists
in photograph, beginning
with *Sauv. and Harris*, of course

taken from engravings.

None was taken in 1880,
and I have not had any taken
since. People tell me that I
have not changed much.

I send at the same
time 3 papers of mine, recently
published. If you should want any
of my previous papers, I shall
send them to you with great
pleasure, because generally I
order a considerable number
of extra-copies.

Very sincerely yours

C. D. Walcott

Prof. W. D. Smith

BIOLOGIA
CENTRALI-AMERICANA.

I N S E C T A.

DIPTERA.

VOL. I.

BY

BARON C. R. OSTEN SACKEN, Hon. F.E.S.
" "

THE SUPPLEMENT

BY

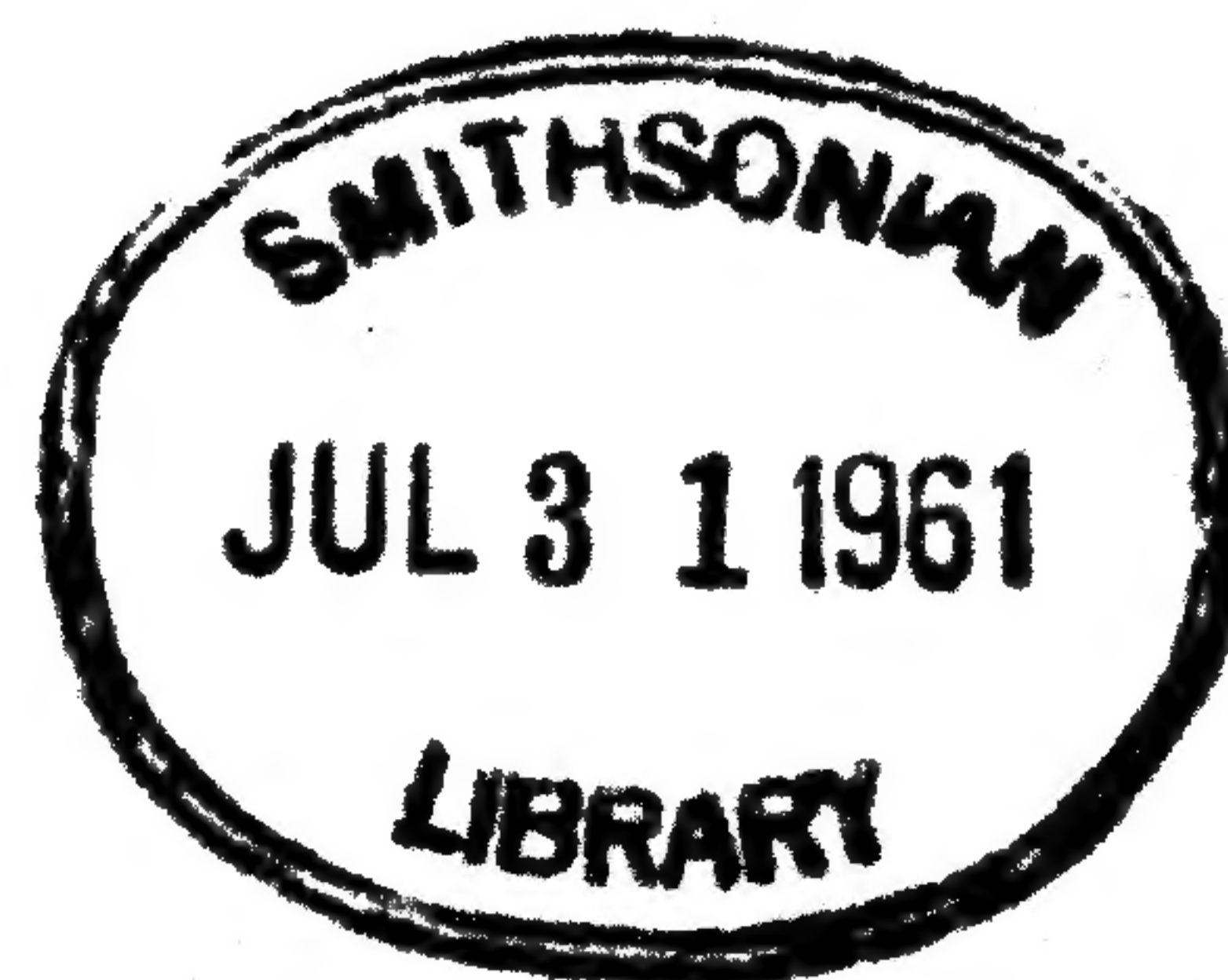
PROFESSOR S. W. WILLISTON,
OF THE UNIVERSITY OF KANSAS;

PROFESSOR J. M. ALDRICH,
OF THE UNIVERSITY OF IDAHO;

AND

PROFESSOR W. M. WHEELER AND A. L. MELANDER,
OF THE UNIVERSITY OF TEXAS.

1886-1901.



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CONTENTS.

	Page		Page
INTRODUCTION	v	TABANIDÆ *	43,
LIST OF PLATES	vii	CHIROMYZIDÆ	60
ERRATA ET CORRIGENDA	viii	LEPTIDÆ *	60, 264
CECIDOMYIIDÆ	1	XYLOPHAGIDÆ	62
MYCETOPHILIDÆ *	1, 217	ACANTHOMERIDÆ *	63, 267
BIBIONIDÆ *	2, 221	MYDAIDÆ *	68, 267
SIMULIIDÆ *	5, 223	NEMESTRINIDÆ *	73, 269
BLEPHAROCERIDÆ	5	BOMBYLIIDÆ *	75, 269
CULICIDÆ *	5, 224	THEREVIDÆ *	162, 297
CHIRONOMIDÆ *	6, 224	CYRTIDÆ *	163, 297
PSYCHODIDÆ	6	ASILIDÆ *	167, 298
TIPULIDÆ *	6, 225	DOLICHOPODIDÆ †	213, 333
RHYPHIDÆ *	20, 229	EMPIDÆ ‡	214, 366
STRATIOMYIDÆ *	22, 230	PLATES.	

* The Supplement to these families by Prof. S. W. WILLISTON.

† The Supplement to this family by Prof. J. M. ALDRICH.

‡ The Supplement to this family by Prof. W. M. WHEELER and Mr. A. L. MELANDER.

INTRODUCTION.

THE first portion of this Volume of Diptera, pp. 1-216, dealing with the Families Cecidomyiidæ—Empidæ, was contributed by Baron C. R. Osten Sacken, and published in 1886-87. The Supplement, pp. 217-376, is based mainly on the collections made for us in Mexico, in 1888-89, by Mr. and Mrs. Herbert H. Smith. This large amount of additional material has been worked out by well-known American Dipterists, the Families Mycetophilidæ—Asilidæ (there were no additional specimens of Cecidomyiidæ, Blepharoceridæ, Chiromyzidæ, or Xylophagidæ) by Professor S. W. Williston, the Dolichopodidæ (of which we had scarcely any representatives previously) by Professor J. M. Aldrich, and the Empidæ by Professor W. M. Wheeler and Mr. A. L. Melander. On pages 377-378 a list of the species recorded from Mexico or Central America since 1887, and not identified or mentioned in the Supplement, is given, some of which may possibly prove to have been here described by Prof. Williston under other names. Amongst these insects is a species of Psychodidæ, not a single representative of this family having been received by us. The six coloured Plates have all been prepared by Mr. Wilson of Cambridge, from drawings made by the late F. M. van der Wulp, or (the Dolichopodidæ) by Mr. J. E. Collin of Newmarket. The index to the three Volumes of this subject will be inserted at the end of the last one, when completed.

ED.

December 1901.

LIST OF PLATES.

	Plate.	Fig.	Page.		Plate.	Fig.	Page.
MYCETOPHILIDÆ.				<i>Tabanus cribellum</i> , ♀	I.	10	52, 258
<i>Plesiastina bifasciata</i> , ♂	IV.	1	217	— <i>chionostigma</i> , ♀	I.	11	54, 259
<i>Platyura elegantula</i> , ♀	IV.	2	218	— <i>pumiloides</i> , ♀	IV.	21	260
<i>Ceroplastus bellulus</i> , ♂	IV.	3	219	<i>Dichelacera pulchra</i> , ♀	IV.	22	263
TIPULIDÆ.				LEPTIDÆ.			
<i>Epiphragma circinata</i> , ♂ (wing)	I.	1	9	<i>Atherix concinna</i> , ♀	IV.	23	266
<i>Eriocera fasciata</i> , ♂	IV.	4	226	ACANTHOMERIDÆ.			
— <i>brunneipes</i> , ♂	IV.	5	227	<i>Acanthomera championi</i> , ♀	III	16	67
<i>Tanyremna opilio</i> , ♂	I.	2	19	BOMBYLIIDÆ.			
RHYPHIDÆ.				<i>Exoprosopa caliptera</i> (wing)	I.	12	81
<i>Olbiogaster</i> sp.?, ♂	IV.	6	229	— <i>iota</i> (wing)	I.	13	82, 270
STRATIOMYIDÆ.				— <i>rhea</i> (wing)	I.	14	83
<i>Berismyia nigrofemorata</i> , ♂	IV.	7	230	— <i>pardus</i>	I.	15	88
<i>Merosargus bulbifrons</i> , ♀	IV.	8	235	<i>Hyperalonia pilatei</i> , var. (wing)	I.	16	90
— <i>concinatus</i> , ♂	IV.	9*	235	— <i>dido</i> (wing)	I.	17	91
<i>Analcocerus hortulanus</i> , ♀	IV.	10	238	— <i>latreillei</i> , ♂	I.	18	93
<i>Campeprosopa longicornis</i> †, ♀	IV.	11	239	— —, ♀	II.	1	93
<i>Hermetia comstocki</i>	I.	3	28	<i>Stonyx clotho</i> (wing)	II.	2	95, 274
— <i>crabro</i>	I.	4	29	— <i>clelia</i> (wing &c.)	II.	3	95
— <i>ptero-causta</i>	I.	5	33	— <i>melia</i> , ♀	V.	1	274
[— <i>concinna</i> , ♀]	IV.	12	241	— <i>lelia</i> , ♂	V.	2	274
— <i>ceria</i>	IV.	13	242	<i>Isopenthes jaennickeana</i> (wing)	II.	4	97
<i>Cyphomyia lasiophthalma</i> , ♂	IV.	15	244	<i>Argyramœba seriepunctata</i> (wing) ..	II.	5	103
<i>Euparyphus elongatulus</i> ‡, ♀	IV.	14	249	— <i>daphne</i> (wing)	II.	6	104
<i>Acanthina inornata</i> , ♀	IV.	17	249	<i>Lepidanthrax disjuncta</i> (wing)	II.	7	108, 276
<i>Lophoteles pallidipennis</i> §, ♀	IV.	16	250	— <i>proboscidea</i> (wing)	II.	8	109, 276
<i>Myxosargus scutellatus</i> , ♀	IV.	18	251	— <i>angulus</i> , ♂ (wing)	II.	9	111
<i>Cynipimorpha minuta</i> , ♂	IV.	19	252	— —, var. (wing)	II.	10	111
TABANIDÆ.				<i>Anthrax arethusa</i>	II.	11	116, 277
<i>Chrysops altivagus</i> , ♂	I.	6	45	— <i>pluricella</i> , ♂	V.	3	277
— —, ♀	I.	7	45	— <i>pœcilogaster</i>	II.	12	118
— <i>neglectus</i> , ♀	IV.	20	256	— <i>edititia</i> (wing)	II.	13	119, 278
<i>Tabanus ebrius</i> , ♀ (wing &c.)	I.	8	49, 258	— <i>selene</i>	II.	14	122
— <i>bifenestratus</i> , ♀ (wing &c.)	I.	9	52, 258	— <i>galathea</i> (wing)	II.	15	123
				— <i>cuniculus</i>	II.	16	125
				— <i>rex</i>	II.	17	127
				— <i>lepidota</i> , ♂	II.	18	130, 281

* Wrongly numbered 19 at the bottom of the Plate.

† *Campeprosopa longicornis* on the Plate.

‡ *Euparyphus elegantulus* on the Plate.

§ *Hophoteles pallidipennis* on the Plate.

	Plate.	Fig.	Page.		Plate.	Fig.	Page.
Anthrax eumenes (wing)	II.	19	131	Deromyia (Diogmites) tau, ♀	III.	11	176
— scylla (wing)	III.	1	132	Saropogon pulcherrima, ♂	VI.	3	312
— orbitalis, ♂	V.	4	281	Taracticus nigrimystaceus, ♀	V.	23	313
— pleuralis, ♀	V.	5	282	Lastaurus anthracinus, ♂	III.	10	179
— livia, ♂	III.	2	139	Cophura sodalis, ♀	III.	13	181, 314
— agrippina, ♀	III.	3	139	— pulchella, ♀	V.	24	314
Anisotamia fasciata, ♀	V.	6	284	Atonia brevistylata, ♀	VI.	1	316
Aphœbantus cyclops, ♂	III.	4	146	Aphestia mexicana, ♀	VI.	2	317
Bombylius io, ♂	V.	7	285	Laphria ichneumon, ♀	III.	6	185
— dolorosus, ♂	V.	8	286	Nusa sexpunctata, ♂	VI.	4	319
Pantarbes pusio, ♂	III.	15	153	Mallophora faultrix, ♀	III.	14	191, 320
Eelimus (?) auripilus	III.	5	161	Erax splendens, ♂	VI.	5	325
— fascipennis, ♀	V.	9	295	— dolichogaster, ♂	VI.	6	326
Sphenoidoptera varipennis, ♀	V.	10	296	Proctacanthus exquisitus, ♀	III.	12	206
Amphicosmus cincturus, ♂	V.	11	296				
				DOLICHOPODIDÆ.			
CYRTIDÆ.				Polymedon argentatus, ♂ (wing)	VI.	7	334
Ocnæa grossa	III.	7	163	— nimius, ♂*	VI.	8	334
Philopota lugubris, ♂	V.	12	297	— —, ♀ (head)	VI.	9	334
				Hercostomus flavipes, ♂ (wing)	VI.	17	336
ASILIDÆ.				Pelastoneurus hamatus, ♂ (wing &c.)	VI.	12	338
Leptogaster triungulata, ♂	V.	13	299	— bigeminatus, ♂ (wing)	VI.	13	338
— macropygialis, ♂	V.	14	301	— punctipennis †, ♂ (wing)	VI.	14	339
Dicranus jaliscoensis, ♂	V.	15	302	Paraclius humeralis, ♂ (abdomen)	VI.	10	340
Ospricerus diversus, ♀	V.	16	303	— venustus, ♂ (wing)	VI.	11	340
Holopogon pulcher, ♂	V.	18	306	Sarcionus flavicoxa ‡, ♂ (wing &c.)	VI.	15	341
— violaceus, ♀	V.	17	306	Phylarchus tripartitus, ♀ (wing)	VI.	16	342
Townsendia minuta, ♂	V.	19	307	Syntormon quadratus, ♂ (wing &c.)	VI.	18	342
Psilocurus caudatus, ♂	V.	20	308	Parasyntormon wheeleri, ♂ (antenna)	VI.	19	343
Damalis occidentalis, ♂	V.	21	309	Sympycnus angustipennis, ♂ (wing)	VI.	20	344
Triclis argentifacies, ♂	V.	22	310	— coxalis, ♂	VI.	21	344
Deromyia (Diogmites) sallæi, ♂	III.	8	174, 311	Psilopus ciliipes, ♂ (middle leg)	VI.	22	355
— (—) memnon	III.	9	174	— nobilissimus, ♂	VI.	23	360
				Gnamptopsilopus ciliipennis, ♂ (wing)	VI.	24	366

* Incorrectly marked ♀ on the Plate.

‡ *Pecilobothrus flavicoxa* on the Plate.† *Pelastoneurus variegatus* on the Plate.

ERRATA ET CORRIGENDA.

Page	Line	
5		Erase the whole of line 8.
22	24	After <i>Xylomyia</i> insert Rondani,
41	32	for <i>stramineus</i> read <i>stamineus</i> .

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J. M. Aldrich,

Nov. 1892

BIOLOGIA CENTRALI-AMERICANA.

ZOOLOGIA.

Class INSECTA.

Order DIPTERA.

Fam. CECIDOMYIDÆ.

ASPHONDYLIA.

Asphondylia, Loew, Dipt. Beitr. iv. p. 21 (1850).

A single species of this genus is the only member of the family Cecidomyidæ as yet described from within our borders.

1. ***Asphondylia monacha*.**

Asphondylia monacha, O. Sacken, Trans. Am. Ent. Soc. ii. p. 300 (1869), iii. p. 347¹.

Hab. NORTH AMERICA, Brooklyn, L. I.¹—MEXICO, Northern Sonora (*Morrison*).

A single specimen is in Mr. Morrison's collection. I used to breed this species from galls of *Solidago altissima* in the State of New York.

Fam. MYCETOPHILIDÆ.

SCIARA.

Sciara, Meigen, in Ill. Mag. f. Insektenk. ii. p. 263 (1803).

1. ***Sciara americana*.**

Sciara americana, Wiedem. Aussereur. zweifl. Ins. i. p. 68; Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 11.

Hab. GUATEMALA, Zapote, Capetillo (*Champion*); NICARAGUA, Chontales (*Belt*); COSTA RICA, Irazu (*Rogers*).—COLOMBIA; BRAZIL.

A dozen specimens from the above Central-American localities agree quite well with Wiedemann's description as completed by Schiner, who may be right in supposing that *S. atra*, Macq., *S. cognata* and *S. præcipua*, Walk., all refer to the same species. *S. cognata*, Walk., the type of which I examined in the British Museum, struck me as the same. It seems to be a common species in Central and South America. *S. atra*, Bell., which I have compared, is identical with my *S. americana*. Arribálzaga includes

S. atra, Macq., amongst the species occurring in the Argentine Republic, but he considers it distinct from *S. americana* (cf. Arrib. Catalogo &c. p. 118).

2. *Sciara gigantea*.

Sciara gigantea, Macq. Dipt. Ex. Suppl. i. p. 19.

Hab. GUATEMALA, San Juan in Vera Paz (*Champion*); COSTA RICA, Irazu (*Rogers*).

The two Irazu specimens were taken in copulâ.

Besides these two species, only four Mycetophilidæ have been recorded from Mexico, and none from other parts of Central America:—

Leja punctata, Bellardi, Saggio &c. Append. fig. 3.

Sciophila popocatepetli, Bellardi, Saggio &c. i. p. 11.

Sciara unicolor, Say, Compl. Wr. ii. p. 251.

— *rotundipennis*, (Macq.?) Bellardi, Saggio &c. i. p. 13.

Fam. BIBIONIDÆ.

PLECIA.

Plecia, Wiedemann, Aussereur. zweifl. Ins. i. p. 72 (1828).

1. *Plecia plagiata*.

Plecia plagiata, Wiedem. Aussereur. zweifl. Ins. i. p. 75; Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 22.

Plecia heteroptera, Macq. Dipt. Ex. Suppl. i. p. 21, t. 2. f. 10, ♀ (apud Schiner).

Plecia vittata, Bellardi, Saggio &c. App. 7, f. 4, ♂ (apud Schiner).

Hab. GUATEMALA, San Gerónimo (*Champion*); NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba (*Champion*).—COLOMBIA.

That the specimens before me belong to *P. vittata*, Bellardi, seems certain; that *P. plagiata*, Wiedem., is the same as *P. heteroptera*, Macq., rests on the authority of Schiner, who compared an author's type of *P. heteroptera* with the type in Wiedemann's collection. In the short description of *P. heteroptera* Macquart says:—"like *plagiata*; second posterior cell closed." The latter is an inaccuracy of expression; Macquart meant the marginal cell. *P. similis*, Rondani (Ann. Bol. 1850), may perhaps likewise belong here.—Eleven specimens, including both sexes.

2. *Plecia rostellata*.

Plecia rostellata, Loew, Berl. ent. Zeit. 1858, p. 109, t. 1. f. 11 (wing).

Plecia rostrata, Bellardi, Saggio &c. i. p. 15 [apud Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 21]¹.

Hab. MEXICO¹; NICARAGUA, Chontales (*Janson*).

The synonymy adopted by Schiner seems very probable; he is right in observing that

the black middle line of the scutellum is not always present, and that the pale reddish colour at the base of the antennæ is variable in its extent. A male and two females.

3. *Plecia ruficollis*.

Plecia ruficollis, (Fabr.) Wiedem. Aussereur. zweifl. Ins. i. p. 72; Bellardi, Saggio &c. i. p. 15¹.

Hab. NORTH AMERICA, Florida¹.—MEXICO¹.—SOUTH AMERICA¹.

The specimens thus named in Prof. Bellardi's collection are very like *P. rostellata*, but the rostrum is short, the antennæ altogether black, &c., in conformity with the description; the wings of the female are much narrower and smaller, and the branch of the third vein much less oblique than in *P. rostrata*, Bell.

4. *Plecia bicolor*.

Plecia bicolor, Bellardi, Saggio &c. i. p. 16¹.

Hab. MEXICO¹, Presidio (*Forrer*).

I refer to this species two female specimens from Presidio. The mesonotum is red, the collar blackish, the rostrum long, &c. I have not compared them with the types.

BIBIO.

Bibio, Geoffroy, Hist. Nat. des Ins. ii. p. 571 (1762).

1. *Bibio* — ?

Hab. COSTA RICA, Irazu 6000 to 7000 feet (*Rogers*).

A single female. It agrees with *B. dubius*, Bellardi, Saggio &c. p. 18 (Mexico), except the words "*stigmatæ fusco*," the stigma being hardly darker. The types in Prof. Bellardi's collection, four females, are difficult to examine under the dust and mould that cover them; three of the specimens have the wings darker than mine.

2. *Bibio* — ?

Hab. COSTA RICA, Irazu (*Rogers*).

A single female. It agrees with *B. superfluus*, Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 20 (Colombia, South America), except that the anterior cross-vein is shorter than the handle of the cubital fork (about two thirds of it); the metanotum is but little darker than the rest of the thorax. It is strange that Schiner should have suggested its possible identity with *B. thoracicus*, Say, as Say distinctly says that "the collar, scutel, and metathorax are black."

3. *Bibio* — ?

Hab. COSTA RICA, Irazu (*Rogers*).

A single male. It is altogether black, but may nevertheless belong to the preceding species.

4. *Bibio albipennis*.

Bibio albipennis, Say, Compl. Writings, ii. p. 69¹; Wiedem. Aussereur. zweifl. Ins. i. p. 80.

Hab. NORTH AMERICA, Atlantic States¹.—MEXICO, Northern Sonora (*Morrison*).

I am in doubt whether six males and two females from Northern Sonora belong to this species or to *Bibio hirtus*, Loew, Centur. v. 2 (California). I have before me several male specimens from Yosemite valley, the long, shaggy hairs of which agree with Loew's description of *B. hirtus*, but much less with the specimens from Sonora. The wings of the latter are distinctly greyish, while Loew says of *B. hirtus*, ♀, "alæ non cinereæ." For this reason I prefer to identify the specimens from Sonora with *B. albipennis*.

5. *Bibio xanthopus*.

Bibio xanthopus, Wiedem. Aussereur. zweifl. Ins. i. p. 80¹.

Hab. NORTH AMERICA, Atlantic States¹.—MEXICO, Northern Sonora (*Morrison*).

A single male. As I have no specimens from the Atlantic States before me, I am not quite certain about the identification.

DILOPHUS.

Dilophus, Meigen, in Illiger's Magaz. ii. p. 264 (1803).

1. *Dilophus melanarius*.

Dilophus melanarius, v. d. Wulp, Tijdschr. &c. xxiv. p. 146¹.

Hab. MEXICO¹.

Van der Wulp's specimens were from Mexico. Four females from Irazu, Rio Sucio, and Cache in Costa Rica (*Rogers*) agree with the above-quoted description; the identification, however, of black *Dilophi* is always difficult and subject to doubt.

2. *Dilophus* — ?

Hab. NICARAGUA, Chontales (*Janson*).

Two specimens from the above locality differ from the preceding species in the head being still longer, and the wings dark yellowish-brown, less blackish. Other differences may perhaps be discovered in better preserved specimens.

The following other Bibionidæ from Mexico have been recorded (there are none from other parts of Central America):—

Bibio canadensis, (Macq. ?) Bellardi, Saggio &c. i. p. 18.

— *criorrhinus*, Bellardi, l. c. i. p. 17.

— *fuliginus*, Bellardi, l. c. i. p. 19.

- Bibio piceus*, Bellardi, l. c. i. p. 17.
 — *dubius*, Bellardi, l. c. i. p. 18.
Dilophus orbatus, (Say) Bellardi, l. c. i. p. 19.
 — *maculatus*, Bellardi, l. c. i. p. 19, t. i. f. 5.
 — *minutus*, Bellardi, l. c. App. p. 7.
 — *stygius*, Say, Compl. Wr. ii. p. 352.
Plecia nigerrima, Bellardi, l. c. i. p. 14.
 — ~~*bicolor*, Bellardi, l. c. i. p. 16.~~
 — *heros*, Say, Compl. Wr. ii. p. 352 (*Penthetria*).
 — *ruficollis*, (Fabr., Wiedem., &c.) Bellardi, l. c. i. p. 15.

Fam. SIMULIDÆ.

SIMULIUM.

Simulium, Latreille, Hist. Natur. des Crust. et des Ins. iii. (1802).

The following are the only species of this group described from within our boundaries; they are all from Mexico:—

- Simulium cinereum et mexicanum*, Bellardi, Saggio &c. i. pp. 13, 14; and
 Append. p. 7.
 — *ochraceum*, Walker, Trans. Ent. Soc. n. ser. v. p. 332.

Fam. BLEPHAROCERIDÆ.

PALTOSTOMA.

Paltostoma, Schiner, Verh. zool.-bot. Ges. Wien, 1866, p. 931.

1. *Paltostoma superbiens*.

Paltostoma superbiens, Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 28, t. 2. fig. 4¹.

Hab. ? MEXICO (*coll. Bellardi*).—SOUTH AMERICA¹.

I am not quite sure of the identity of the Mexican specimens, which I saw in Turin, with those from South America. Compare Osten Sacken, Catal. Dipt. N. Am. 1878, p. 17.

Fam. CULICIDÆ.

CULEX.

Culex, Linnæus, Fauna Suecica (1735).

1. *Culex annulatus*.

Culex annulatus, (Fabr.) Meigen, Syst. Besch. eur. zweifl. Ins. i. p. 4; O. Sacken, Catal. Dipt. N. Am. 1878, p. 18¹.

Hab. NORTH-WESTERN NORTH-AMERICA¹.—MEXICO, Ciudad in Durango 8100 feet (*Forrer*).—EUROPE.

A single female specimen from Ciudad agrees very well with this species.

MEGARRHINA.

Megarhinus, Rob. Desvoidy, Essai &c. in the Mém. de la Soc. d'Hist. Nat. de Paris, iii. p. 412 (1827).

Megarrhina, Macquart and later authors.

1. *Megarrhina* — ?

Hab. PANAMA, San Miguel in the Pearl Islands (*Champion*).

Two males. The fourth joint of the hind tarsi is white, except at the tip.

Culicidæ previously described from Mexico (there are none from Central America):—

Culex bigoti, Bellardi, Saggio &c. App. 3, f. 1.

—— *mexicanus*, Bellardi, l. c. i. p. 5.

—— *posticatus*, Wiedem. Aussereur. zweifl. Ins. i. pp. 9, 15.

Families **CHIRONOMIDÆ** and **PSYCHODIDÆ**.

I do not find any insects of these families recorded from Central America, nor are there any in the collections before me.

Fam. **TIPULIDÆ**.

TEUCHOLABIS.

Teucholabis, O. Sacken, Proc. Acad. Phil. 1859, p. 222; id. Monogr. &c. iv. p. 129 (1868).

1. *Teucholabis molesta*, sp. n., ♂.

Black, shining, the collar, scutellum, and a few thoracic spots bright yellow; abdomen with yellowish cross-bands; wings hyaline.

Length 5 millim.

Hab. MEXICO, Orizaba (*Sumichrast*).

Thorax shining black; collar, the humeral and præscutellar callosities, the scutellum, a triangular spot in the middle of the thoracic suture, another spot on the pleura above the middle and the hind coxæ, and a longitudinal stripe in the middle of the sternum between the coxæ, yellow; halteres with a yellow knob, the stem brownish. Abdomen blackish above, with yellow cross-bands; on the ventral side these cross-bands are broader; male forceps black. Head black; palpi and antennæ dark brown, the underside of the scapus of the latter a little paler. Legs brownish-yellow; knees, the

the tips of tibiæ and the tarsi, infuscated. Wings hyaline, the veins brown; stigma small, brown. Venation like Monogr. &c. iv. tab. 1. f. 12; only the præfurca a little more arcuate; the remainder of the second vein more straight, the marginal cross-vein in a line with the other central cross-veins.

Four males in Prof. Bellardi's collection.

The specimens are not in good condition, and for this reason the description is not so complete as it should be, especially as regards the head, abdomen, and pleuræ.

N.B.—*Limnobia morionella*, Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 47 (South America), is a *Teucholabis*; it may perhaps be the same species as *T. molesta*.

2. *Teucholabis gracilis*, sp. n., ♂.

Slender, the rostrum prolonged; thorax yellowish-red, with three confluent black stripes; scutellum, metanotum, and abdomen black, with a strong metallic violet-blue reflection; abdominal incisures reddish-yellow; wings hyaline.

Length 9–10 millim.

Hab. MEXICO, Orizaba (*Sumichrast*).

Antennæ and palpi brown; rostrum and front black with a violet reflection; posterior and inferior part of the head reddish (the heads of both specimens are injured). Thorax reddish-yellow; three confluent black stripes occupy nearly the whole mesonotum, the intermediate one extends over the collar, the lateral ones reach posteriorly beyond the thoracic suture, towards the scutellum, leaving a reddish interval between them; metanotum and scutellum metallic black, with a violet reflection; halteres brown. Abdomen metallic black, with violet reflections; incisures of the segments reddish-yellow; the same reddish colour appears on the ventral side, near the base of the abdomen, and also on the segments preceding the male forceps, the latter black and hairy. Legs brown; coxæ and base of the femora reddish-yellow. Wings hyaline, rather narrow, with very dark veins; stigma small, brown, not longer than broad, bisected by the marginal cross-vein; central cross-veins and origin of second vein slightly clouded with brown. The venation differs somewhat from that of *T. complexa* figured by me in Monogr. &c. iv. tab. 1. f. 12; the proximal ends of the submarginal and discal cells are on the same line, but the small cross-vein between them is a little nearer the apex, so that the first posterior cell is shorter; the great cross-vein is removed from the discal cell to a distance equal to its own length.

Two males in Prof. Bellardi's collection in Turin.

This is the form of *Teucholabis* alluded to by me in Monogr. &c. iv. p. 132, line 6 from top.—The species may perhaps be the same as *T. (Rhamphidia) chalybeiventris*, Loew, Wien. entom. Monatschr. 1861, p. 33 (Cuba); but the thorax of the latter is described simply as “melleus, sub-badius,” while *T. gracilis* has the scutellum and metanotum black; the abdomen also is much darker.

PARATROPESA.

Paratropesa, Schiner, Verh. zool.-bot. Ges. Wien, xvi. p. 932 (1866) ; Reise d. Novara, Zool. iii. Abth. i. p. 44, t. 2. f. 2.

1. *Paratropesa præusta*, sp. n., ♂ ♀.

Head and thorax reddish-yellow, the latter with three dark stripes ; wings yellowish, with a brown, incomplete cross-band in the middle, the apex pale brown.

Length of the body, 8-9 millim.

Hab. MEXICO, Jalapa (*Bilimek*), Orizaba (*Sumichrast*).

Head reddish-yellow ; palpi and the flagellum of the antennæ brownish. Thorax reddish-yellow, with three black stripes ; the intermediate one not encroaching upon the collar anteriorly, the lateral ones connected in front of the scutellum (in one of the specimens the stripes are reddish-brown) ; scutellum yellow ; metathorax black in the middle, yellow on the sides ; the greater part of the pleuræ and pectus black ; stem of the halteres brownish, the knob yellow. Front coxæ and femora reddish-yellow, except the distal third of the latter, which is black ; front tibiæ and tarsi brownish, darker towards their tips ; middle legs (including the coxæ) reddish-ferruginous ; tarsi brown, except the basal joint, which is more reddish ; hind coxæ black ; hind femora and tibiæ reddish-ferruginous ; hind tarsi dark brown. Abdomen in the male black at the base, as far as the middle of the second segment, the remainder reddish-yellow, with a black cross-band on each segment, the genitals black ; in the female the black prevails over the yellow so much that the abdomen may be described as black, with yellow hind margins to the segments, the ovipositor is ferruginous. Wings tinged with yellow ; a brown cross-band between the tip of the first longitudinal vein and the great cross-vein, a faint cloud connecting it with the hind margin ; a pale brown shadow occupies the tip of the wing : it is bounded by the perpendicular branch of the second vein, the cross-veins at the end of the discal cell, and the last of the three veins issuing from that cell.—A male and a female in the Museum in Vienna ; a male in Bellardi's collection.

LIMNOPHILA.

Limnophila, Macquart, Hist. Nat. Dipt. i. 1834 ; O. Sacken, Proc. Acad. Phil. 1859, p. 231 ; Monogr. &c. iv. p. 196.

1. *Limnophila luteipennis*.

Limnophila luteipennis, O. Sacken, Monogr. &c. iv. p. 217, t. 2. f. 10, & t. 4. f. 25¹.

Hab. UNITED STATES¹, from Canada to California.—MEXICO, Northern Sonora (*Morrison*).

2. *Limnophila tenuipes*.

Limnophila tenuipes, (Say) O. Sacken, Monogr. &c. iv. p. 210¹.

Hab. UNITED STATES¹ and CANADA, common.—MEXICO, Northern Sonora (*Morrison*).

A single male.

EPIPHRAGMA.

Epiphragma, O. Sacken, Proc. Acad. Phil. 1859, p. 238; Monogr. &c. iv. p. 193.

1. ***Epiphragma circinata***, sp. n., ♂. (Tab. I. fig. 1, wing.)

Antennæ of the male with elongated, almost linear, joints to the flagellum, clothed with a short and very dense microscopic pubescence; ocellar spots on the wings like those of the European *E. picta*, only the spotless intervals existing in the latter are much smaller here.

Length (♂) 11-12 millim.

Hab. COSTA RICA, Irazu 6000 to 7000 feet (*Rogers*).

Antennæ brown, the first joint of the flagellum yellow; proportionally longer than in the normal species of the genus; bent backwards they would reach the end of the second abdominal segment; joints of the flagellum, except the first, long, linear, almost imperceptibly incrassate at the base, where a few verticillate hairs are inserted; the dense, erect, microscopic pubescence begins with the second joint of the flagellum (it is very probable, from analogy, that in the female the antennæ are shorter, and without microscopic pubescence). Head, including the rostrum and palpi, brown. Front very narrow (only one third as wide as in *E. picta*, ♂). Collar brown in front, brownish-yellow posteriorly; mesonotum reddish-brown, with a dark brown middle stripe expanding into a triangle in front; its sides, between the suture and the humerus, brown; metanotum and pleuræ brown, mixed with yellowish, the latter distinctly yellowish sericeous between the front and middle coxæ; halteres rather long, brown, the tip of the knob pale. Abdomen linear (narrower than in *E. picta*), brown, brownish-yellow at the base; hind margins of the segments yellowish, a yellowish transverse line nearly in the middle of each segment (not all the segments show it distinctly). Coxæ yellow, the extreme base darker (the rest of the legs broken). Wings greyish, subhyaline, with a dense pale brown pattern, the ocelli of which are arranged very much like those of *E. picta*; only the pupils of the ocelli on the distal half of the wing are larger, and there is more brown around the ocellus having the base of the second posterior cell for its centre, especially between it and the costa. Head, thorax, and abdomen much less hairy than in *E. picta*.

A single male.

N.B.—The presence of the supernumerary subcostal cross-vein and the coloration of the wings prove that this is an *Epiphragma*; the ventral segment, preceding the male forceps, is fornicate, just as it is in *E. picta*. But this species differs from the normal ones in the structure of the male antennæ, which are longer, with more linear joints, and with a microscopic pubescence. The venation is almost exactly like that of *E. picta* (*cf.* Curtis, Brit. Entom., Dipt. t. 50, *Limn. ocellaris*). In *E. solatrix* (O. Sack. Monogr. N. Am. Dipt. iv. t. 2. f. 8) the petiole of the first submarginal cell is much shorter. The “transverse impressed line” on the abdominal segments mentioned by me among the characters of the genus (*l. c.* p. 194) is represented here

by the yellow lines described above; I do not see that they are interrupted in the middle.

ERIOCERA.

Eriocera, Macquart, Dipt. Exot. ^{I. 78.} ~~i. 1, p. 74~~ (1838); O. Sacken, Proc. Acad. Phil. 1859, p. 243; Monogr. &c. iv. p. 244.

Analytical Table of the Erioceræ from Mexico and Central America.

Wings unicolorous (without differently coloured bands or spots).

Abdomen yellow, with a black band before the tip.

Head black 1. *mesoxantha*, sp. n.

Head yellow 2. *zonata*, sp. n.

Prevailing colour of the abdomen black.

Thorax red above.

Frontal tubercle red; scutellum black 3. *hæmorrhœa*, sp. n.

Frontal tubercle black; scutellum red 4. *erythræa*, sp. n.

Thorax black.

Frontal tubercle red 5. *gracilis*, sp. n.

Frontal tubercle black 6. *pretiosa*, sp. n.

Thorax metallic blue 7. *lessepsi*, sp. n.

1. *Eriocera mesoxantha*, sp. n., ♂.

Head black; thorax black above, except the interval between the suture and collar, which is red, with a dark longitudinal line; abdomen yellow, segments 6 and 7 black; wings pale brownish.

Length 15 millim.

Hab. MEXICO, Orizaba (*Sumichrast*).

Head black; antennæ brownish; frontal tubercle very little prominent. Thorax partly black, partly yellowish-red; the latter colour occupies the interval between the suture and the collar, but is interrupted in the middle by a longitudinal dark line; the lower part of the pleuræ, the pectus, and the coxæ are also yellow; halteres with brown knobs. Abdomen yellow; extreme base and segments 6 and 7 black (the tip of the abdomen is damaged by mould, and thus the colour of the genitals is not visible). Legs (only the right middle leg is attached) black, the extreme base of the femora yellow. Wings of a uniform pale brownish tinge; a small stigmatic spot a little darker brown; tip of the auxiliary vein opposite the proximal end of the first submarginal cell; there are four posterior cells.

A single male (*coll. Bellardi*).

2. *Eriocera zonata*, sp. n., ♂ ♀.

Prevailing colour yellow; thorax with three black stripes; abdomen with a black cross-band before the tip; wings pale brownish-yellow.

Length: ♂, about 15 millim.; ♀, about 22 millim.

Hab. MEXICO, Orizaba (*Sumichrast*).

Head, including the rostrum and antennæ, yellow; palpi brown. Besides the three black stripes on the thorax there are some blackish and brownish marks on the pleuræ. Knobs of the halteres brown, the stem yellow. The posterior half of the first abdominal segment is black; in the male the posterior half of segment 5 and the whole of segments 6 and 7 are also black, in the female the posterior half of segment 5 and segment 6 only; the rest of the abdomen, and the genitals, yellow. Legs yellow, the tips of the femora black; tips of the tibiæ, and the tarsi entirely, brown. Wings with a pale yellowish-brown tinge, more yellowish along the costa; the tip of the auxiliary vein does not reach much beyond the proximal end of the second posterior cell; this tip is incurved towards the first vein; there are four posterior cells; the great cross-vein anterior to the middle of the discal cell.

A male and a female (*coll. Bellardi*).

N.B.—This description was made several years ago, and I have not now the types before me. A female specimen from Zapote, Guatemala (*Champion*), agrees with it; but the four basal joints of the antennæ only are yellow, the rest black. The stout auxiliary vein shows the same peculiar course; it seems to end in the first vein, but has a delicate cross-vein at the tip, connecting it with the costa. Two specimens from Irazu, Costa Rica (*Rogers*), show the same characters, but in one of them the whole abdomen is blackish (in the other specimen it is broken).

3. *Eriocera hæmorrhœa*, sp. n., ♂ ♀.

Black, except the frontal tubercle, the part of the thoracic dorsum anterior to the suture, and the tip of the abdomen, which are orange; wings fuliginous.

Length: ♂, 14–17 millim.; ♀, 17–20 millim.

Hab. MEXICO, Orizaba (*Sumichrast*).

There is but little to be added to the diagnosis:—The orange colour on the thorax occupies the whole of the space between the suture and the collar. The abdomen is velvety-black, but the anterior half of each segment, above, is bluish-black and shining; in the male the third and fourth segments show traces of reddish-yellow at the base; the last segment is orange. Halteres and legs black. The tip of the auxiliary vein is nearly opposite the proximal end of the first submarginal cell; the great cross-vein anterior to the middle of the discal cell, sometimes at its base; there are four posterior cells.

Three males and as many females (*coll. Bellardi*). A female in M. Bigot's collection.

4. *Eriocera erythræa*, sp. n., ♂ ♀.

Black, the thoracic dorsum, including the scutellum, orange; wings fuliginous.

Length: ♂, 13 millim.; ♀, 17 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Head, including the antennæ and palpi, black; front slightly greyish-pruinose. Thorax

orange-coloured above, including the scutellum; metanotum brown, with a faint reddish line in the middle; pleuræ blackish-brown, except the portion in front of the root of the wings, which is reddish; halteres and legs brownish-black. Abdomen black, with a bluish metallic reflection; genitals black. Wings brown, darker along the costa; tip of the auxiliary vein nearly opposite the proximal end of the first submarginal cell; great cross-vein in one specimen opposite the middle of the discal cell, in the other nearer its end; there are four posterior cells.

A male and a female.

5. **Eriocera gracilis**, sp. n., ♂.

Rather slender, black; frontal tubercle orange; base of the abdominal segments 3-5 reddish; wings pale fuliginous; costa darker.

Length 15-16 millim.

Hab. MEXICO, Orizaba (*Sumichrast*).

The thorax is somewhat hoary on the sides, but faintly shining on the dorsum; abdomen more slender than in other *Eriocerae*, shining, with bluish reflections, the posterior half of segments 1-4 somewhat opaque, the basal half of segments 3-5 yellowish-red; halteres and legs black. Wings pale fuliginous, darker along the costa; the tip of the auxiliary vein does not quite reach the first submarginal cell; the great cross-vein anterior to the middle of the discal cell; there are four posterior cells.

A male (*coll. Bellardi*).

N.B.—It may be that the yellowish-red colour at the base of some of the abdominal segments does not exist in the female; such, at least, is the case in *E. hæmorrhœa*.

6. **Eriocera pretiosa**, sp. n., ♂.

Altogether black, mostly opaque, the abdomen more shining; wings brownish, darker along the costa. Length 12 millim.

Hab. MEXICO, Orizaba (*Sumichrast*).

Head altogether black, opaque; front bituberculate, the ordinary tubercle being bisected by a deep incision in the middle. On the thorax three stripes are visible, which are deeper black and more opaque than the rest of the surface; their intervals, especially backwards, are slightly clothed with a yellowish-brown pollen; pleuræ with a similar, very fine, pollen; halteres brown. Abdomen black, moderately shining, with slight bluish reflections; the posterior half of the intermediate segments each with a more opaque cross-band of ill-defined outline, not touching the hinder margin. Legs black. Wings brownish, darker along the costa; stigma not darker than the rest; the tip of the auxiliary vein is nearly opposite the middle of the distance between the distal ends of the two submarginal cells; there are four posterior cells.

A single male (*coll. Bellardi*).

N.B.—This species cannot be *E. nigra*, Walk., because the latter has some yellow at the base of the wings. *E. tenebrosa*, Walk., from South America, is too badly described for recognition.

7. ***Eriocera lessepsi***, sp. n., ♂ .

Metallic blue; head orange-red; wings unicolorous, brown.
Length 10–12 millim.

Hab. PANAMA.

Front, vertex, and first joint of the antennæ orange-red; the latter has a brown line on the side; antennæ (except the first joint) black, if bent backwards they would reach the root of the wings; underside of the head brownish. Thorax and coxæ deep metallic blue; abdomen velvety-black, the posterior margins of the segments metallic blue; the forceps of the male reddish-brown. Wings uniformly brown; legs black, with slight metallic reflections; there are four posterior cells; the venation is the same as in *E. hæmorrhœa*, only the petiole of the fork which includes the first submarginal cell is not more than half as long as that cell.

A single male (*coll. Bigot*).

N.B.—The described specimen is in bad condition, and, especially the thoracic dorsum, is partly concealed under a patch of dust; nevertheless there will be no difficulty in recognizing the species.

TIPULA.

Tipula, Linnæus, Syst. Nat. (1735).

1. ***Tipula monilifera*** (?).

Tipula monilifera, Loew, Linn. Entom. v. p. 404, t. 2. ff. 26, 27¹.

Hab. COSTA RICA, Irazu (*Rogers*).—BRAZIL¹.

I refer, with doubt, to this species a male and a female from Irazu, Costa Rica (*Rogers*). They agree with Dr. Loew's species from Brazil in the unusual structure of the antennæ and, very nearly, in the colouring of the body and wings; but, besides small discrepancies in the coloration of the body, the wings do not show the longitudinal hyaline band running from the discal cell towards the apex, as figured by Loew; instead of it, there is only a small hyaline spot at the distal end of the first posterior cell, and another at the proximal end of the second.

A third specimen from the same locality, a male, has the coloration of the wings still more different, although the body seems to be the same. We have here either several closely conflicting species or else a very variable one.

The specimens are not well preserved enough to make it worth while to draw up a more detailed description. In the Berlin Museum I have seen specimens of the same group determined as *T. spilota*, Wiedem. (*Aussereur. zweifl. Ins.* p. 553, ♀; Brazil).

2. *Tipula virgo*, sp. n., ♂ ♀.

Of the same group as the European *T. oleracea* ("Tipulæ costatæ," Schummel)—that is, with infuscated costal cells and a limpid stripe behind them, along the basal and marginal cells to the apex; colour grey, shape much more slender than *T. oleracea*; the same structure of the male forceps.

Length: ♂, 12 millim.; ♀, 13 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

Head and rostrum light grey; front with a brownish shade, in the middle of which there is an indistinct brown line extending to the vertex; palpi black. Antennæ black, bent backwards they would reach (in the male) about the middle of the second abdominal segment; joints of the flagellum, beginning with the second, binodate, the distal node being a little larger; in the female they would hardly reach the end of the thorax, and the nodes of the flagellum are less marked. The portion of the mesonotum occupied by the usual stripes is pale brownish, the outline of the stripes being bordered by darker brown; the triangular intermediate stripe is bisected by a longitudinal brown line. The portion of the mesonotum behind the suture, the scutellum, the metanotum, and the pleuræ are light greyish, almost hoary; the membranous parts on both sides of the roots of the wings are pale yellowish. Abdomen grey, paler along the lateral margins; male genitals with whitish foliaceous appendages; base of the ovipositor dark brown. Halteres with brown knobs. Legs brown, the femora reddish at the base. Wings greyish-hyaline, brownish along the costa, as far as the stigma; a limpid, whitish, longitudinal stripe runs behind the brown costal margin, occupying nearly the whole first and second basal cells except the distal end of the latter, as well as the submarginal and first posterior cells; it stops a little before reaching the apex.

Three males, one female.

N.B.—The brown lines on the mesonotum are sometimes very indistinct.

3. *Tipula* — ?

Hab. MEXICO, Northern Sonora (*Morrison*).

Group of *T. lunata*. Nine males, one female.

4. *Tipula* — ?

Hab. MEXICO, Northern Sonora (*Morrison*).

Group of *T. lunata*. Three males, one female.

5. *Tipula* — ?

Hab. MEXICO, Northern Sonora (*Morrison*).

Group of *T. bella*, Loew, *T. strepens*, Loew. A single male.

6. *Tipula craverii* (?).

Tipula craverii, Bellardi, Saggio &c. i. p. 7, t. 1. f. 1¹.

Hab. MEXICO¹, Northern Sonora (*Morrison*).

The specimens from Sonora seem to belong to this species. I have seen the types in Prof. Bellardi's collection (two specimens in very indifferent condition, the one a male, the other without abdomen, but, judging by the antennæ, apparently a female), and I am not able to make up my mind whether they belong to the same species as my specimens or not. The wings certainly belong to the same type of marmorate pattern; but there are, I believe, several conflicting species with that same pattern in Central America and in California. My specimens are smaller, the antennæ are more uniformly coloured, &c.

A specimen from Guatemala shows two distinct brown rings on the femora, of which there is not a trace in the specimens from Sonora; there are also some slight differences in the pale spots on the wings.

Bellardi does not mention the conspicuous brown stripe on the pleuræ.

PACHYRRHINA.

Pachyrhina, Macquart, Hist. Nat. Dipt. i. p. 88 (1834).

Analytical Table of the Pachyrrhinæ from Mexico and Central America.

Thoracic stripes black.

Lateral thoracic stripes straight	1. <i>ordinaria</i> , sp. n.
Lateral thoracic stripes incurved towards the dorso-pleural suture.	
Lateral thoracic stripes with a velvety-black opaque spot at the end.	
Antennal flagellum altogether black	2. <i>nigrolutea</i> , Bell.
Antennal flagellum not altogether black	3. <i>consularis</i> , sp. n.
Lateral thoracic stripes without a velvety-black opaque spot at the end, shining	4. <i>usta</i> , sp. n.
Thoracic stripes ferruginous	5. <i>ferruginea</i> , Fabr.

The following species are not included in this Table: *P. mexicana*, Macq., and *P. affinis*, Bellardi.

Of *P. affinis* I have seen the type, a single specimen without abdomen. Owing to its dusty condition I cannot say positively whether its lateral thoracic stripes are velvety-black at the end; I believe they are *not*. These stripes being incurved, the species would find its place near *P. usta*, from which it is easily distinguished by its yellow pleura, spotted with lemon-yellow.

1. *Pachyrrhina ordinaria*, sp. n., ♂ ♀.

Head orange-yellow above; rostrum with a more or less distinct brown spot above; an arrow-shaped shining black spot on the vertex, the point of which is drawn out in a line towards the front; a small black or brown mark on the inner orbit of each eye. Antennæ black, the first and third joints reddish or brownish at the base; in some specimens, principally females, the two basal joints are altogether yellow. Thorax yellow, with uniformly deep black shining stripes; the lateral ones straight, not incurved towards the dorso-pleural suture; a brown line (sometimes obsolete) on each side of the collar; a similar line above the dorso-pleural suture, a little in front of the root of the wing; pleuræ sulphur-yellow, with yolk-yellow spots; scutellum yellow; metanotum sulphur-yellow on the sides, reddish or brownish-yellow in the middle. Abdomen reddish-yellow, with a more or less broad black dorsal stripe (in some specimens it is uninterrupted, in others it is broken up at the incisures into a series of spots, which are often triangular), and a trace of a black or a brown stripe on the lateral margins; genitals reddish-yellow. Legs more or less brownish or reddish-brown, except the coxæ and the proximal half of the femora; sometimes the femora are altogether reddish-yellow, except at the tip. Halteres pale brownish. Wings greyish-hyaline; stigma pale, brownish-grey; second posterior cell coarctate at the base, sometimes even short-petiolate.

Length: ♂, 10–11 millim.; ♀, 12–13 millim.

Hab. MEXICO, Ciudad in Durango (*Forrer*). Three males, two females.

2. *Pachyrrhina nigrolutea*.

Pachyrrhina nigrolutea, Bellardi, Saggio &c. i. p. 11.

Head orange-coloured above, with a broad arrow-shaped shining black spot in the middle (the point of which is not drawn out in a line), and some black marks on the inner orbit of the eyes; rostrum yellow, with a broad black stripe above, not touching the base of the rostrum; antennæ black, the first joint more or less reddish. Thorax yellow, with the usual black shining stripes; the lateral ones are incurved towards the dorso-pleural suture, where they assume an opaque, velvety-black colour; both ends of the mesothoracic suture, above the root of the wings, are marked with the same velvety-black, which, in a favourable light, can be seen on the black shining ground of the posterior end of the lateral thoracic stripes; the pleuræ are yellow, with a number of black spots and stripes; a large black angular spot above the sterno-pleural suture, its upper lobe pointing towards the root of the wing; a black stripe along the mesopleural suture runs from the root of the wing downwards; its lower end is connected on one side with the angular spot, and on the other with a large horseshoe-shaped black or brown spot running round the yellow metapleura; the posterior end of the latter spot expands round the point of insertion of the haltere and bifurcates beyond it, sending one branch to the middle coxa, the other to the hind one; a large black spot on the sternum, between the front and middle coxæ, and a similar smaller one between the middle and hind coxæ, both encroach upon the extreme base of the coxæ; scutellum black; metanotum black in the middle, yellow on the sides; knob of the halteres bright yellow. First segment of the abdomen reddish-yellow, with a narrow black hind margin; second segment reddish-yellow on its anterior portion, the remainder black; the following segments are like the second, the yellow and black thus forming alternate cross-bands, the yellow ones being narrower. Wings with a pale yellowish-brown tinge, more yellow on the costal cells; stigma pale brown; second posterior cell subsessile or short-petiolate, attenuate at the base.

Length (♀) 11–12 millim.

Hab. MEXICO, Orizaba (*Sumichrast*); COSTA RICA, Rio Sucio, Irazu 6000 to 7000 feet (*Rogers*).

The yellow tinge of the costal cells is the characteristic mark of this species. I have compared Professor Bellardi's types, and give a somewhat fuller description.

3. *Pachyrrhina consularis*, sp. n., ♀.

Pachyrrhina (*Tipula*) *elegans* (Wiedem.?, non Fabr.!), Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 34¹.

Head, including the rostrum, pale orange-yellow; the latter with a brown mark (almost obsolete in some specimens) on the upper side; a broad, deep black, shining spot on the vertex, the point of which is a little less than a right angle, and not drawn out in a stripe; a small dark brown mark on the inner orbit of each eye; antennæ yellowish, darker towards the tip, the second joint and the bases of the joints beyond the fourth slightly infuscated; palpi yellowish, brownish towards the tip. Thorax yellow, with uniformly deep black, shining stripes; the lateral ones strongly curved towards the dorso-pleural suture, their tip being velvety-black and opaque; collar yellow in the middle, black on the sides; scutellum black; metanotum yellow, with a black stripe in the middle triangularly expanding towards the posterior margin; on the pleura the following black or dark brown spots are visible: a large one, above the sterno-pleural suture, occupies the lower half of the mesopleura, its upper angle pointing towards the root of the wing; an elongated one along the mesopleural suture; one between the front and middle coxæ, and another between the middle and hind coxæ; a large horseshoe-shaped spot running round the yellow metapleura, and having the haltere inserted on its posterior end. Abdomen yellow, segments 1-6 with black posterior margins; on the first segment the margin is rather narrow and of nearly equal breadth; on the other segments the margins, narrow on the sides, expand in the middle, so as to reach a little beyond the distal half of the segment (except on the second segment, which is larger); on all the segments the stripes reach the lateral margins; the seventh segment has only a narrow blackish edge. Ovipositor ferruginous. Halteres brownish-yellow. Coxæ and femora yellow, the extreme tips of the latter brownish; tibiæ yellowish-brown; tarsi brownish. Wings with a yellowish tinge on the antero-proximal half, and especially in the costal cells; stigma pale brown; contact of the second posterior cell very narrow, sometimes punctiform.

Length (♀) 11-13 millim. (without ovip.).

Hab. COSTA RICA, Cache (*Rogers*); NICARAGUA, Chontales (*Janson*).—VENEZUELA¹. Four females.

N.B.—Schiner's specimens (from Venezuela), which I have compared in Vienna, certainly belong to the same species, although they show some differences; the black on the abdomen leaves only narrow yellow anterior margins on the segments, and the halteres have more distinctly yellow knobs. That these specimens are the *Tipula elegans* of Fabricius seems more than doubtful: "Antennæ nigræ, articulo primo flavo; abdomen, ano nigro," &c., does not agree at all. Moreover, Wiedemann, in interpreting this description, confuses *P. crocata* with *P. cornicina*. Fabricius means the former, and hence describes the thorax as black with yellow lines; the inconsistency which Wiedemann discovers in the description arises from the fact that for *crocata* he reads *cornicina*. *P. consularis* cannot be compared to *P. crocata*.

P. consularis has also something of *P. mexicana*, Macq. Dipt. Ex. Suppl. i. p. 12, but cannot be identified with it.

4. *Pachyrrhina usta*, sp. n., ♂ ♀.

Head orange-coloured above, with a large arrow-shaped shining black spot on the vertex (the point of which is prolonged in the shape of a line over the front), and some black marks on the inner orbits of the eyes; rostrum shining black above, yellowish below. Antennæ black, the basal joints more or less yellowish-brown. The prevailing colour of the thorax is black; narrow yellow lines, expanding on the humeri, separate the usual thoracic stripes, which are deep black, and shining; the lateral ones incurved towards the dorso-pleural suture, without any opaque spot at the tip; collar bright yellow in the middle only; a yellow spot in front of the thoracic suture, inside of the curvature of the thoracic stripe; a couple of small yellow marks near the root of the wing; an elongated yellow spot in front of the haltere; otherwise the pleura

is black or brown, shining, with some ill-defined lighter shades along the sutures; metanotum brown in the middle, yellow on the sides, shining; scutellum dark brown or black. Abdomen black, with some yellow on the sides of the two or three basal segments; lower portion of the male genitals brown, the upper appendages yellow; in the female the eighth segment, as well as the ovipositor, ferruginous. Halteres yellowish-brown, the tip bright yellow in the male. Coxæ dark brown; femora brownish-yellow, darker at the tip; tibiæ and tarsi brownish. Wings with a pale yellowish-brown tinge, more yellow in the costal cells; stigma pale brown; second posterior cell subsessile, attenuated at the base, the contact sometimes punctiform.

Length: ♂, 9–10 millim.; ♀, 11–12 millim.

Hab. COSTA RICA, Rio Sucio, Irazu (*Rogers*). A male and a female.

This species is not unlike *P. nigrolutea* in general appearance, but is easily distinguished by the absence of an opaque spot on the lateral thoracic stripes, by the more uniformly dark pleuræ, the brown coxæ, &c.

5. *Pachyrrhina ferruginea*.

Tipula ferruginea, Fabr. Syst. Antl. pp. 28, 29.

Pachyrrhina ferruginea, Wiedemann, Aussereur. zweifl. Ins. i. p. 53; O. Sacken, Western Diptera, p. 211.

Pachyrrhina quadrilineata, Macq. Dipt. Ex. i. p. 50 (teste O. Sack.).

Pachyrrhina proxima, Bellardi, Saggio &c. i. p. 9¹ (teste O. Sack.).

Hab. UNITED STATES and BRITISH NORTH AMERICAN possessions, common.—MEXICO¹, Ciudad in Durango (*Forrer*).

This species varies in the intensity of the brown borders of the thoracic stripes and of the dark abdominal triangles; both disappear altogether in some specimens.

I have compared the types of *P. proxima*, Bellardi; *P. quadrilineata*, Macq., is very probably the same species.

I have a series of specimens of a *Pachyrrhina* from Northern Sonora (*Morrison*), which agree with the characters of *P. ferruginea*, but have the basal joint of the flagellum reddish-yellow (sometimes also the second joint); the following joints are not altogether black or brown, but reddish-brown, with the base only black. Such specimens are in a dangerous proximity to *P. suturalis*, Loew, Cent. iv. 37 (Georgia); and if the latter is a really good species, a closer definition than that of Loew will be required in order to distinguish it from *P. ferruginea*. There are passages between specimens with a decidedly black flagellum, and such where the basis of the joints only is decidedly black; also between specimens with distinct blackish spots on the abdominal segments, and such where these spots are almost obsolete, or absolutely wanting.

The other Mexican Tipulidæ hitherto described (there are none from other parts of Central America) are the following:—

Geranomyia mexicana, Bellardi, Saggio &c. App. p. 4 (*Aporosa*).

Trimicra anomala, O. Sack. Monogr. N. Am. Dipt. iv. p. 167, t. 2. f. 1;
id. Catal. Dipt. N. Am. 1878, p. 29.

- Sigmatomera flavipennis*, O. Sack. Monogr. N. Am. Dipt. iii. (Addit. and Correct.), iv. p. 136.
- Tipula nebulosa*, Bellardi, Saggio &c. i. p. 6, t. 1. f. 4.—N.B. Is not a *Tipula*; seems to be allied to *Epiphragma*.
- Limnophila undulata*, Bellardi, Saggio &c. App. p. 3, t. 1. f. 2.—N.B. A true *Limnophila*.
- Epiphragma solatrix*, O. Sack. Monogr. &c. iv. p. 195.—Mexico, Orizaba (coll. Bellardi).
- Limnobia stupens*, Walk. Trans. Ent. Soc. Lond. n. ser. v. p. 332.—N.B. I suppose this is a *Gnophomyia*.
- Tipula associans*, Walk. Trans. Ent. Soc. Lond. n. ser. v. p. 332.
- *dispellens*, Walk. l. c. p. 333.
- *edwardsii*, Bellardi, Saggio &c. i. p. 8, t. 1. f. 2.
- *quadrinaculata*, Bellardi, l. c. p. 9, t. 1. f. 3.
- Pachyrrhina affinis*, Bellardi, l. c. p. 10 (*Tipula*).
- *mexicana*, Macq. Dipt. Ex. Suppl. i. p. 12.

TANYPREMNA, gen. nov.

Antennæ remarkably short, not much longer than the head, apparently 11-jointed. Legs very long; tarsi slender, whip-lash-shaped; venation of a *Tipula*, but anterior branch of the second vein still shorter than usual. Male forceps not incrassate, of a simple structure.

Tanypremna is a new genus which I propose for certain Tipulina related to *Dolichozeza*.

A detailed characterization will be published in a forthcoming paper of mine on Tipulidæ.

1. *Tanypremna opilio*, sp. n., ♂. (Tab. I. fig. 2, ♂*.)

Legs brown, the tibiæ whitish at the base, the tarsi white; thoracic dorsum brown; humeri and a portion of the pleuræ brownish-yellow; abdomen brown, the venter and male forceps brownish-yellow; wings slightly infuscated.

Length about 25 millim.

Hab. GUATEMALA, Purula in Vera Paz 5000 feet (*Champion*). A single male.

Head brownish-yellow; palpi and lips brownish; antennæ yellow, brownish towards the tips; a brown spot on the vertex. Collar brown, which colour is prolonged on the anterior part of the front coxæ; upper part of the mesonotum brown, the usual stripes being coalescent; a yellowish space in front of the suture, upon which two brown stripes are visible; a faint yellow line in the middle of the scutellum; metanotum brownish; humeri and pleuræ brownish-yellow, the latter with a brown stripe running from the dorso-pleural suture to the middle coxæ; sternum yellow. Coxæ and the base of the femora yellow, the rest of the femora and tibiæ dark brown, the latter have at the

* Through an error of the engraver, the seventh longitudinal vein and the last of the three veins issuing from the discal cell have been omitted from the figure.

base a white space about a millimetre broad; tarsi white, distinctly longer than the femora and tibiæ together, very slender, whip-lash-shaped. Halteres with a brownish knob. Abdomen brown; male forceps, and the venter, brownish-yellow; hind margins of the segments with a narrow brown border. Wings with a uniform pale brownish tinge; stigma slightly darker.

Inhabits the humid forest region (*Champion*).

Fam. RHYPHIDÆ.

OLBIOGASTER, gen. nov.

Head of about the same breadth as the thorax, rather closely applied to the latter, as there is very little development of the occiput behind the eyes, and but little more behind the vertex; the side view of the head is like that of *Lobogaster* (Philippi, Verh. z.-b. Ges. Wien, xv. t. 24. fig. 16*a*), and very different from that of *Rhyphus*, where the back part of the head is very much developed. *Front* moderately broad; above the antennæ its breadth is in both sexes a little less than the horizontal diameter of the eye about the middle; three distinct ocelli on the vertex. There is no rostral prolongation of the head whatever, so that the palpi are in contact with the lower orbit of the eyes, and the rather large labellæ are immediately under the palpi. *Palpi* short, the second joint stout, the last two joints smaller. *Face* very little convex, with some scattered hairs. (*Rhyphus* also has the oral opening almost immediately adjoining the lower orbit of the eyes, but the structure of the mouth-parts is different; there is a short, projecting proboscis, at the end of which the labellæ are much smaller than in *Olbiogaster*; the second joint of the palpi is likewise incrassate, but the last joint is longer).

Antennæ filiform; bent backwards they would nearly reach the middle of the second abdominal segment; clothed with a dense microscopic pubescence, which, together with the cylindrical shape of the joints, renders the discrimination of the latter somewhat difficult; the joints are 16 in number, and differ but little in length, except the first, which is short, subglobose, and the second, which is very short, disciform. (The antennæ of *Rhyphus* are comparatively shorter, more distinctly attenuate towards the tip, the joints more distinct; joints 1 and 2 of nearly equal length, &c.)

Thorax comparatively small and little convex, with a scattered, moderately long pubescence on the mesonotum; no macrochetæ; scutellum and metanotum as in *Rhyphus*; the former is beset with delicate hairs, but has no conspicuous pair of bristles. (*Rhyphus* has the more gibbose mesonotum beset with two regular rows of bristles, besides other bristles, inserted above the root of the wings, on the very developed, ridge-like postalar callosity, and has also a pair of bristles on the scutellum.)

Abdomen comparatively long and flat, almost ribbon-shaped in the male, slightly attenuate at the base and a little expanded posteriorly in the female; with seven segments (besides the genitals), not differing much in length, except the seventh, which is a little shorter; the posterior margins of segments 4, 5, 6 project on the sides, being broader than the anterior margin of the next following segment. The male genitals are represented by a pair of subtriangular, elongated lamels, between which a pair of pointed (horny?) organs is perceptible; the female likewise has a pair of triangular lamels, but smaller; I cannot perceive the horny points.

Legs of moderate length and strength; tibiæ beset with scattered, very minute spines; front tibiæ with a single spur, the other pairs with two; there is a broad, short empodium.

Wings elongated, moderately broad; venation like that of *Rhyphus*, with this difference, that the second vein converges towards the first, and reaches the costa at the same point with it (the same as in *Lobogaster*); while in *Rhyphus* the second vein, before reaching the costa, forms a curve, diverging from the first, so that the marginal cell is broader in its distal than in its proximal portion. The fifth vein, towards its end, forms the same peculiar curve as in *Rhyphus* or *Lobogaster*, although in a less marked degree. (The pubescence which covers the surface of the wing in *Rhyphus* is microscopic here, and invisible even under a strong lens, except in the shape of black dots.)

This interesting genus forms the passage between *Rhyphus* and the Chilean genus

Lobogaster, Phil. It differs from *Rhyphus* in the structure of the head (the eyes separated by a broad front in both sexes, the occiput but very little developed), of the antennæ (the scapus short, the flagellum more filiform, &c.), of the thorax and abdomen, also in the venation (for the details compare above).

Its relationship to *Lobogaster* is apparent in the structure of the abdomen, of the antennæ, and in the venation. The differences, however, are:—1, the eyes are glabrous and not “longe hirsuti” as Philippi has it; 2, the bifurcation of the second and third veins takes place some distance *before* the anterior cross-vein, and is not coincident with that cross-vein; 3, the difference in size, both species of *Lobogaster* measuring 17–18 millim. in length, while the species of *Olbiogaster* are about half as long. Without taking notice of the difference in the colouring, which is merely specific, I will mention some minor discrepancies between my specimens and Dr. Philippi’s description: the face is slightly convex, but not “projecting like a bladder;” the hairs on the face are short and inconspicuous, and it cannot be said to be densely beset with long bristles (“mit langen Börstchen dicht besetzt”). Philippi speaks of “ein Paar Börstchen über den Ocellen,” which I do not perceive in *Olbiogaster*; his figure (incorrectly?) represents a quantity of long hair on the front and vertex. The first abdominal segment is described as “lang behaart” in *Lobogaster*, which is not the case with my specimen. Philippi counts twelve joints in the antennæ of *Lobogaster*; Schiner sixteen. I rather believe the latter, as both *Rhyphus* and *Olbiogaster* have the same number.

The difference between the venation of *Lobogaster* and *Olbiogaster* I have explained above. That the venation of *Lobogaster* is exceedingly like that of *Rhyphus*, is very easy to perceive in comparing the latter with figure 16 *b* of Philippi (not the principal figure 16, where the venation is given incorrectly). When Schiner (Reise d. Novara, p. 23) discovers differences between both which do not exist, it is the result of a most unnatural interpretation of the homology of the veins, in consequence of which the second vein (his *Radialader*) is said to be entirely wanting, and the fork to be formed by the third vein alone (his *Cubitalader*)!

My statements are based on a specimen from Costa Rica, three (male and female) specimens from Porto Rico (in the Berlin Museum), and the type specimen of *Rhyphus tæniatus*, Bellardi, Saggio &c. Append. p. 5, fig. 5, which is a male *Olbiogaster*.

1. *Olbiogaster cognatus*, sp. n., ♀.

Reddish-yellow. Head black, except the mouth-parts and the first joint of the antennæ, which are reddish-yellow; the face is dark brown in the middle, yellow on the sides; antennal flagellum black; front above the antennæ silvery, which colour is bounded by a straight line, running a little below the anterior ocellus. Thorax shining reddish-yellow, with a scattered yellowish pubescence; pleuræ likewise shining, except a spot, in the shape of an elongated square, above the sterno-pleural suture, which is semiopaque, and in an oblique light shows a whitish, almost silvery reflection; a brownish spot in front of the root of the wings. Halteres reddish-yellow. Abdomen reddish-yellow, of a slightly paler shade than the thorax; the whole surface clothed with a golden-yellow, appressed pubescence; segments 1–4 with a brown spot in the anterior corner of each segment, the one on the first segment the smallest, on the other segments

each spot occupies less than one third of the breadth, and a little less than one half of the length of the segment. (As segments 5–7 have become brownish in drying, I cannot speak about their colour positively; instead of the brown spots in the corners, they seem to have smaller ones more towards the middle of the segments, the posterior portion of segment 7 is altogether brown.) Legs pale yellow; posterior tibiæ slightly brownish, with yellow spurs; tarsi brown. Wings subhyaline, with a slight yellowish-grey tinge; veins brown; stigma elongate, brown.

Length 7–8 millim.

Hab. COSTA RICA, Irazu (*Rogers*). A single specimen.

N.B.—I have completed the generic description from three specimens from Porto Rico (*Moritz*) in the Berlin Museum. The two males differ from *O. cognatus* in the colouring of the body: the pleuræ, the metanotum, and the two hind pairs of coxæ are brown; the abdomen brown, but the hind margins of segments 1–5 are yellow, the yellow margin occupying about one third of the breadth of the segment. One of the specimens has the two posterior pairs of femora brownish, the other not. The wings of one of the specimens have a distinct brownish shade on the apex, and another around the small cross-vein; in the other specimen the wings are more unicolorous.

The female specimen has the body altogether reddish-yellow, except the end of the abdomen, which is infuscated; apical cloud on the wings very distinct.

I am not certain whether all these specimens belong to different species, or are only varieties of the same insect.

Fam. STRATIOMYIDÆ.

SUBULA.

Subula, Megerle, in Meig. System. Besch. &c. ii. p. 15 (1820).

Xylomyia, ^{Rognæ} Prodr. Dipt. Ital. iv. p. 11 (1861).

Macroceromys, Bigot, Ann. Soc. Ent. Fr. 1879, p. 187.

1. *Subula elongata*, sp. n., ♂.

Black; legs yellow, the tarsi infuscated towards the tip; wings subhyaline.

Length 9–10 millim.

Hab. GUATEMALA, Capetillo (*Champion*).

The same type of structure as *Subula americana* (compare van der Wulp's figure in Tijdschr. &c. 1867, t. 3. ff. 5–7).

Head black, the tips of the palpi and of the proboscis paler. Antennæ brown, paler towards the base; bent backwards they would nearly reach the base of the wings. Thorax, including the front and middle coxæ, black, very little shining; the margin of the scutellum pale yellowish. Legs, including the middle coxæ, pale reddish-yellow; front and middle tarsi infuscated, except at the base; hind tarsi brown from the tip of the first joint. Halteres brownish. Wings subhyaline, with a slight pale brownish tinge, especially on the distal half; stigma only a little darker; veins brown; venation like

that of the European *S. marginata*, only the second posterior cell is more ventricose in the middle, and more attenuated at the base. A single male, indifferently preserved.

N.B.—*S. elongata*, like *S. americana*, has comparatively a more slender body, longer legs, and antennæ than *S. marginata*. *Subula fulviventris*, Bigot (Mexico), for which Bigot has introduced the genus *Macroceromys*, has still longer antennæ; in other respects the definition of this genus shows nothing to distinguish it from *Subula*; by adopting it we should be embarrassed as to which of the two genera to assign our *Subula elongata*, as it is midway between the others in regard to the length of the antennæ.

For *Subula*, which is preoccupied (Mollusca, 1817), Prof. Rondani has proposed the name *Xylomyia*. I think, however, that a change in a name of such old standing involves much more inconvenience than its retention.

SARGUS.

Sargus, Fabricius, Entom. System. Suppl. p. 566 (1798).

1. *Sargus* — ?

Hab. PANAMA, Bugaba (*Champion*). A single male.

Belongs to the group of green, metallic species, with a dark bronze-coloured abdomen; the hind margins of the abdominal segments paler, and beset with a fulvous, appressed pubescence, and segments 1 and 2 coarctate. A number of the existing descriptions agree more or less with this specimen, and I cannot say whether there are several closely allied species, or whether the same species is subject to variation; probably both alternatives are true. *S. lucens*, Loew, Centur. vii. 11 (Cuba), has “alæ fuscæ,” while in my specimen they are, at most, “fuscescentes.” The same remark applies to the description of *S. clavatus*, Walk. List &c. v. p. 93 (Para), the wings of which are described as “blackish.” *S. alchidas*, Walk. List &c. iii. p. 517 (Jamaica), differs apparently only in the colour of the halteres. *S. contractus*, Walk. List &c. v. p. 319, and *Macrosargus tenuiventris*, Bigot, Ann. Ent. Soc. Fr. 1879, p. 225 (both from the Amazon River), must be closely allied to the above-quoted species. These species (at least in my specimens of *S. lucens*, Loew, and *M. tenuiventris*, Bigot) have contiguous eyes in the male sex.

2. *Sargus concinnus*, sp. n., ♂ ♀.

Thorax red above; scutellum and metanotum dark metallic; abdomen with the first and second segments pale yellow, the others metallic purplish-blue, with more or less distinct yellow hind margins.
Length 11–12 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).—BRAZIL, Villa Nova, Amazon River (*Bates*).

Face blackish, the proboscis yellow; antennæ reddish-yellow, the scapus paler, beset with short black pile; arista slender, reddish at the base; lower part of the front swollen, of a dingy yellowish colour; the rest of the front and the vertex metallic blue, with greenish

and purple reflections. Thoracic dorsum red, with a very slight coppery reflection; scutellum metallic bronze-green, its hind margin yellow; metanotum metallic green; pleuræ pale yellow; a large triangular black spot, with a green metallic reflection, occupies nearly the whole space in front of the mesopleural suture; sternum, between the front and middle coxæ, of the same colour, but bisected by a slender yellow line; front and middle coxæ yellow, with a black spot on the outside (wanting in my female specimen); hind coxæ almost entirely black. Front legs pale yellow; middle legs yellow, but the femora more or less brown on the distal half, the tibiæ brownish on the underside, and beset with microscopic black pile, the upperside whitish, glabrous; the trochanters and the base of the femora of the hind legs are pale yellow, the rest black, with a metallic reflection; hind tibiæ whitish-yellow, brown on the underside of the proximal third, the distal third brown on both sides; tarsi yellow; the hind pair has the four last joints dark brown. Halteres yellow at the base, the knob brownish. Abdomen with the first and second segments pale yellow: the first with a metallic blue triangular spot on the lateral margin on each side; the second with a similar spot, but larger, occupying the whole lateral and a portion of the posterior margin; segments 3-6 metallic blue, with purplish reflections; on the third segment the posterior margin has a narrow yellow border, attenuated on each side, and not quite reaching the lateral margin; a similar yellow border, but still narrower, on the fourth segment; venter and the three first segments pale yellow, metallic blue on the sides, the other segments metallic blue. Wings subhyaline, with a slight grey tinge; stigma dark brown. A single male specimen from Guatemala; a female from Brazil in the British Museum collection.

The *not* equidistant ocelli and the not contiguous eyes of the male prove this to be a true *Sargus*; the abdomen is, however, much broader than in the European species of the group, *S. cuprarius*, *S. infuscatus*, &c. The end of the second vein is a little less parallel to the end of the first than in those species. The tibiæ of the male show the usual sexual characters.

PTECTICUS.

Ptecticus, Loew, Verh. zool.-bot. Ges. Wien, v. p. 142 (1855). (*Plectiscus*, l. c. on the plate, is a misprint; see O. Sack. Catal. Dipt. N. Am. 1878, p. 224, note 53.)

1. *Ptecticus figlinus*, sp. n., ♂.

Thorax reddish-brown; abdomen metallic violet-brown, with yellow cross-bands on the hind margins of the segments; wings with a pale brownish tinge, yellowish between the discal cell and the costa.

Length 15 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Face and the vesicular frontal triangle dingy pale yellowish; front brownish, the ocellar spot darker; antennæ reddish-yellow. Thorax reddish-brown, subopaque above, and clothed with a short fulvous, erect pubescence; pleuræ and metanotum more shining and

somewhat more yellowish. Legs, including the anterior coxæ, brownish-yellow; front tarsi infuscated from the tip of the first joint, the middle and hind tarsi from the tip of the second; all the tibiæ beset with a fine, appressed, fulvous pubescence; hind tibiæ slightly infuscated on their proximal half. Halteres yellow. Abdomen brown, with a distinct violet-metallic reflection; hind margins of the segments yellow, beset with a golden-fulvous pubescence; segment 2 is yellow, with only a narrow violet-brown strip anteriorly; on segments 3 and 4 the yellow occupies a little less than half of the surface in the middle, and a little more than half on the sides; on segments 5 and 6 the yellow border is narrower; male forceps brownish-yellow, its palpi-like appendages brown. Wings with a pale brownish tinge; the antero-proximal region, especially between the discal cell and the anterior margin, yellow, the veins in this part also partaking of that colour. A single male.

The characteristic thumb-like projection of the second antennal joint on the inner side of the third exists here, although in a lesser degree than in other species. *P. figlinus* belongs to a type of structure different from *P. testaceus*; the thorax and abdomen are comparatively more slender, the abdomen more convex, and the head (seen from above) is more rounded in front. The venation is, in the main, the same; but the branch of the third vein is more oblique. The American species differ from the Asiatic ones (*Ptecticus repensans*, Walk., *P. remeans*, Walk., and *P. leoninus*, Rond., all from the Indo-Malay Archipelago) in the shape of the small marginal cell (included between the end of the first vein and the second): in the Asiatic species this cell is broad, triangular, and the anterior cross-vein coincides with the apex of the triangle, that is, with the bifurcation of the second and third veins; in the two above-mentioned American species this cell is very narrow, linear; the small cross-vein is sometimes *before* the bifurcation, but in *P. testaceus*, however, it is *behind* it. I have verified these statements on many species in the Berlin Museum.

RHAPHIOCERA.

Raphiocera, Macquart, H. N. Dipt. i. p. 253 (1834).

1. *Rhaphiocera pampinus*, sp. n., ♂.

Thorax green, with black stripes; wings hyaline, with a grey shadow on the apex, and a brown stigma; legs black, except the base of the femora and the first joint of the tarsi, which are white.

Length 7–8 millim.

Hab. PANAMA, Volcan de Chiriqui 3000 to 4000 feet (*Champion*).

Male. Antennæ black, including the arista; they are inserted on green ground—that is the face and a broad interval of the front above the antennæ are green; the remainder of the front and vertex is black, except a green spot in front of the ocelli; the posterior orbits of the eyes are green, but the occiput itself is black. Mesonotum black, with two green stripes, abbreviated in front and behind; in front the stripes are interrupted

BIOL. CENTR.-AMER., Dipt., August 1886.

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before reaching the green humeri, and posteriorly before reaching the green scutellum (the spines of which are brown); between the scutellum and the root of the wings, on each side, there is a triangular green spot pointing forward, but not reaching the suture; another green spot in the angle formed by the mesothoracic with the dorso-pleural suture; metanotum black; the pleuræ are party-coloured with black and green; a large green spot above each of the front coxæ; an oblique green band running from the humerus towards the mesosternum, and emitting anteriorly a branch towards the front coxa; a large elongate spot in front of the mesopleural suture, contiguous on one side to a similar spot below the sterno-pleural suture, on the other to the green spot on the mesonotum; hypopleura and metapleura for the most part green; a green stripe across the pteropleura; sternum black. Abdomen black, with a green border (which is broader on the dorsal than on the ventral side) running around it; a green cross-band on the second segment, and a less distinct one on the third. Legs, including the coxæ, black; base of the femora and the first joint of the tarsi white; the tip of that joint, however, is black, as well as the extreme root; the white of the front tarsi is dingy. Halteres pale yellow, the knob green. Wings hyaline; stigmatic region brown; apex with a distinct grey tinge. A single male.

N.B.—The hind metatarsus has a distinct swelling on the underside, probably a sexual character.

2. *Rhaphiocera caloptera*, sp. n., ♂.

Thorax green, with black stripes; both the submarginal and the discal cells brown; apex and hind margin of the wing with a pale brownish tinge; femora brownish-yellow, the tibiæ and tarsi darker, the first joint of the four hind tarsi white, except at the tip.

Length 14 millim.

Hab. MEXICO, Paso del Macho (*Höge*).

Male. Head and thorax green; a black spot above the antennæ, another in the middle of the front, contiguous to the eyes, and a third on the occiput, including the ocelli; antennæ brownish-yellow; arista whitish. Mesonotum black, with four green stripes (the intermediate ones abbreviated posteriorly, a little before the scutellum, and incurved anteriorly towards the green humeri; the lateral ones, between the mesothoracic suture and the humerus, do not quite reach the latter, and run somewhat obliquely, leaving a narrow, acutangular black strip between them and the pleura); post-alar callosities green, this colour extending also a little in front of them; scutellum green; metanotum black; mesosternum with a large black triangle in front of the middle coxæ, its bifid apex not reaching the front femora; an elongate black spot under the root of the wing (on the pteropleura), another above the middle femora. Abdomen brownish, with narrow green borders; the second segment with an indistinct green cross-band at the base; venter brownish. Front coxæ green; hind coxæ with a large brown spot at the base, greenish at the tip. Femora brownish-yellow; tibiæ brownish,

rendered darker by microscopic black pile; denuded, and therefore less coloured, spots in the middle on the front as well as on the hind side of the tibiæ (perhaps a sexual character); tarsi brown, the first joint of the four hind ones white, the tip brown. Halteres with a greenish knob. Wings: the interval between the third vein and the costa yellowish-brown; a cloud of the same colour crosses the extreme proximal end of the first basal cell, and fills out the discal; the costal cell (between the auxiliary and the costa) is subhyaline, but the space between the auxiliary and first vein is brownish; the distal half of the first and second posterior cells has a pale brownish-grey tinge, which is prolonged towards the anal angle along the posterior margin, filling out nearly the whole third and fourth posterior cells; the fifth vein is clouded with brown on its proximal portion; the triangular cell between the root of the wing and the basal cells is pure hyaline. A single male.

HERMETIA.

Hermetia, Latreille, in Dict. d'Hist. nat. Déterville, xxiv. (1804).

This genus includes a great variety of types, differing considerably in the general shape of the body, as well as in the structural details; it would be useless and confusing, however, to introduce new genera for them.

My material not being sufficient for a monographic treatment of these interesting forms, I will merely draw attention to the coloration of the eyes, which, in this genus, shows a variation corresponding in a measure to the diversity in outward shape of the different species. I have revived on wet sand the eyes of the eight American species before me, and have found three different types of coloration as follows:—

1. Eyes green, with numerous purple transverse lines and dots, sometimes connected, and forming a design in zigzag: *Hermetia illucens*, *H. coarctata*, *H. crabro*, *H. aurata*, *H. comstocki*.
2. Eyes unicolorous: *Hermetia formica*, *H. pterocausta*.
3. Eyes green, with three large purple spots: *Hermetia relictæ*.

Besides North and South America, especially in their warmer regions, there is, so far as I know, only one other region where the true *Hermetiæ* have been found, and that is the Austro-Malayan Archipelago. *Hermetia* (*Massycita*) *cerioides*, Walker, which occurs there, has the eyes very like *H. illucens*; a double zigzag purplish design on blue ground. In the Berlin Museum I have seen a *Hermetia* from Northern Australia which is very like *H. illucens* in its colouring.

The eight American *Hermetiæ* mentioned below may be tabulated as follows:—

Eyes pubescent.

Abdomen with a dense, conspicuous golden tomentum.

Femora black 1. *aurata*, Bell.

Femora red 2. *comstocki*, Willist.

Abdomen without such tomentum 3. *crabro*, sp. n.

Eyes glabrous.

Abdomen with a double spot of a lighter colour on dark ground on the second segment.

Segments 3-5 of the abdomen red 4. *relicta*, sp. n.

Segments 3-5 of the abdomen not red.

Front femora and tibiæ red 5. *coarctata*, Macq.

Front femora and tibiæ black 6. *illucens*, Linn.

Abdomen without the double spot of a lighter colour on the second segment.

Wings unicolorous, yellowish 7. *formica*, sp. n.

Wings darker at the apex 8. *ptero-causta*, sp. n.

1. *Hermetia aurata*.

Hermetia aurata, Bellardi, Saggio &c. i. p. 27, t. 1. f. 8¹.

Hermetia chrysopila, Loew, Centur. x. p. 11.

Hab. NORTH AMERICA, Texas.—MEXICO, Northern Sonora (*Morrison*), Morelia (*de Saussure*¹).

In the single specimen from Sonora the first two abdominal segments show only traces of golden pile; on the second segment a narrow cross-band of such pile becomes visible near the anterior margin in an oblique light only; the third segment has a similar cross-band, and its posterior portion is densely clothed with golden pile, but the interval is black. Instead of "abdomen præter segmentorum singulorum angulos *posticos*," I would read "*anticos*" in Loew's description: with this alteration I have but little hesitation in referring our specimen to *H. chrysopila* (= *H. aurata*, Bell.). Both Bellardi and Loew have omitted to mention that the eyes of this species are densely hairy: revived on wet sand they showed, on bluish-green ground, two deeply indented zigzag purplish lines running from top to bottom, and between the two a stripe of the same colour, expanded in the middle, and bearing an eye-like blue spot on the expansion. The types in Prof. Bellardi's collection are larger, and have more golden pile on the second segment; nevertheless I believe them to be the same species.

2. *Hermetia comstocki*. (Tab. I. fig. 3.)

Hermetia comstocki, Willist. Canad. Entom. 1885, p. 125.

Eyes pubescent; wings brown, with a longitudinal hyaline cuneiform stripe, which begins in the third posterior cell, and runs towards the anal angle, where it becomes much broader; thorax and abdomen aureo-tomentose.

Length 10-14 millim.

Hab. NORTH AMERICA, Arizona (*Comstock*).—MEXICO, Northern Sonora (*Morrison*).

Face, front, and vertex brownish-red, with brownish spots, sometimes altogether brown, with some reddish spots; face of a purer yellow in the middle; a narrow border of yellowish-silvery hairs along the eyes; ocellar tubercle brown; occiput black; first two joints of the antennæ, and a portion of the third, yellowish-red, the rest black.

Thorax brownish-black, sometimes reddish behind the humeri; on the anterior part of the dorsum are three short stripes of appressed golden pubescence (the intermediate one reaching the suture, the lateral ones oblique and extending only a very short distance behind the humeri); fringes of similar golden-yellow pile along the dorso-pleural and meso-pleural sutures and in front of the scutellum; the interval between the latter fringe and the red scutellum is deep black; pleuræ, sternum, and metanotum dark brown; mesosternum and metanotum beset with golden pile. Halteres with a yellow knob. Coxæ dark brown with golden pile; legs rufous; hind tarsi whitish-yellow at the base; in darker specimens the hind femora are infuscated on the distal half, and the other femora and some of the tibiæ show traces of brown. The anterior half of the wing, as far as the fourth vein and including the discal cell, is brown, slightly ferruginous at the base and along the costa; the apex and the posterior margin are of a paler brown; between the two colours there is a cuneiform hyaline stripe, which begins in the third posterior cell, crosses the fourth and fifth near their bases, and occupies the whole middle portion of the anal cell, and the proximal half of the auxiliary and spurious cells, including the alula. Abdomen dark brown, nearly black, more or less reddish along the sides; its rather convex upper surface densely clothed with an appressed golden pubescence, which, in an oblique light, is especially apparent along the hind margins of segments 2-4; narrow at the base, expanded on the second segment, and from that point to the tip gradually attenuated. Venter dark brown or black, with a similar golden pubescence.

Three specimens.

The eyes (revived on wet sand) show a design of zigzag lines on green ground.

I have seen examples in the Berlin Museum (Mexico, *Ehrenberg*). Specimens in the museum in Vienna bear the collection-name *H. mexicana*, Schin., and are alluded to by Dr. Brauer (Sitzungber. d. k. Acad. d. Wiss. Wien, 1885, p. 152) as showing a remarkable mimetic resemblance to certain species of *Polistes*.

3. *Hermetia crabro*, sp. n. (Tab. I. fig. 4.)

Eyes densely pubescent; wings brown along the costa, as far as the fourth vein; suture between the first and second segments with a narrow transverse pellucid spot; body black, some lines formed by golden-yellow pile on the thorax; abdomen comparatively short, broad and convex.

Length 11-12 millim.

Hab. GUATEMALA, El Reposo 800 feet (*Champion*).

Head black, with some traces of brownish-yellow in the middle of the face; a yellow spot on each side, near the eye, a little above the level of the root of the antennæ; another spot higher up, almost on a level with the ocelli; facial orbits somewhat pale, and beset with a yellowish-white pubescence; some pile of the same colour on the front; that on the vertex black; frontal bump with four deep grooves; eyes densely pubescent, green, with numerous purple transverse streaks connected at their ends. Antennæ

rufous at the base, the extreme tip white, the rest black ; the distal half of the third joint, instead of having the usual lamelliform shape, shows its vane-like, feathery structure more distinctly here than in the other species, and is somewhat curled up at the end. Thorax black, moderately shining, with microscopic punctures and pile ; the following design on the mesonotum is formed by golden-yellow hairs—a border along the anterior end, from one humerus to the other, with a slight interruption in the middle ; a longitudinal line starts from that interruption and does not reach beyond the middle of the thorax ; a line on each side, along the mesothoracic suture, not reaching the central longitudinal line ; and a short oblique line in each of the hind corners. The convex portion of the metanotum has a transverse golden fringe ; a similar, but paler and less dense, fringe along the mesopleural suture ; the hairs on the sternum silvery. Abdomen comparatively short and broad, rather convex ; black, subopaque, its surface microscopically shagreened ; pubescence short, rather dense, in a certain light golden ; a narrow yellowish-brown border on each side, of equal breadth, reaching from the second segment to the end of the fifth ; a narrow, transverse, pale yellow, pellucid spot on the incisure between the first and second segments, encroaching on both (this spot has a fringe of golden hairs upon it, and on the ventral side occupies the greater part of both segments). Legs brownish-black ; tarsi yellowish, the tips brown. Wings infuscated along the costa, the brown being bounded by the fifth vein before the discal cell, and by the third vein beyond it ; the apical portion and the posterior margin greyish, but the anal cell, the anterior portion of the auxiliary and spurious cells, and the alula are hyaline ; venation normal.

A single specimen ; sex doubtful.

This species differs from its congeners by its stouter appearance ; the thorax is shorter and broader ; the scutellum shorter and much less triangular ; the abdomen broad in the middle, attenuated at both ends, convex, comparatively short ; the antennal lamella shows its feathery structure more distinctly here than in the other species ; the eyes are densely pubescent. At the same time the whole organization is that of a *Hermetia* : the structure of the head, the frontal bump, the facial, beak-like elongation, and the coloration of the front belong to that genus. The coloration of the eyes is very like that of the typical *H. illucens*.

4. *Hermetia relictæ*, sp. n., ♀ .

Black, with a slight greenish metallic reflection ; abdomen with segments 3-5, and the posterior margin of the second, ferruginous-red, the latter with two reddish-yellow pellucid spots on black ground ; wings uniformly brown ; antennæ black, the extreme tip of the style white ; tibiæ and tarsi yellowish-white.

Length about 15 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Head black, with a strong bluish-green metallic reflection ; the bump below the ocelli pure black ; the convex middle portion of the face, between the base of the

antennæ and the edge of the mouth, white; facial orbits likewise whitish; a yellowish-white spot on each side of the lower part of the front, near the orbit; proboscis reddish; the sides of the face and the underside of the head are beset with silvery-white hairs; front and vertex with darker hairs; eyes glabrous. Antennæ black, except the tip, which is white; the compound part of the third joint is linear, not swollen, and distinctly shorter than the vane-like rather narrow terminal portion. Thorax metallic greenish-black; the dorsum with a whitish scattered pubescence, which forms two beginnings of stripes anteriorly; traces of yellowish on the post-alar callosity, along the posterior edge of the scutellum, and on the pleuræ, along the mesopleural suture. Halteres yellow. Abdomen gently convex, gradually expanding from the base to the tip; red, the two basal segments black and with a violet metallic reflection; posterior margin of the second segment red; on the dark portion of the second segment are a pair of oblong reddish-yellow spots, which slightly encroach upon the first segment; each of these spots has, on its outer side, a beak-like expansion lying on the suture between the two segments; the red portions of the abdomen are clothed with a microscopic, appressed, dense, rufous tomentum, visible in an oblique light only. Femora black; tibiæ and tarsi whitish-yellow. Wings rather uniformly tinged with dark brown from the very root; a slight bluish-opalescent reflection upon them.

A single female.

N.B.—1. The eyes (revived on wet sand) appear quite different from those of the typical *H. illucens*: ground-colour green, with three large purple spots; the upper one triangular, with one side concave; below it an oval, somewhat ill-defined spot, separated from the former by a broad green cross-band; between these two spots and the fronto-facial orbit, lying alongside of the orbit, is placed the third elongated spot.

2. The principal differences of the present species from *H. rufiventris*, Fabr., are that the first two abdominal segments are black; that the incisures are not “weisslich schimmernd” (with a whitish reflection); and that the tibiæ are altogether whitish. The differences from *H. lativentris*, Bellardi, are that the pubescence of the face is silvery on the sides, that of the front blackish, while Bellardi describes both as yellow (“flavo-villosa”); that the thorax shows traces of silvery stripes in front, and a whitish pubescence near the scutellum, while Bellardi speaks of a “tomentum aureum in tres vittas subobsoletas dispositum.” The pale spot on the second abdominal segment according to Bellardi’s figure and description is merely bisected by a black line, interrupted posteriorly, while in our specimen the whole segment is black, with two perfectly isolated reddish-yellow spots. Bellardi says: “alæ ad imam basin subhyalinæ”; my specimen has the wings uniformly brown up to the root.

[Since writing the above I have seen Prof. Bellardi’s type in Turin, and have found his description to be correct: it is an altogether different species. *H. rufiventris*, (Fabr.?), which I saw in Berlin, is likewise different; its wings are much paler, &c.]

5. *Hermetia coarctata*.

Hermetia coarctata, Macq. Dipt. Ex. Suppl. i. p. 50, t. 5. f. 4¹; Bellardi, Saggio &c. i. p. 24; Schiner, Reise d. Novara, p. 70².

Hab. MEXICO, Merida in Yucatan¹.—SOUTH AMERICA².

A single specimen (a female from Presidio, Mexico, collected by Forrer) agrees with the descriptions, with the following differences: the scapus as well as the annulate portion of the third joint of the antennæ are reddish; only the tip of the annulate portion as well as the long lamelliform vane-like style are black; the palpi are red; the legs are altogether red, except the coxæ and the base of the posterior femora. The colouring of the head is the same as that of several other *Hermetiæ*: there is a greenish-white spot in the middle of the face; the facial orbits are silvery; besides the pair of whitish spots on the front near the orbits, there is a similar pair higher on the vertex. The stigma is brown (as Macquart describes it). The short stump of a vein, inside of the discal cell, mentioned by Schiner, is less than a rudiment in our specimen. The only important differences consist in the colour of the palpi and legs, and even these may be due to variation; the agreement in other respects is so great that I do not doubt of the specific identity, the more so as Macquart's specimen was likewise from Mexico.

The eyes are green, with purple transverse streaks and dots, which are not placed quite so close together as in *H. illucens*.

6. *Hermetia illucens*.

Hermetia illucens (Linn.), Wiedem. Aussereur. zweifl. Ins. ii. p. 22, t. 7. f. 3 (for the rest of the synonymy compare O. Sacken, Catal. N. A. Dipt. 1878, p. 46).

Hab. SOUTHERN UNITED STATES.—MEXICO; GUATEMALA, San Gerónimo (*Champion*); COSTA RICA, Cache (*Rogers*); PANAMA, David in Chiriqui (*Champion*).—SOUTH AMERICA.

I have before me five Central-American examples of this well-known species; their average size seems to be *smaller* than that of the specimens from the United States.

7. *Hermetia formica*, sp. n., ♀.

Brown, at the base of the second abdominal segment a transverse, yellowish, pellucid spot; antennal style very narrow, white; wings yellowish.

Length about 19 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Head broader than the thorax, brown, the face paler; front beset with brown and black hairs, the face with a yellowish pubescence more dense along the orbits; the front has the usual bump below the ocelli. First joint of the antennæ rather long, the annulate portion of the third joint about as long as the vane-like style; the latter is unusually narrow and pointed, giving the whole antenna a different appearance from that of an ordinary

Hermetia; the colour of the style is yellowish-white, that of the rest of the antennæ reddish-brown. Thorax dark brown; shining on the sides, less so on the dorsum, on account of a dense short pubescence; the latter dark brown, with the exception of two rufous stripes, which are interrupted anteriorly and coalesce posteriorly into a square of rufous pile between the suture and the scutellum; a fringe of rufous hairs along the mesopleural suture. Abdomen elongate, gradually, but moderately, expanding from the base to the tip, very convex, dark brown, with opalescent reflections; in some places a microscopic appressed pubescence is visible, which does not materially affect the ground-colour; on the sides of the three basal segments the pubescence looks reddish in a certain light, on the middle of the apical segments it is greyer in tint; a transverse, yellow, pellucid spot on the incisure between the first and second segments, not reaching the lateral margins; venter yellow, pellucid at the base, the remainder dark brown, shining. Halteres brownish-yellow. Coxæ and femora brown; tibiæ and tarsi yellowish-brown; knees and base of the tibiæ brownish-yellow; the hind tibiæ darker. Wings with a decided yellowish tinge, more saturate yellow along the costa.

A single male.

N.B.—This species is different in shape from an ordinary *Hermetia*, for instance *H. illucens*; the thorax is more convex, but narrower; the abdomen comparatively longer, and much more convex, especially on its distal half. The comparatively shorter antennæ, with their short and narrow style, also contribute to give *H. formica* a peculiar appearance. The name was suggested by its resemblance to the winged male of a large ant, e. g. *Formica herculeana*.

The eyes (revived on wet sand) are of a uniform dark brownish-bronze colour.

8. *Hermetia pterocausta*, sp. n. (Tab. I. fig. 5.)

Brown; abdomen without pellucid spot; wings yellowish, the apex brown; legs yellow, the greater part of the femora brown.

Length 14–15 millim.

Hab. PANAMA, Bugaba (*Champion*).

Head brown, with paler yellowish spots on the middle of the face, above the antennæ (near the orbits), on the frontal bump, and on both sides of the vertex; pale yellowish-golden hairs on both sides of the face, and some few also on the yellowish spot on each side of the front; the rest of the front and vertex with a short, black, erect pubescence. Antennæ black, reddish-brown at the base. Thorax dark brown; two more or less distinct stripes of reddish-golden hairs in the middle of the mesonotum; similar hairs on each side of the mesonotum, above the dorso-pleural suture and in front of the scutellum; a fringe of reddish hair on the pleuræ; humeral and post-alar callosities, also the tip of the scutellum, yellowish-brown. Halteres yellowish. Abdomen uniformly dark brown, moderately shining, with a trace of golden pubescence on the hind margin of the second segment; in shape comparatively broad, with parallel sides, and moderately

BIOL. CENTR.-AMER., Dipt., August 1886.

f

convex. Coxæ and femora, except the tip, more or less dark brown; the front pair lighter brown; tibiæ and tarsi yellow. Wings with a saturate yellow tinge on the antero-proximal portion, including the discal cell; beyond the fork of the third vein and the discal cell the colour is brownish; the posterior margin, as far as the anal angle, and including the fourth and fifth posterior cells, is greyish.

A single specimen.

N.B.—The eyes (revived on wet sand) are of a uniform dark bronze-green.

CYPHOMYIA.

Cyphomyia, Wiedemann, Zool. Mag. i. 3, p. 55 (1819).

1. *Cyphomyia varipes*.

Cyphomyia varipes, Gerst. Linn. Entom. xi. p. 283¹; Schiner, Reise d. Novara, p. 52².

Hab. MEXICO¹; CENTRAL AMERICA¹; GUATEMALA, Zapote, Panima in Vera Paz (*Champion*); NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba (*Champion*).—SOUTH AMERICA, Colombia², Venezuela¹.

I have received seven females, from Guatemala, Nicaragua, and the State of Panama.

2. *Cyphomyia androgyna*, sp. n., ♂ ♀.

Male. Face yellow, with a golden pubescence; vertex and the broad occipital orbits whitish-yellow, pellucid; two delicate impressed lines run from the upper corners of the eyes backwards; eyes glabrous, contiguous on the front; the breadth of the head is about equal to the breadth of the thorax between the insertion of the wings. Antennæ black; first joint elongate, attenuate at the base, the second short, obconic. Thorax and abdomen bright metallic blue, with slight violet reflections; the thorax in front, between the humeri, with a cross-band of appressed reddish-golden hair, which is a little broader in the middle; the rest of the thorax and the abdomen clothed with very delicate, erect, scattered, black pile; the spines of the scutellum are about as long as the scutellum itself, directed upwards, metallic blue, sometimes reddish at the tip, hairy; pleuræ and coxæ with a silvery pubescence, of which there is no trace on the abdomen. Halteres with a whitish knob. Legs black, with metallic reflections; tarsi dark brown, the first joint pale brownish-yellow, brown at the tip; middle tarsi more whitish and the brown at the tip hardly perceptible. Wings blackish-brown, especially dark on the antero-proximal portion.

Length 9.5–12 millim.

Female. The vertex and occipital orbits a little broader, and (in most specimens) of a more decided yellow; the grooves, running from the upper corners of the eyes backwards, are much deeper; the golden hair in front of the thorax, between the humeri, is hardly visible here, though in some specimens traces of it are perceptible from an oblique point of view.

Length 11–14.5 millim.

Hab. PANAMA, Volcan de Chiriqui, Bugaba (*Champion*).

Two males, four females.

Easily distinguished from the described species of *Cyphomyia* by the structure of the head of the male, the occiput being as much developed behind the eyes as in the female. The female must be exceedingly like that of *C. verticalis*, judging by the description of the latter in Gerst. *l. c.* p. 287.

C. androgyna, ♀, is very like *C. varipes*, ♀, brought from the same locality; but is easily distinguished by the colour of the femora, which, in the latter, are yellowish-white on the proximal half; the face of *C. varipes* has a silvery pubescence, instead of a golden one; the spines of the scutellum have a more horizontal direction; the front is grooved in the middle in *C. varipes*, but not so in *C. androgyna*.

When I compare *C. androgyna*, ♀, with the description of *C. verticalis*, ♀, I find that the former has golden, and not silvery hairs on the face; the front is not perceptibly coarctate anteriorly, and is not grooved: the ocellar tubercle is on a line between the upper corners of the eyes; I do not perceive any longitudinal folds enclosing it, as described by Gerstaecker, although the interval between the two grooves, upon which the ocellar tubercle is placed, is slightly convex: the violet reflections of the body are very distinct; I do not see any cross-band of whitish hairs on the back part of the thorax, nor whitish hairs on the abdomen; the points of the scutel are not turned inwards, and are at least as long as the scutel; the second joint of the front tarsi is altogether dark brown, that of the middle tarsi, in some specimens, is a little paler at base.

N.B.—The androgynous character of the head of the male of this species puts me in mind of another *Cyphomyia*, in which the female assumes a character ordinarily belonging to the male only; it is the *C. scalaris*, Bigot, Ann. Soc. Ent. Fr. 1875, p. 487 (Mexico); both male and female are said to have contiguous eyes.

3. *Cyphomyia albitarsis*.

Cyphomyia albitarsis (Fabr.?), Bellardi, Saggio &c. i. p. 22¹.

Hab. MEXICO, Merida, in Yucatan¹; COSTA RICA, Cache (*Rogers*); PANAMA, Taboga Island (*Champion*).—? VENEZUELA¹; ? GUIANA¹.

I have five specimens from Costa Rica and the State of Panama that agree with Prof. Bellardi's description, except that the two spines of the scutellum are altogether, not their points only, pale yellow. In the description of the wings—"alis fuscis, macula centrali longa, transversa hyalina"—I think that "longitudinali" would have been more appropriate than "transversa." I do not quote *Cyphomyia albitarsis*, (Fabr.) Gerstaecker, Linn. Ent. xi. p. 300 (syn. *C. fenestrata*, Macq. Dipt. Exot. Suppl. i. p. 48), because both Gerstaecker and Macquart describe the abdomen as *blue*, while my specimens, in agreement with Bellardi's description, have it black.

Is it a different species? Gerstaecker's two type-specimens in Berlin have a bluish abdomen and seem smaller; unfortunately I had none of my specimens at hand for comparison. The types in Prof. Bellardi's collection agree with mine.

4. *Cyphomyia* — ? , ♂ .

Eyes with a distinct, erect, fulvous pubescence, occupying the greater part of the head; occipital orbits not developed. Head and thorax much more bulky than those of *C. androgyna*, male, the head looking much

larger than in that species, although it is likewise equal in breadth to the thorax between the insertion of the wings. Antennæ black; joints of the scapus comparatively long. Vertical triangle yellow; face brown, with a silvery pubescence; a small spot under the antennæ yellowish. Body metallic blue, the thorax with a very distinct stripe of silvery pubescence in the middle, not reaching the scutellum; pleuræ and pectus silvery-pubescent; spines of the scutellum as long as itself, beset with hairs, red towards the tip. Abdomen with a silvery pubescence on the venter only. Halteres with a yellow knob. Legs black; first joint of the tarsi yellowish or yellowish-white, the base of the second joint of the front pair slightly, of the middle pair more distinctly, of the same colour. Wings brown, more saturate in the antero-proximal region.

Length a little over 11 millim.

Hab. GUATEMALA, Telemán in Vera Paz (*Champion*). A single male.

Dr. Gerstaecker described only a single *Cyphomyia* with a distinct, long pubescence on the eyes, *C. pilosissima*, ♂: Loew has *C. marginata* (Cuba); Bellardi, *C. tomentosa*, Gerst., and *C. similis*, Bell., among the species with distinctly hairy eyes. If the identification of *C. tomentosa*, Gerst., by Prof. Bellardi be correct, it would seem that in that species the pubescence of the eyes is much more conspicuous in the male than in the female. Schiner, in describing *C. dispar*, ♂ ♀, showed that this character may belong to one sex only. All these species have hyaline or subhyaline wings, and therefore are different from the above described male. It is therefore either a new species, or it may belong to one of the females described as having glabrous eyes.

ODONTOMYIA.

Odontomyia, Meigen, *Classific. &c.* i. p. 128 (1804).

1. *Odontomyia tritæniata*.

Odontomyia tritæniata, Bellardi, *Saggio &c.* i. p. 38, t. 1. f. 17¹.

Hab. MEXICO, Cuantla (*de Saussure*), Mexico city (*Sallé*)¹; GUATEMALA, Dueñas (*Champion*).

The description agrees well, except that the antennæ are brownish-yellow and not green; the thoracic dorsum is clothed with an appressed golden-yellow pubescence, somewhat modifying the black ground-colour of the stripes; the scutellum is armed with two brownish-yellow spines; on each side of the ocellar black spot there is a pale brownish one, filling out the interval between the ocellar spot and the eye; similar brown spots further down about the middle of the front, on each side of the central furrow; still paler, almost yellowish spots between the antennæ and the eyes, and on the facial prominence; the discal cell emits three nearly equal veins; third vein without branch.

A single female.

STRATIOMYIA.

Stratiomys, Geoffroy, *Hist. des Ins.* ii. p. 475 (1764).

Stratiomyia, as amended by Macquart, Loew, &c.

1. *Stratiomyia mutabilis*.

Stratiomyia mutabilis (Fabr.), Bellardi, Saggio &c. i. p. 30¹ (for the remaining literature, see O. Sacken, Catal. N. A. Dipt. 1878, p. 49).

Hab. MEXICO, Cuantla, Meztitlan (*de Saussure*), Cuernavaca (*Truqui*), Mexico city (*Sallé*)¹; GUATEMALA, San Gerónimo (*Champion*); COSTA RICA, Irazu 6000 to 7000 feet (*Rogers*); PANAMA (*Boucard*).—BRAZIL¹.

It is difficult to describe, and still more so to recognize from a description, a species so variable as the present. I quote Bellardi only, because his descriptions alone agree with our specimens. The upperside of the abdomen of these examples is black up to the anterior part of the fourth segment, the latter half of that segment, as well as the greater part of the fifth, yellow; the venter is black, but the posterior margins of the segments have a more or less broad yellow border. The variation consists principally in the colour of the scutellum, and in the shape of the yellow band on the fourth segment, which is sometimes of equal breadth, sometimes triangularly expanded; but in all my specimens the first three segments are black, clothed in the male with a silvery, in the female with a golden, tomentum; the extreme lateral end of the posterior margin of the third segment shows a trace of yellow. In all these specimens the wings are *fulvous* along the costa, as far as the origin of the second vein; beyond that the colouring is more brown, as far as the end of the third vein. This agreement of specimens (Bellardi's and mine) coming from the same region, would seem to prove that the geographical distribution of the varieties of this species is subject to rule, and that they do not occur quite promiscuously. More detailed observations on the subject would be interesting.

I have before me a male and five females from Central America.

2. *Stratiomyia subalba*.

Stratiomyia subalba, Bellardi, Saggio &c. i. p. 31¹.

(?) *Stratiomys subalba*, Walker, List &c. v. p. 43².

Hab. MEXICO, Tampico (*de Saussure*)¹, Presidio (*Forrer*); GUATEMALA, San Gerónimo (*Champion*); PANAMA, Bugaba, Taboga Island (*Champion*).—BRAZIL, Pará².

I cannot believe that this species is merely a variety of *S. mutabilis*; besides the very considerable difference in the colouring of the body and wings (the costal half of which is uniformly brown), the abdomen is squarer and flatter than in the male of that insect. Schiner, Reise d. Novara, Dipt., p. 61, speaks of varieties of *S. mutabilis* with the costal half of the wings uniformly brown; and Arribáizaga (Catalogue &c. p. 128) regards *S. subalba*, Walk. (List &c. v. p. 43), as a mere variety of *S. mutabilis*. But is Schiner right?, and is *S. subalba*, Arrib., the same as *S. subalba*, Bell.? Meanwhile I cannot believe, until we have proof of the contrary, that the four male specimens before me are a mere variety of *S. mutabilis*.

AOCHLETUS, gen. nov.

Resembles *Oxycera* in its general appearance and colouring; the principal difference consisting in the structure of the antennæ, in which the terminal aristiform style is replaced by a stout, elongate joint.

Antennæ, in both sexes, not longer than the longitudinal diameter of the head; first joint slender, subcylindrical, the second not much shorter, but stouter, both beset with short hairs; the first three joints of the flagellum are broader than long, and, taken together, form a cylindrical body about as long as the antennal scapus, but stouter; the fourth joint of the flagellum is not unlike the preceding in shape, but a little narrower, and separated from it by a distinct coarctation; upon this follows an elongated body, a little longer than the two preceding joints taken together, without any distinct articulations, and placed somewhat at an angle to the axis of the antenna; in the male this last joint is more flattened than in the female.—N.B. I have only two specimens for comparison; to give an accurate description of the antennæ, fresh or living specimens would be necessary.

The occipital orbits of the female are like those of *Oxycera*.

Thorax and scutellum as in *Oxycera*.

The abdomen of the male is narrower than in the *Oxyceræ* known to me, elongated, about three times longer than broad, almost a half-cylinder in shape, slightly coarctate near the base; that of the female is broader and flatter, more rounded.

The antennæ are inserted in the middle of the profile; the face flat, oblique; the eyes glabrous in the male. subcontiguous for a length a little less than that of the face, the upper facets separated by a distinct line from the lower ones, which are of a different colour; front of the female broad.

Venation like that of *Oxycera*, but there is no branch to the third vein; of the four veins issuing from the discal cell, the anterior one is very weak.

These last characters may be as variable in *Aochletus* as they are in *Oxycera* or in *Euparyphus* (Schiner, Fauna Austr. i. p. 9, is not right in describing the third vein of *Oxycera* as being always branched); the structure of the front and face may also vary; the eyes, in some as yet undiscovered species, may be pubescent, as they often are in *Oxycera*. The chief generic character is in the structure of the antennæ.

In short, *Aochletus* is an *Oxycera* with a stout terminal joint to the antennæ, instead of an aristiform style.

It differs from *Euryneura*, Schin., in the position of the antennæ, which in the latter are close above the oral edge.

Aochletus, in Greek, means undisturbed, unruffled.

1. ***Aochletus cinctus***, sp. n., ♂ ♀.

Male. Face and frontal triangle yellow; facial orbits broad, silvery (or black, when the light is not reflected from them); vertical triangle black; antennæ brownish-yellow at the base, browner towards the tip.

Thorax black, variegated with yellow ; a pair of longitudinal yellow stripes on the mesonotum, attenuated at both ends, and reaching posteriorly the corners of the yellow scutellum ; a broad yellow stripe reaches from the humerus to the hind coxæ, encroaching in the shape of a triangle on the mesonotum, above the dorso-pleural suture ; post-alar callosities yellow, with a small yellow triangle in front of them, on the mesonotum ; on the black portions of the mesonotum an appressed golden pubescence. Abdomen black, moderately shining, with a microscopic, black, erect pubescence ; lateral edges with a narrow, irregular, jagged yellow margin, which, about the middle, expands into a semifascia rounded at the top, corresponding to a similar semifascia on the other side and resembling a broadly interrupted yellow cross-band ; venter yellow. Knobs of the halteres yellow. Front legs, including the coxæ, yellow, the tarsi brown ; four posterior legs, including the metatarsi, yellow, the last four joints of the tarsi brown ; hind tibiæ with interrupted brown lines ; hind metatarsus brownish at the tip. Wings hyaline ; stigma more or less infuscated ; the veins around it, the fifth vein, and the central cross-veins darker brown.

Female. Like the male, but the silvery facial orbits are on yellow, and not black, ground ; front yellow, with brownish shades ; a large black spot on each side, near the eye ; occiput black, the occipital orbits yellow, silvery below, and with a narrow black edge, quite near the eye, on their upper half ; vertex brownish-yellow ; ocellar spot black. The yellow stripes on the mesonotum are interrupted posteriorly some distance before the scutellum ; in front they are slightly club-shaped, and not attenuate as in the male. Antennæ dark brown, slightly reddish at the base of the flagellum only.

Length : ♂, 4 millim. ; ♀, 4–5 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). Two males, one female.

EUPARHYPHUS.

Euparhyphus, Gerstaecker, Linnæa Entomol. xi. p. 314 (1857).

To the characters of this genus given by Gerstaecker I would add that, in the male, the eyes are subcontiguous, the front, below the vertical triangle, being linear ; the upper, larger, facets are separated by a well-marked horizontal line from the lower ones ; both portions of the eye also differ in colour. The *E. decem-maculatus*, which I describe below, has pubescent eyes. Two of the species described by Loew have no branch to the third vein, that is, they have only a single submarginal cell.

Only American species are known ; the one from Africa, described by Bigot, does not belong to the genus.

The North-American and Mexican species hitherto described may be grouped as follows :—

Scutellum black, sometimes yellowish at the tip ; spines yellow.

Femora black, except the tip.

A single submarginal cell *tetraspilus*, Loew.

Two submarginal cells *bellus*, Loew.

Femora yellow (except posterior pair at the tip) *stigmatalis*, Loew.

ornatus, Willist.

Scutellum yellow or red.

Abdomen with lateral yellow spots.

Two lateral spots on each side *brevicornis*, Loew.

Three oblique yellow spots on each side ; a row of spots in the middle *decem-maculatus*, sp. n.

Abdomen with yellow or green margins.

- Thorax greenish, with black stripes *elegans*, Wiedem.
 Thorax red, with black stripes *tricolor*, sp. n.

1. *Euparhyphus tricolor*, sp. n., ♂.

Face brownish-yellow in the middle, the sides black, which colour is entirely concealed under silvery pollen; proboscis yellow; cheeks black; occiput black; lower occipital orbit silvery, with an indistinct yellowish margin; antennæ and vertex black. Thorax above, including the scutellum, rufous; its anterior end black, emitting two broad black stripes, which stop immediately before the præscutellar callosity; the two scutellar spines yellowish, with black tips; a pale sulphur-yellow stripe runs from the humerus along the dorso-pleural suture to the base of the abdomen; sternum black, with some small sulphur-yellow spots, the principal one being between the front and middle coxæ; metanotum black, as well as the callosities on its sides. Abdomen black, with yellow margins, which become narrower towards the tip; venter yellow, the base black. Coxæ yellow; the femora and tibiæ reddish-yellow, the tibiæ brownish at the tip, the tarsi black; first joint of the four posterior tarsi white, black at the tip. Knobs of the halteres green. Wings subhyaline, the apex greyish from a little beyond the discal cell; veins and stigma brown; the branch of the third vein is rudimental (as the other wing is injured, I cannot tell whether this is normal). Length 5 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). A single male.

2. *Euparhyphus* (?) *decem-maculatus*, sp. n., ♂.

Male. Eyes pubescent; face black, with four yellow lines, the two lateral ones reaching the antennæ, the intermediate ones abbreviated above; facial orbits silvery and beset with short white hairs; vertical triangle black; two basal joints of the antennæ brownish-yellow, rather elongated, of equal length; flagellum black, joints 1 to 3 short, the following joints longer; occiput black, the lower part of the occipital orbit silvery. Thorax black, sparsely beset with short hairs; four longitudinal yellow stripes, the lateral ones running from the humerus to a yellow spot on the post-alar callosity (the middle of the mesothorax is injured by the pin in my specimen); a yellow line along the dorso-pleural suture runs between the humerus and an oblique yellow spot in front of the wing; several pale yellow, slightly greenish spots between the root of the wing and the posterior coxæ; scutellum yellow, with two yellow spines which are black at the tips. Abdomen black, with three oblique yellow spots on each side; three smaller, subtriangular spots in the middle of segments 3-5; a transverse yellow spot with rounded sides on the sixth (last) segment, at the tip. Legs yellow; front coxæ black, the tip yellow; front femora brown in the middle; the four posterior femora infuscated on the latter half only; on the front tarsi, joints 2, 3, 4, on the hind ones joints 3 and 4, are infuscated. Halteres with a greenish knob. Wings hyaline, the veins and stigma rather pale: branch of the third vein distinct. Length 7-8 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). A single male.

N.B.—I place this species in the genus *Euparhyphus*, although in shape it is less elongate, and broader, than the other species of that genus known to me. I can distinguish three short joints, followed by three longer ones, on the flagellum, but the longer ones I do not see distinctly. The fifth posterior cell is in contact with the discal. The structure of the occipital orbits is like that of *Euparhyphus*. The pubescent eyes distinguish this species from those hitherto described.

ACANTHINA.

Acanthina, Wiedemann, Aussereur. zweifl. Ins. ii. p. 50 (1830).

1. *Acanthina argentea*, sp. n., ♂.

Body covered with a silvery fur, especially dense on the upperside of the thorax, less so on the underside, where the black ground-colour is visible through it. Face reddish. Antennæ reddish, darker at the tip. Legs brownish-yellow; tibiæ and tarsi more brownish. Wings hyaline, the veins pale yellow; central cross-veins and a part of the fifth vein a little darker; stigma brownish-yellow, connected with a brownish cloud on the central cross-veins; a slight grey shadow on the apex.

Length 6 millim.

Hab. COSTA RICA, Cache (*Rogers*).—COLOMBIA (*Berlin Museum*). Two males.

The following is a list of species of Stratiomyidæ from Mexico and Central America described by earlier writers, and not mentioned by me in the above descriptions (whenever no locality is given, Mexico is understood):—

- Macroceromys fulviventris*, Bigot, Ann. Soc. Ent. Fr. 1879, p. 187.
Neoexaireta rufipalpis, Wiedem. A. z. Ins. ii. p. 619; Macq. Dipt. Ex. i. 1, p. 172 (*Diphysa*); O. Sacken, Catal. &c. 1878 (*Neoexaireta*).
Beris mexicana, Bellardi, Saggio &c. i. p. 20, t. 1. f. 6 (*Oplacantha*, according to Rondani); Williston, Canad. Entom. 1885, p. 123.
Oplacantha limbata, Bigot, Ann. Soc. Ent. Fr. 1879, p. 196.
Histiodroma flaveola, Bigot, l. c. p. 205.
Macrosargus smaragdiferus, Bigot, l. c. p. 226.
Sargus aureus, Bellardi, Saggio &c. i. p. 42, t. 1. f. 20.
 — *cæsius*, Bellardi, l. c. i. p. 40, t. 1. f. 18.
 — *clavatus*, Walker, List &c. v. p. 93; Bellardi, l. c. i. p. 41.—Para; Morelia, Mexico.
 — *latus*, Bellardi, l. c. i. p. 41, t. 1. f. 19.
 — *linearis*, Walker, List &c. v. p. 318.
 — *nigrifemoratus*, Macq. Dipt. Ex. Suppl. ii. p. 31; Bellardi, l. c. i. p. 42.
 — *sallei*, Bellardi, l. c. i. p. 43, t. 1. f. 21.
 — *speciosus*, Macq. Dipt. Ex. Suppl. i. p. 56; Bellardi, l. c. i. p. 40.—Merida and Jalapa, Mexico.
 — *stamineus*, Fabr. Syst. Antl. p. 253; Wiedem. A. z. Ins. ii. p. 39; Bellardi, l. c. i. p. 44.
 — *subinterruptus*, Bellardi, l. c. i. p. 44, t. 1. f. 22; Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 271.
 — *versicolor*, Bellardi, l. c. Append. p. 13, f. 8.—Oaxaca, Mexico.
 — *splendens*, Bigot, Ann. Soc. Ent. Fr. 1879, p. 224.

- Ptecticus testaceus*, Fabr. Syst. Antl. p. 257; Wiedem. A. z. Ins. ii. p. 35; Macq. Dipt. Ex. i. 1, p. 203; Suppl. i. p. 57; Bellardi, Saggio &c. i. p. 45; Rondani, Stud. Ent. i. p. 103.—North and South America; Merida in Yucatan and Tampico, Mexico.
- *flaviceps*, Bigot, Ann. Soc. Ent. Fr. 1879, p. 230.
- Chrysonotus flavopilosus*, Bigot, l. c. p. 228.
- Chrysochlora purpurea*, Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 271.
- Merosargus fraternus*, Bigot, Ann. Soc. Ent. Fr. 1879, p. 228.
- *calceolatus*, Bigot, l. c. p. 229.
- Hermetia lativentris*, Bellardi, l. c. i. p. 27, t. 1. f. 9; also Append. p. 8; Williston, Canad. Entom. 1885, p. 125.—Tuxpango and Tampico, Mexico.
- *planifrons*, Macq. Dipt. Ex. Suppl. i. p. 50.—Yucatan, Mexico.
- *nigrifacies*, Bigot, Ann. Soc. Ent. Fr. 1879, p. 200.
- *flavoscutata*, Bigot, l. c. p. 201.
- Myxosargus fasciatus*, Brauer, Vers. Char. Gatt. der Notacanthén, p. 21.
- Odontomyia vertebrata*, Say, Compl. Wr. i. p. 251; Wiedem. A. z. Ins. ii. p. 73; Bellardi, Saggio &c. i. p. 38.—North America; Morelia, Mexico.
- *affinis*, Bellardi, Saggio &c. i. p. 35, t. 1. f. 12.—Puebla, Mexico.
- *dissimilis*, Bellardi, l. c. i. p. 35, t. 1. ff. 13, 14.
- *emarginata*, Macq. Dipt. Ex. i. pp. 1, 14, 190.
- *femorata*, Bellardi, Saggio &c. i. p. 37.—Toluca, Mexico.
- *flavifasciata*, Macq. Dipt. Ex. 4^e Suppl. pp. 36, 53.
- *lefebvrei*, Macq. Dipt. Ex. i. pp. 1, 13, 189 (comp. also Walker, List &c. v. p. 311); Bellardi, Saggio &c. i. p. 33.—Orizaba and Toluca, Mexico.
- *maculifrons*, Walker, List &c. iii. p. 536.—Honduras.
- *prasina*, Jaennicke, Neue exot. Dipt. p. 16.
- *quadrinaculata*, Bellardi, Saggio &c. i. p. 37, t. 1. f. 15.
- *rubricornis*, Macq. Dipt. Ex. Suppl. i. pp. 21, 53.—Yucatan, Mexico.
- *truquii*, Bellardi, Saggio &c. i. p. 34, f. 11.—Cuernavaca, Mexico.
- *viridis*, Bellardi, l. c. i. p. 36, t. 1. f. 16.—Cuantla, Mexico.
- Stratiomyia pinguis*, Walker, Trans. Ent. Lond. Soc. n. ser. v. p. 270 (*Stratiomys*).
- *trivittata*, Say, Journ. Ac. Phil. vi. p. 160; Compl. Wr. ii. p. 356 (*Stratiomys*).
- *bimaculata*, Bellardi, Saggio &c. Append. p. 10, f. 7.—Tuxpango, Mexico.
- *constricta*, Walker, Trans. Ent. Lond. n. ser. v. p. 269.
- *euchlora*, Gerstaecker, Linn. Ent. xi. p. 328.
- *fenestrata*, Gerstaecker, l. c. p. 327.
- *gerstaeckeri*, Bellardi, Saggio &c. i. p. 31, t. 1. f. 10.
- *goniphora*, Say, Journ. Ac. Phil. vi. p. 161; Compl. Wr. ii. p. 356 (*Stratiomys*).

- Cyphomyia auriflamma*, Wiedemann, Zool. Mag. i. 3, p. 54; A. z. Ins. ii. p. 54, t. 8. f. 1; Macq. Hist. Nat. Dipt. i. p. 242; Guérin, Iconogr. t. 98. f. 5; Gerstaecker, Linn. Ent. xi. p. 276; Bellardi, Saggio &c. i. p. 21.—Mexico, Brazil, Guiana. (= *chrysodota*, Perty, Del. An. Art. p. 184, t. 36. f. 14, ♂ [Gerst.]); *cyanea*, Macq. Hist. Nat. Dipt. i. p. 242, ♀ [Gerst.].)
- *pilosissima*, Gerstaecker, Linn. Ent. xi. p. 292.
- *similis*, Bellardi, Saggio &c. i. p. 23, t. 1. f. 7.
- *scalaris*, Bigot, Ann. Soc. Ent. Fr. 1875, p. 487.
- *simplex*, Walker, Trans. Ent. Soc. n. ser. v. p. 268.
- *tomentosa*, Gerstaecker, Linn. Ent. xi. p. 294; Bellardi, Saggio &c. i. p. 22.—Morelia, Patzcuaro, Mexico.
- Acanthina nana*, Bellardi, Saggio &c. Append. p. 9.—Tuxpango, Mexico.
- *ornata*, Macq. Dipt. Ex. Suppl. i. p. 51, t. 5. f. 5; Bellardi, Saggio &c. i. p. 28.—Mexico, Brazil.
- Chordonota carbonaria*, Bellardi, l. c. Append. p. 11.—Tuxpango, Mexico.
- *fuscipennis*, Bellardi, l. c. Append. p. 11, f. 6.—Playa Vicente, Mexico.
- Clitellaria fenestrata*, Macq. Dipt. Ex. Suppl. i. p. 53 (*Ephippium*).
- *halala*, Walker, List &c. iii. p. 523.—Honduras.
- *obesa*, Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 270.
- Euryneura pygmæa*, Bellardi, l. c. Append. p. 12, f. 5 (*Clitellaria*); Schiner, Reise d. Novara, p. 56.—Tuxpango, Mexico.
- Neorondania obscura*, Jaennicke, Neue exot. Dipt. p. 17.
- Nemotelus polyposus*, Say, Compl. Wr. ii. p. 356.
- Cynipimorpha bilimeki*, Brauer, Vers. Char. Gatt. der Notacanthen, p. 19.

Fam. TABANIDÆ.

PANGONIA.

Pangonia, Latreille, Hist. Nat. Crust. et Ins. iii. p. 437 (1802).

1. *Pangonia pyrausta*, sp. n., ♀.

Brown, segments 4–6 of the abdomen clothed with dense bright rufous hair; proboscis long; eyes pubescent; ocelli distinct; first posterior cell distinctly open, although coarctate.

Length, including the conical projection of the head, about 18 millim.; proboscis 10 millim.

Hab. PANAMA, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Female. Antennæ with the basal joints brown, with black hairs; third joint black, narrow and long, not broader anywhere than the basal joints. Palpi long, black, the last joint lanceolate, with a long, acuminate prolongation. Front and face dark brown, nearly black, the latter projecting in the shape of a rather long cone; occiput grey, with white hairs. Thoracic dorsum chocolate-brown, with a slight hoary bloom, clothed with scattered,

black, erect hair; a more or less distinct brownish flesh-coloured stripe in the middle, longitudinally bisected by a brown line; the stripe does not reach the scutellum, and is sometimes very indistinct; some white hairs on the humeri; the dark-brown pleuræ and pectus are clothed with long black hairs; tufts of similar hairs above the root of the wings on the post-alar callus; the scutellum in some specimens is reddish. Abdomen brown on the three first segments, with an appressed black pubescence; segments 4–6 above and below clothed with dense, bright rufous hair; a tuft of white hair at each end of the posterior margin of the second segment; some white hair on the corresponding portion of the venter. Coxæ and femora dark brown, beset with black hair; tibiæ and tarsi pale whitish-yellow; the tarsi with brown tips. Wings dark brown between the costa and the fifth vein, before the central cross-veins; the rest of the surface tinged with pale brownish, which becomes yellower near the costa; first posterior cell open, although coarctate; the fourth cell broadly open; the second submarginal cell is not appendiculate in two of my specimens, it bears a short stump on one of the wings of the third specimen. Three females.

N.B.—This species shows the most remarkable resemblance to *P. rhinophora*, Bellardi. Still the latter has distinct tufts of white hair in the middle of the abdominal segments, no rufous hair on the fourth segment, and no vestige of a longitudinal stripe on the thorax. The shape of the head, antennæ, and palpi, and the general colouring (with the above-mentioned exceptions) are the same. I did not have specimens of *P. pyrausta* with me when I visited Turin, and could not, for this reason, undertake a closer comparison.

P. analis, Fabr., must be something like *P. pyrausta*; but the “antennæ ferrugineæ, alæ albæ, &c.,” render the identification impossible.

2. *Pangonia caustica*, sp. n., ♂.

Eyes glabrous; ocelli distinct; first posterior cell closed; face retreating; proboscis about as long as the head is high. Thorax brown. Abdomen reddish-brown, black at the base; femora black, the tibiæ rufous.

Wings with a pale brownish tinge, dark brown at the base.

Length about 18 millim.; length of proboscis 3·5 millim.

Hab. MEXICO, Ciudad in Durango 8000 feet (*Forrer*).

Male. Face strongly retreating, brownish-grey with black pile. Antennæ ferruginous; basal joints with black pile; third joint with a rounded projection at the base, abruptly attenuated beyond it, and very slender towards the tip. Palpi dark brown, with black pile. Thorax uniformly brown, beset everywhere with black pile; tufts of whitish hairs under the root of the wings; mesonotum with almost imperceptible traces of greyish lines. Abdomen reddish-brown, clothed with black pile, the first segment darker brown or black; an ill-defined inverted blackish triangle occupies the middle of the second segment; a similar infuscation, in the shape of an ill-defined stripe, on the next following segments, up to the fifth. Femora black; tibiæ and tarsi rufous, the tips of the latter

brownish. Wings at the base, up to the alar excision, dark brown; beyond, up to the central cross-veins and still further along the costa, tinged with yellow, the remainder of the wing being pale brownish; submarginal cell appendiculate; first posterior cell closed near the margin, the fourth broadly open. A single male.

3. *Pangonia prasiniventris*.

Pangonia prasiniventris, Macq. Dipt. Ex. Suppl. i. p. 29, t. 3. f. 9¹; Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 100.

Hab. PANAMA, David (*Champion*).—COLOMBIA.

Schiner is right in criticising Macquart's description and completing it; nevertheless the identification is hardly doubtful. Four males.

CHRYSOPS.

Chrysops, Meigen, in Illig. Magaz. ii. (1803).

1. *Chrysops altivagus*, sp. n., ♂ ♀. (Tab. I. figg. 6 ♂, 7 ♀.)

Antennæ altogether black, first joint incrassate; legs black.

♀. Abdomen grey, with two rows of black spots on the segments; wings with a black costal margin and cross-band.

♂. Body altogether black; wings black, with a hyaline triangle before the apex only.

Length 7–8 millim.

Hab. MEXICO, Ciudad in Durango 8000 feet (*Forrer*).

Female. Face and front covered with the usual yellowish pollen; facial callosities shining black on the outer side, yellowish-brown on the inner, the lower part, where they coalesce above the mouth, being black, but in some specimens brownish; palpi black; frontal callosity black, transverse, about three times broader than long, separated by a comparatively broad interval from the blackish area of the ocelli. Antennæ black; first joint incrassate (somewhat like the European *C. rufipes*); the second joint but little more than half so long as the first, stout; the third joint about equal in length to the first two together, rather stout. Mesonotum and scutellum black, moderately shining, clothed with scattered, erect, yellowish hairs (often rubbed off); a faint greyish stripe, bisected by a black longitudinal line, is visible in front; more distinct stripes of greyish pollen along the sides, above the dorso-pleural suture; pleuræ greyish-pollinose. Abdomen greenish-grey, yellowish pubescent; the sides of segments 1 and 2 more or less yellow; the middle of the first segment black; in the middle of each of the segments 2–6 a pair of black, semioval spots, contiguous to the anterior margin only, not to each other, those on segment 6 nearly obsolete; on each side of these spots, on segments 3–5, other, smaller black spots are visible, variable in size, sometimes coalescing with the central spots; venter grey, yellowish pubescent. Legs black, yellowish-pubescent, especially on the tibiæ; intermediate tibiæ slightly reddish at the base. The black costal border of

the wings reaches a little beyond the proximal half of the first basal cell, and fills out the proximal third of the second basal cell; the apical spot encroaches upon the anterior portion of the second submarginal cell, and is separated from the black cross-band by a hyaline triangle with an oblique prolongation at the apex which does not quite reach the costa; the distal margin of the cross-band is framed in by a whitish border; the cross-band is not interrupted by any hyaline spots, it fills out the proximal end of the first posterior cell (within a short distance from the inner end of the second submarginal cell), the proximal third of the second, the proximal half of the third, and the whole fourth and fifth posterior cells, and becomes paler near the posterior margin, which it follows as far as the anal angle.

Male. Altogether black, shining; antennæ like those of the female; face covered with yellowish-grey pollen; callosities large, black, shining; thorax clothed with black hair; legs black; halteres black (knob yellowish-brown in one of the specimens only); a minute tuft of whitish hair at the tip of the abdomen; wings black, greyish towards the anal angle; a hyaline triangle, the apex of which does not quite reach the costa, separates the apical spot from the black region; the shape of the apical spot, as well as of the distal margin of the remainder of the black region, is exactly the same as in the female.

Six males and as many females.

N.B.—This species has an altogether northern physiognomy; nevertheless I have not been able to identify it either among the North-American or among the South-American species. It will be easily distinguished by its black antennæ with an incrassate first joint.

2. *Chrysops costatus*.

Chrysops costatus (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 198 &c.

(?) *Tabanus variegatus*, Degeer, vi. t. 30. f. 7.

Chrysops vulneratus, Rondani, Esame &c. p. 44¹ [O. S.].

Hab. GUATEMALA, Telemán (*Champion*); NICARAGUA, Chontales (*Janson*).—WEST INDIES (common); BRAZIL¹.

3. *Chrysops latifasciatus*.

Chrysops latifasciatus, Bellardi, Saggio &c. i. p. 71, t. 2. f. 15¹.

Hab. MEXICO¹ (*Sallé*¹); GUATEMALA, La Tinta (*Champion*); COSTA RICA, Cache (*Rogers*).

4. *Chrysops tanycerus*, sp. n., ♀.

First two joints of the antennæ unusually long, brownish-yellow, the third joint black and shorter than the second; thorax brown, with two distinct, rather distant, whitish lines; wings irregularly clouded with brown, especially along the cross-veins.

Length about 9 millim.

Hab. COSTA RICA, Cache (*Rogers*).

Female. Face and front brownish-yellow pollinose; callosities of the face but little perceptible, as they differ only slightly from the face in colour, but towards the eyes they are darker brown; palpi small, reddish; frontal callosity blackish or brown, almost like an ace of spades in shape, somewhat rugose on the surface. Antennæ nearly as long as head and thorax together; the relative length of the joints is about $4\frac{1}{2} : 3 : 2$; first joint gently incrassate beyond the base, subcylindrical on its distal half; the second joint gradually stouter from the base to the tip; the third joint has an obconic basal segment, and is annulate and gradually attenuate beyond. Thorax brown; sides of the mesonotum and of the scutellum yellowish-white; on the mesonotum are two, rather distant, yellowish-white stripes, which in some specimens reach the scutellum (although much fainter), usually they stop long before it; pleuræ with a brownish-white pollen. Abdomen brown; hind margins of the segments, beginning with the second, whitish, expanding into a small triangle in the middle; venter greyish pollinose, more or less brown at the base of the segments. Legs rufous; tarsi brown, except at the base; tip of front tibiæ brownish. Wings with a broad brown cloud across the central cross-veins; other clouds on the bifurcation of the third vein and on the cross-veins at the end of the discal cell; the rest of the wing has a dingy pale brownish tinge, slightly more saturate between the stigma and the apex. Five females.

N.B.—The eyes of this species (revived on wet sand) are dark purple, unicolorous, and do not show the usual markings of *Chrysops*.

The *Chrysops megaceras*, Bell., is most closely allied to *C. tanycerus*, but is larger; the proportion of the antennal joints is different; the white hind margins of the segments are almost imperceptible. I have seen the types in Turin.

DICLISA.

Diclisia, Schiner, Verh. zool.-bot. Ges. Wien, 1867, p. 311.

1. *Diclisia maculipennis*.

Diclisia maculipennis, Schiner, Reise d. Novara, p. 102, t. 2. f. 7¹.

Hab. PANAMA, Volcan de Chiriqui 3000 to 4000 feet (*Champion*).—VENEZUELA¹.

The beard is white, rather than yellowish. I have a single female.

2. *Diclisia misera*, sp. n., ♀.

Brownish-ochraceous, almost unicolorous; wings of a uniform pale brownish tinge; proboscis nearly as long as the body; submarginal cell not appendiculate.

Length 10–11 millim.; proboscis 8–9 millim.

Hab. GUATEMALA, Lanquin and Panima (*Champion*).

Head brownish-ochraceous, the conically projecting face a little more yellowish on the sides; on the underside a long yellowish-white beard; antennæ reddish, the tips

darker; the front and face beset with a scattered, erect, black pubescence; eyes pubescent; ocelli distinct. Thoracic dorsum clothed with a dense brownish-ochraceous pollen and with scattered, black, erect pile; tufts of reddish-yellow pile above the root of the wings and on the post-alar callosities; pleuræ and pectus greyish, with long whitish hairs. Abdomen yellowish-rufous above, a little darker towards the end, with some appressed hairs on the surface, partly black, partly rufous; venter paler, yellowish. Legs pale reddish; tarsi brownish, except the base. Wings of a uniform pale brownish tinge, a little more saturate towards the costa; submarginal cell not appendiculate, although a little knot, as a rudiment of a stump, is sometimes visible; first and fourth posterior cells closed very near the margin. Three females.

N.B.—I refer this species to *Diclisia*, on account of the closed first and fourth posterior cells, and of the conical prolongation of the face. *D. misera* does not, however, show the colouring of the thorax and abdomen which distinguish the other species of the genus. The palpi are like those of *Diclisia*.

TABANUS.

Tabanus, Linné, Fauna Suecica, 1761.

1. *Tabanus (Therioplectes) quadripunctatus*.

Tabanus quadripunctatus (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 151; Schiner, Reise d. Novara, p. 86.

Tabanus nigro-punctatus, Bellardi, Saggio &c. i. p. 67, t. 2. f. 8¹.

Hab. MEXICO, Cordova, Huastec (*de Saussure*¹); GUATEMALA, San Gerónimo (*Champion*); COSTA RICA, Rio Sucio (*Rogers*).—BRAZIL.

I have shown in my Catal. N. A. Dipt. 1878, p. 57 and note 74, that this is a *Therioplectes*. Wiedemann describes the venter, "Brown with white incisures." It is grey, with a longitudinal blackish band occupying about one third of the breadth.

The male (hitherto not described) is very like the female; the head answers the description of the head of *Therioplectes* given by me (*cf.* Prodr. of Tabanidæ, p. 425, and Western Dipt. p. 215); that is, it does not differ much in size and shape from the head of the female, and the dividing-line between the large and small facets is rather indistinct.

2. *Tabanus bigoti*.

Tabanus bigoti, Bellardi, Saggio &c. i. p. 58¹.

Tabanus apicalis, Macq. Dipt. Ex. Suppl. ii. p. 20.

Tabanus macquarti, Schiner, Reise d. Novara, p. 89².

Hab. MEXICO¹; NICARAGUA, Chontales (*Belt*).—COLOMBIA².

The descriptions by Macquart and Bellardi were drawn from the same example, which was without head; I will attempt to complete it from two very indifferently preserved specimens:—

Front rather narrow; callosity in the shape of an elevated line, but slightly expanded below and almost reaching the vertex. Antennæ with a projecting, pointed upper part to the first joint; third joint strongly excised, the upper corner drawn out in a short point, the annulate portion rather long; colour dark reddish, mixed with black on the first and second, and also on the base of the third, joints; the rest black. The ground-colour of the thorax is densely clothed with a thick brownish-fulvous pollen, which again is covered on the thoracic dorsum and scutellum with a fine golden-yellow, appressed pubescence.

My description of the thorax is rather different from Macquart's, and agrees better with Schiner's; nevertheless I have no doubt that our insect represents the same species. Schiner had overlooked Bellardi's description.

3. *Tabanus (Theriopectes)* — ?

Antennæ red, but the third joint has that colour on the basal third only, the upper corner and everything beyond it are deep black; palpi pale yellowish, beset with white and black pile; frontal callus blackish-brown, rounded in shape, above it is an irregular black, linear, rather broad prolongation on black ground, &c.
Length 12·5–13·5 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

Belongs to the difficult group of species allied to *T. rhombicus*, and mentioned in my 'Western Diptera,' p. 218, without agreeing exactly with any of the three forms characterized by me. The lateral triangles on all the segments (one to six) are oblique, more streaks than triangles; their prolongation towards the lateral margin coincides with the narrow whitish border of the segment; the intermediate triangles have the apex prolonged towards the next segment, and appear more like a continuous line than a series of triangles. Ante-alar callosity faintly reddish. Subcostal cell nearly hyaline; no stump on the fork of the third vein. Subcallus partially denuded, reddish. Venter reddish, which colour is also somewhat visible on the sides of the first and second segments; a more or less distinct blackish longitudinal stripe in the middle. The grey thoracic stripes are rather distinct. Three specimens.

4. *Tabanus ebrius*, sp. n., ♀. (Tab. I. fig. 8.)

Pale reddish-brown, the thorax with two whitish lines; antennæ red, the annulate portion black; palpi very narrow; wings with two brown irregular cross-bands, and a brown spot inside the fork of the third vein.
Length 13–14 millim.

Hab. COSTA RICA, Irazu 6000 to 7000 feet (*Rogers*); PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Front rather narrow, coarctate anteriorly, brownish-yellow; a dark brown (sometimes reddish?) raised longitudinal line in the middle is slightly expanded anteriorly (instead of a callus), posteriorly it gradually attenuates and stops long before reaching the vertex. A slight blackish tubercle, with something like vestiges of ocelli, is visible

on the vertex. Face brownish-yellow. Palpi long and very narrow, almost linear, brownish-yellow, densely clothed with minute black hairs. Antennæ pale red; third joint with a flat excision, its upper angle forming a sharp, rectangular projection, but not drawn out in a point; annulate portion black. Thoracic dorsum pale brown, with two yellowish-white longitudinal lines, expanding, but evanescent posteriorly, and coalescing in front of the scutellum with the pale lateral margins; the intervals between these pale markings forming three more or less distinct brown stripes, which do not reach the scutellum, the intermediate one being the broadest. Pleuræ and legs pale brown, the front legs darker; front tarsi, and the tips only of the hinder ones, dark brown. Abdomen brownish-red, a little more brown towards the end, with thin fringes of short yellow hair on the hind margins of the segments. Halteres yellowish-brown, the knob more yellow. Wings subhyaline, with reddish-yellow veins and brown bands and spots, the extreme root hyaline; a light-brown band across the proximal portion of the basal cells; a brown spot at the distal end of the first basal cell coalesces with the second cross-band; the latter begins from the elongated, dark brown stigma and bifurcates in the first posterior cell; the proximal branch takes an irregular course across the discal and the fourth and fifth posterior cells towards the anal cell; the much shorter distal branch enters the second posterior cell and fades away beyond it, connecting with the proximal branch, and emitting more or less distinct rays along the wing-veins; a brown spot at the proximal end of the second submarginal cell; first posterior cell broadly open; fork not appendiculate. Three female specimens.

N.B.—A fourth female from British Honduras (*Blancaneaux*) agrees in everything except that the brown spot within the fork is wanting; the tips of the antennæ are red, and the segments of the abdomen have distinct and rather broad yellowish margins. Is it a different species?

The eyes (revived on wet sand) are dark purple, unicolorous.

T. ebrius has a superficial resemblance to *T. potator*, Wied., but the latter has the upper angle of the third joint of the antennæ drawn out in a long point.

Tabanus alteripennis, Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 274 (from Mexico), represented by a single specimen in the British Museum, is perhaps a mere variety of *T. ebrius*, in which the brown spots on the wings are more confluent.

5. *Tabanus erebus*, sp. n., ♀.

Altogether black, including the wings; knob of the halteres whitish-yellow; frontal callus narrow, almost linear; subcallus flat, opaque; first posterior cell broadly open; upper corner of the third antennal joint drawn out in a long point.

Length 19–23 millim.

Hab. NICARAGUA, Chontales (*Janson*); PANAMA, Volcan de Chiriqui 2000 to 4000 feet (*Champion*).

Face and cheeks subopaque; proboscis rather long, with long lips; palpi long, narrow; third antennal joint with a distinct projection on the underside, deeply

excised above, the upper corner drawn out in a point which reaches about half the distance to the annulate portion; front comparatively narrow, narrower in front than behind; a denuded, slightly convex frontal line expands but very little in front into a narrow callus, posteriorly it stops long before reaching the vertex; on the latter a small denuded space bears the vestiges of ocelli (imperceptible in some specimens); subcallus flat, opaque, brownish. The uniformly black colour of the whole body is varied only by a slight whitish efflorescence on some parts of the front, on the thorax, and the abdomen. The pleuræ are deep black, with long black hair; the abdomen is fringed all round with black hair; the hind tibiæ have the usual fringe of black hair, but it is less apparent than in *T. atratus* on account of the other hairs which clothe the tibiæ being longer than in *T. atratus*. Wings of a uniform blackish-brown; some specimens show subhyaline spots in the marginal and submarginal cells; the bifurcation of the third vein opposite the tip of the second of the veins issuing from the discal cell; first posterior cell broadly open, although a little narrower at the tip than in the middle. Tegulæ black or dark brown, and, for this reason, their darker fringe but little perceptible.

Six females; two of them have the wings more brown than black.

6. **Tabanus corone**, sp. n., ♀.

Altogether black, including the wings; knob of the halteres whitish-yellow; first posterior cell broadly open; subcallus convex, shining; upper corner of the third antennal joint rectangular, not drawn out.

Length 17-18 millim.

Hab. GUATEMALA, Panima (*Champion*).

At first sight this species (of which we have only a single female) might be taken for a small specimen of *T. erebus*; it will be easily distinguished, however, by the shape of the third joint of the antennæ, which has but a shallow excision above, and the upper corner of which is rectangular and not drawn out in a long point. The proboscis is shorter; the palpi are shorter, stouter, more curved at the base, more shining; the front is parallel, not perceptibly narrower in front; there is a frontal elevated line, but it does not expand into a frontal callus; the subcallus is convex, shining. The colour is uniformly black, with a white efflorescence on the front, thorax, and abdomen; the thoracic dorsum and scutellum show traces of reddish, due perhaps to immaturity; tegulæ whitish, and, for that reason, their black edges more visible.

I deem it useful to give here a synoptical table of the five species of *Tabanus* with an altogether black body and black wings which occur north of the Isthmus of Panama.

Halteres with a yellowish-white knob.

Upper angle of the third joint of the antennæ drawn out in a long point; subcallus flat, opaque	<i>erebus</i> , O. S.
Upper angle of the third joint rectangular, not drawn out; subcallus convex, shining	<i>corone</i> , O. S.

Halteres black.

Front unusually broad, the frontal callosity transverse; front tibiæ whitish at the base; first posterior cell very strongly coarctate, often closed *atratus*, Fabr.

Front not unusually broad, the frontal callosity not transverse; front tibiæ altogether black; first posterior cell only moderately coarctate.

Narrow portion of the third antennal joint not remarkably elongate *wiedemanni*, O. S.

Narrow portion of the third antennal joint unusually long *lugubris*, Macq.

7. *Tabanus bifenestratus*, sp. n., ♀. (Tab. I. fig. 9.)

Black, abdomen red on the sides of the three first segments; wings brown, the second basal, discal, and second submarginal cells subhyaline; antennæ and legs rufous.

Length 13–14 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

Antennæ rufous, the scapus beset with black pile; upper angle of the third joint well marked, but blunt at the tip; annulate portion rather stout, black, about half as long as the basal. Face and palpi yellowish-red; the latter rather narrow, with black pile; the cheeks with fulvous hairs; front rather broad; frontal callus reddish-brown, convex; subcallus rufous, denuded, shining. Eyes apparently glabrous. Thorax black with yellow hairs, which are scarce on the back, but more dense and long on some parts of the pleuræ. Abdomen with the first three segments red, with black spots in the middle; the last four segments black, with narrow red borders. Coxæ black; legs rufous; femora beset with fulvous, the tibiæ with black, hairs; front tarsi brown, except at the base; tips of the other tarsi infuscated. Wings brown; second submarginal, discal, second basal, axillary, and spurious cells subhyaline; first posterior cell broadly open; no stump on the fork of the third vein (but as the upper branch is somewhat angular at the base, it is possible that a stump may occur in other specimens). A single female.

N.B.—The specimen is somewhat injured by moisture on the head and the thorax; for this reason I have not been able to give a complete description of these parts; the very peculiar and easily recognizable colouring of the wings induced me nevertheless to publish the species.

The eyes (revived on wet sand) are green, with a single narrow purple stripe in the middle.

8. *Tabanus cribellum*, sp. n., ♀. (Tab. I. fig. 10.)

Eyes glabrous, with three green cross-bands; thorax greyish, with yellowish-white lines; abdomen variegated with brown; wings hyaline, the first posterior cell broadly open; antennæ yellowish-red, the annulate portion of the third joint rather stout.

Length 9–10.5 millim.

Hab. MEXICO, Presidio (*Forrer*).

Head rather broad; front yellowish-grey, rather broad, slightly convergent anteriorly; frontal callosity dark brown, shining; an oblong blackish spot in the middle of the front and another more rounded one on the vertex; face whitish, with whitish hair; palpi rather short and stout, yellowish-white, with white pile, mixed with some black. Antennæ yellowish-red, the scapus with some black hairs; third joint rather short, with an obtuse, but little projecting upper angle; annulate portion as long as the basal, stout. Thorax brownish-grey, beset with scattered, short, white hairs (often rubbed off) which do not conceal the ground-colour; with three distinct longitudinal yellowish-white lines, and some (less distinct) lateral whitish marks above the root of the wings; pleuræ greyish-white with white hair. Halteres yellowish. Legs yellowish; femora with soft, white pile; distal half of the front tibiæ and the front tarsi dark brown; four posterior tarsi infuscated from the tip of the first joint. Abdomen of a pale reddish-yellow, variegated with brown as follows: on the first segment an undulating brown cross-band, interrupted under the scutellum; on the second and third segments, at the base, a brown cross-band, deeply excised in the middle, and behind it a transverse row of four round brown spots, the middle pair of which are more or less distinctly connected with the basal cross-band; segments 4–6 show the same row of four brown spots, but no brown cross-band at the base; in some specimens the spots on segments 5 and 6 become coalescent by pairs, thus forming an oblong spot with raised up ends on each side; sometimes this takes place even on the third and fourth segments. All the segments are clothed with an appressed yellowish pubescence, especially dense along the middle line and on the hind margins, but easily rubbed off. Venter pale reddish-yellow, sometimes darker towards the tip. Wings, including the costal cells, hyaline; stigma yellowish-brown; fork of third vein with a stump; first posterior cell broadly open, the second coarctate at the base. Three females.

It is very probable that the colouring of the abdomen is subject to even more variation than indicated in my description. As the lateral brown spots coalesce by pairs, without encroaching upon the middle of the segment, the prevalence of the brown would tend to render this central portion more conspicuous, and the colouring of the abdomen would finally appear as a longitudinal central pale-coloured stripe, with alternate brown and pale cross-bands on each side.

T. cribellum, apart from the colouring of the abdomen, will be easily recognized by the structure of the antennæ, with their short and comparatively broad third joint, and its stout and blunt annulate portion. I believe that this species must be closely related to *T. pumilus*, Macq. Dipt. Ex. i. 1, p. 146 (comp. my Prodr. of Tabanidæ, p. 448), from the Southern United States, but I have no specimen of the latter for comparison. *T. stigma*, Fabr., Wiedem. Auss. zweifl. Ins. i. p. 180 (Mus. Vienna), is also a closely allied species, but easily distinguished by the spots on its wings and the black end of the antennæ. *Tabanus completus*, Walker, List &c. i. p. 185 (St. Thomas), of which there is a single specimen in the British Museum, is very probably identical with *T. stigma*.

9. **Tabanus chionostigma**, sp. n., ♀. (Tab. I. fig. 11.)

Third antennal joint very deeply excised, forming two branches, the upper one blunt at the tip; abdomen (♀) cut off squarely at the tip; ventral segments fringed with long, golden-yellow hairs; proximal half of the four anterior tibiæ beset with snow-white pile. Wings with a brown semi-fascia on the distal half, the proximal half with a broad brown costal margin.

Length 18 millim.

Hab. GUATEMALA, Panima in Vera Paz (*Champion*).

Head broader than the thorax, flat; front of moderate breadth, but slightly coarctate anteriorly, black, subopaque, with hoary reflections along the orbits; in the middle a raised longitudinal line, broad, but ill-defined, hardly shining, expanding anteriorly into a semblance of a flat triangular callus; subcallus convex, shining, brown. Face black, but with a hoary, almost silvery reflection; palpi of moderate length, strongly curved at the base, attenuate towards the tip, clothed with black pile, interspersed with snow-white hairs; proboscis black; occiput greyish. Antennæ black; third joint brownish, its upper branch linear, blunt at the tip, and fully reaching the third joint of the annulate portion of the lower branch. Thoracic dorsum reddish-brown, with a slight greyish pollen, and a black, erect pubescence; pleuræ dark brown, beset with black hair, and with a tuft of snow-white hair in front of the root of the wings. Abdomen brown, beset with black hairs, especially on the sides; a fringe of yellow hairs on the last segment; on the venter the hind margins of the last six segments are beset with golden-yellow hairs, forming six distinct cross-bands. Knob of the halteres yellow. Legs dark brown or black, beset with black pile; proximal half of the four anterior tibiæ yellowish, beset with white hairs; hind tibiæ with a distinct fringe of black hair, with a few white hairs at the proximal ends. Wings brown from the root along the costa, as far as the central cross-veins; posteriorly the brown is bounded by the fourth vein, but invades more or less both ends of the second basal cell, the middle of which is yellowish; a brown cross-band on the distal half of the wing, begins on the costa between the tips of the first and second veins, attenuates and fades posteriorly and ends in the second posterior cell; the interval between this cross-band and the brown on the proximal half of the wing is yellow, more saturate towards the costa, where the yolk-yellow stigma is visible; first posterior cell broadly open; fork without stump of a vein. A single female.

N.B.—The eyes (revived on wet sand) are dark green, unicolorous.

10. **Tabanus venenatus**, sp. n., ♀.

Third antennal joint very deeply excised, forming two branches, the upper one blunt at the tip; antennæ red; femora reddish-yellow; anterior tibiæ whitish, beset with white pile; hind tibiæ dark brown, with a fringe of black pile; tarsi black. Wings subhyaline, with a slight brownish tinge.

Length 15–16½ millim.

Hab. GUATEMALA, Sinanja (*Champion*); PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

The ill-defined colour of the body of this species is somewhat difficult to describe. Thorax of a pale reddish-brown above, almost imperceptibly whitish-pruinose anteriorly; ill-defined paler reddish spots sometimes mark the divisions of the usual stripes; ante-alar callus pale-coloured, almost whitish; traces of greenish on the post-alar callus and on the scutellum; a tuft of yellow hairs on the post-alar callus. Pleuræ yellowish, with reddish-yellow hairs; in one specimen very pale, almost whitish-yellow, with pale yellowish-white hairs. Abdomen of a dirty brownish-yellow, with an admixture of more or less greenish, especially towards the base; a delicate, scarce, appressed black pubescence, which becomes more dense and distinct and forms a fringe on the posterior margins of segments 4–6; in the middle of these margins there is sometimes a spot of whitish hairs, often wanting; lateral margins, beginning with the third segment, with tufts of pale yellow hairs; venter yellowish-brown; posterior margins of the segments yellowish. Face and cheeks pale yellowish, with reddish-yellow hair, or, in some specimens almost whitish, with whitish hair; palpi in one specimen reddish-yellow, with golden-yellow pile, in the other yellowish, with black pile. Antennæ: third joint rufous, deeply excised, the long upper branch linear, blunt at the tip, and reaching beyond the base of the annulate portion of the joint: basal joints a little paler, more or less beset with black pile. The front is almost entirely occupied by a chestnut-brown, smooth, shining, slightly raised stripe, which absorbs the usual frontal callus, and reaches upwards nearly to the vertex; the interval between this stripe and the eye is pale-yellowish pollinose; vertex brown, whitish-pruinose, with some black pile. Halteres pale yellow. Wings subhyaline, more or less tinged with pale brownish; costal cell and stigma brownish-yellow; first posterior cell broadly open, the fork without stump of a vein. Two females.

Although the two specimens show the above-described differences in the colour &c. of the pleuræ and palpi, I entertain no doubt about their specific identity.

The eyes (revived on wet sand) are of a handsome reddish-purple, with green reflections.

11. *Tabanus albonotatus*.

Tabanus albo-notatus, Bellardi, Saggio &c. i. p. 56, t. 2. f. 5 (♀)¹.

Tabanus oculus, Walker, List &c. i. p. 157 (♀)².

Tabanus bipartitus, Walker, List &c. i. p. 158 (♀)³.

Hab. MEXICO (*Sallé*¹), Tampico (*de Saussure*¹); BRITISH HONDURAS, R. Sarstoon; HONDURAS^{2 3}.—SOUTH AMERICA, Colombia².

The characteristic black spot (surrounded by a whitish aureole) on the scutellum, the appendiculated branch of the third vein, the closed first posterior cell, and the colour of the front tibiæ (dark on the distal half) renders the identification certain. The frontal callus, in my specimens, is chestnut-brown, not black; the hind margins of the abdominal segments show traces of white hairs in the middle; the brownish clouds on the

bifurcation of the third vein and on the cross-veins closing the discal cell are not a constant character; in one of my specimens they are wanting. Two females.

N.B.—Although Walker's two descriptions are earlier, they are too unsatisfactory to be taken into consideration; that both refer to *albonotatus* is proved by the description of the front tibiæ (for *oculus*: fore shanks pale tawny, with black tips; for *bipartitus*: legs ferruginous, fore thighs rather darker, fore feet and tips of fore shanks piceous). At the same time, Walker does not mention the closed first posterior cell nor the appendiculated fork; instead of which he breaks up the species in two, with an imaginary difference in the length of the abdomen. I have seen the types in the British Museum.

I have a single female specimen (Bugaba, Panama, *Champion*) with the same characteristic dark spot, encircled with white, on the scutellum, but easily distinguished by the broadly open first posterior cell, the unappendiculated fork of the third vein, and the uniformly black front tibiæ. All these characters are those of *T. defilippii*, Bellardi, Saggio &c. i. p. 57; nevertheless the Panama insect is not that species. The true *T. defilippii* is much larger (23–24 millim., while the specimen from Bugaba is about 14 millim.), and has the body and wings much browner.

12. *Tabanus mexicanus*.

Tabanus mexicanus (Linn.), Wiedem. Aussereur. zweifl. Ins. i. p. 147; Bellardi, Saggio &c. i. p. 59¹ (for the synonymy, see my Catal. N. A. Dipt. 1878, p. 59).

Hab. SOUTHERN UNITED STATES.—MEXICO¹; BRITISH HONDURAS (*Blancaneaux*, two females).—SOUTH AMERICA.

13. *Tabanus lineola*.

Tabanus lineola (Fabr.), O. Sacken, Prodr. of N. Am. Tabanidæ, p. 448¹ (where the synonymy will be found).

Tabanus trilineatus (Latr.?), Bellardi, Saggio &c. i. p. 63².

Hab. UNITED STATES¹.—MEXICO² (*Sallé*, *Sumichrast*); NICARAGUA, Chontales (*Janson*).—SOUTH AMERICA.

I have seen the type of *T. trilineatus*, Bellardi, in Turin.

A common species in the United States.

Tabanus commixtus, Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 273, from Mexico, is represented in the British Museum by a single badly-preserved female specimen which belongs either to *T. lineola* or to some closely-allied species of that difficult group. This is one of those cases where a description represents merely a specimen, and not a species, and for this reason the name would better be suppressed.

STIBASOMA.

Stibasoma, Schiner, Verh. zool.-bot. Ges. Wien, xvii. p. 310 (1867); Reise d. Novara, Zool. iii. Abth. 1, p. 93.

1. *Stibasoma fulvohirtum*.

Tabanus fulvohirtus, Wiedem. Aussereur. zweifl. Ins. i. p. 155¹.

Stibasoma fulvohirtum, Schiner, Reise d. Novara, Zool. iii. Abth. 1, p. 94².

Tabanus compactus, Walk. List &c. v. p. 222³.

Hab. PANAMA (*Champion*).—COLOMBIA²; BRAZIL¹, Amazon River³.

I have a single specimen from Panama which I have compared with the types in London and Vienna. It agrees in everything, except that the fringe of hairs on the posterior margin of the first abdominal segment *differs* from that on the other segments in being fulvous and not white. The description of the legs should be amended: the ground-colour is reddish throughout, but more or less concealed by hairs of different length and density; on the femora this pile is black, but the reddish ground-colour is visible on the posterior side; on the tibiæ the pile is white at the base, black on the distal portion only; on the front tibiæ the white occupies less than half, on the middle tibiæ much more than half, of the whole length; the hair on the hind tibiæ is especially long, the white at the base occupies about one third of the length. The tarsi have a microscopic silvery pubescence on the upperside, and a reddish fulvous one on the lower side. The wings have a decided yellow tinge from the base to the end of the first vein, and from the costa to the fifth vein; the apex and a broad posterior margin are greyish. I have little doubt of the specific identity.

LEPIDOSELAGA.

Lepiselaga, Macquart, Dipt. Ex. i. 1, p. 153 (1838).

Lepidoselaga, as amended by Loew.

1. *Lepidoselaga recta*.

Lepidoselaga recta, Loew, Centur. viii. 8¹.

Hadrus lepidotus, Bellardi, Saggio &c. i. p. 75².

Hab. MEXICO² (*Sallé, Sumichrast*); GUATEMALA, Panzos (*Champion*).—COLOMBIA¹.

Since Dr. Loew defined the difference between *L. recta* and *L. lepidota*, Wiedem., the *Hadrus lepidotus*, Bellardi (non Wiedem.), must be referred to the former. A single specimen has been received from Guatemala.

DIACHLORUS.

Diachlorus, O. Sacken, Prodr. of N. Am. Tabanidæ, ii. p. 475 (1876).

Diabasis, Macq. Hist. Nat. Dipt. i. p. 207 (nomen præoc.).

1. *Diachlorus ferrugatus*.

Diachlorus ferrugatus (Fabr.), O. Sacken, Prodr. &c. p. 397¹ (where the rest of the synonymy will be found).

Tabanus rondanii, Bellardi, Saggio &c. i. p. 68, t. 2. f. 11².

Hab. SOUTHERN UNITED STATES¹.—MEXICO² (*Sallé, de Saussure*); GUATEMALA, Panzos (*Champion*; a single specimen).—WEST INDIES; BRAZIL.

BIOL. CENTR.-AMER., Dipt., October 1886.

DICHELACERA.

Dichelacera, Macquart, Dipt. Exot. i. 1, p. 112 (1838).

1. *Dichelacera cervicornis*.

Dichelacera cervicornis (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 157.

Hab. CENTRAL AMERICA; PANAMA, David in Chiriqui (*Champion*).—SOUTH AMERICA.

A single small specimen has been received from the State of Panama.

This species varies very much in size and in the intensity of the colouring. I have compared the types in Vienna.

In the British Museum the same species figures as *Dichelacera fasciata*, Walk. (Ins. Saund. p. 68). I am afraid that a substitution of specimens has taken place here, because of the total disagreement with the description—the more so as the specimen is labelled South America, and the description gives North America.

List of the Tabanidæ from Mexico and Central America hitherto described, besides the above-mentioned species (where no locality is given, Mexico is understood).

Pangonia aurulans, Wiedem. Aussereur. zweifl. Ins. ii. p. 620.

— *atrifera*, Walker, Trans. Ent. Soc. n. ser. v. p. 272.

— *flavo-hirta*, Bellardi, Saggio &c. i. p. 49.

— *fulvithorax*, Wiedem. Aussereur. zweifl. Ins. i. p. 89; Bigot, in R. de la Sagra &c. p. 797.—Also in Brazil and Cuba.

— *incerta*, Bellardi, l. c. i. p. 52.—Orizaba, Mexico.

— *nigronotata*, Macq. Dipt. Ex. Suppl. iv. p. 27, t. 2. f. 5; Bellardi, l. c. i. p. 51.
—Orizaba, Mexico.

— *planiventris*, Macq. Dipt. Ex. Suppl. iv. p. 26.

— *rhizophora*, Bellardi, l. c. i. p. 46, t. 2. f. 1.

— *rostrifera*, Bellardi, l. c. i. p. 47.

— *sallei*, Bellardi, l. c. i. p. 50.

— *saussurei*, Bellardi, l. c. i. p. 49, t. 2. f. 4.—Orizaba, Mexico.

— *semiflava*, Wiedem. l. c. ii. p. 622; Bellardi, l. c. i. p. 51, t. 2. f. 2 (syn. *P. bicolor*, Macq. Dipt. Ex. Suppl. iv. p. 27 [Bell.]).—Orizaba, Mexico.

— *tenuirostris*, Walker, Trans. Ent. Soc. n. ser. v. p. 272.

— *wiedemanni*, Bellardi, l. c. i. p. 48, t. 2. f. 3 (syn. *P. basilaris*, Wiedem. Aussereur. zweifl. Ins. ii. p. 621 [Bell.]).

Chrysops flavidus, Wiedem. Aussereur. zweifl. Ins. i. p. 199; O. Sack. Prodr. i. p. 385 (syn. *C. pallidus*, Bellardi, l. c. i. p. 73, t. 2. f. 16).

— *affinis*, Bellardi, l. c. i. p. 70, t. 2. f. 14.

- Chrysops apicalis*, Bellardi, l. c. i. p. 73.
- *lateralis*, Wiedem. l. c. i. p. 209; Walker, List &c. i. p. 200, v. p. 286
(patria ignota in Wiedem.; Honduras and South America in Walk.).
- *megaceras*, Bellardi, l. c. i. p. 74, t. 2. f. 18.
- *scalaratus*, Bellardi, l. c. i. p. 72, t. 2. f. 19.
- *subcæcutiens*, Bellardi, l. c. i. p. 69, t. 2. f. 13.
- *virgulatus*, Bellardi, l. c. i. p. 71, t. 2. f. 17.—Cuantla, Mexico.
- *crassicornis*, v. d. Wulp, Wien. ent. Zeit. 1884, p. 141 (syn. *C. geminatus*,
Macq. [non Wiedem.] Dipt. Ex. Suppl. iv. p. 39).
- Dichelacera scapularis*, Macq. Dipt. Ex. Suppl. ii. p. 15; Bellardi, Saggio &c.
i. p. 53, t. 2. f. 12.—Tehuantepec, Mexico.
- [*Theriopectes zonalis*, Kirby (syn. *Tab. flavocinctus*, Bellardi, Saggio &c. i.
p. 61), is a doubtful native of Mexico; see O. Sack. Catal. &c. 1878,
p. 226, note 73.]
- *cinctus* (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 119 (*Tabanus*);
O. Sack. Prodr. ii. p. 464.—United States and Mexico (?), according
to Walker, List &c. i. p. 153.
- Tabanus albiscutellatus*, Macq. Dipt. Ex. Suppl. iv. p. 34, t. 2. f. 9.
- *alteripennis*, Walker, Trans. Ent. Soc. n. ser. v. p. 274. (Compare above
[ante, p. 50] the remarks under *Tab. ebrius*.)
- *aurantiacus*, Bellardi, Saggio &c. i. p. 67, t. 2. f. 9.—Orizaba, Mexico.
- *caliginosus*, Bellardi, Saggio &c. i. p. 68, t. 2. f. 10.
- *carneus*, Bellardi, Saggio &c. i. p. 62.
- *circumfusus*, Wiedem. Aussereur. zweifl. Ins. ii. p. 624.
- *commixtus*, Walker, Trans. Ent. Soc. n. ser. v. p. 273. (About this
species see ante, p. 56, *Tab. lineola*.)
- *dorsifer*, Walker, Trans. Ent. Soc. n. ser. v. p. 273.
- *luteo-flavus*, Bellardi, Saggio &c. i. p. 60.
- *longiappendiculatus*, Macq. Dipt. Ex. Suppl. v. p. 32.—Honduras.
- *propinquus*, Bellardi, Saggio &c. i. p. 65.
- *purus*, Walker, Trans. Ent. Soc. n. ser. v. p. 274.
- *quinquevittatus*, Wiedem. Dipt. Ex. i. p. 84; Aussereur. zweifl. Ins. i.
p. 173; Bellardi, Saggio &c. i. p. 65.
- *rubescens*, Bellardi, Saggio &c. App. p. 15.—Oaxaca, Mexico.
- *sallei*, Bellardi, Saggio &c. i. p. 61, t. 2. f. 7.
- *stigma*, Fabr. Syst. Antl. p. 104; Wiedem. Dipt. Ex. i. p. 92;
Aussereur. zweifl. Ins. i. p. 180.—South America and St. Thomas
(Wiedem.).
- *subsimilis*, Bellardi, Saggio &c. i. p. 66.
- *subtilis*, Bellardi, Saggio &c. App. p. 14, f. 9.—Oaxaca, Mexico.

- Tabanus subruber*, Bellardi, Saggio &c. i. p. 55. (= *T. ruber*, Macq. Dipt. Ex. Suppl. i. p. 42; change of name by Bellardi.)
 — *sumichrasti*, Bellardi, Saggio &c. i. p. 56.
 — *truquii*, Bellardi, Saggio &c. i. p. 64, t. 2. f. 6.
 — *craverii*, Bellardi, Saggio &c. i. p. 60.

Fam. CHIROMYZIDÆ.

CHIROMYZA.

Chiromyza, Wiedemann, Dipt. Ex. p. 114 (1821).

1. *Chiromyza fuscana*.

Chiromyza fuscana, Wiedem. Aussereur. zweifl. Ins. i. p. 238, t. 1. f. 5 c; Schiner, Reise d. Novara, Zool. iii. Abth. 1, p. 76¹.

Hab. GUATEMALA, San Gerónimo (*Champion*); COSTA RICA, Irazu 6000 to 7000 feet (*Rogers*).—SOUTH AMERICA¹. Three females.

No *Chiromyza* has been found so far north before. In the Central-American examples the four posterior tibiæ are almost whitish in the middle, both ends being brown (I do not find this character mentioned in the descriptions); the two first veins, issuing from the discal cell, are nearly straight, by no means so much curved as in Wiedemann's figure; the third vein, on the contrary, which is represented as straight, is gently curved in our specimens.

Fam. LEPTIDÆ.

CHRYSOPILA.

Chrysopila, Macquart, Dipt. du Nord &c. 1827.

The four species of this genus which I find in the collections before me bear the general character of the smaller dark-coloured forms, and are often clothed with a golden pubescence. They seem to be numerous both in North and South America, but are not readily recognizable from descriptions. For this reason I abstain from describing any new species, especially as the specimens are not well preserved.

1. *Chrysopila* —?

Hab. COSTA RICA 6000 to 7000 feet (*Rogers*), Irazu. Two males.

Comes near *Chrysopila basalis*, Walk. Trans. Ent. Soc. n. ser. v. p. 284 (Mexico), but I do not see any dull testaceous stripes on the thorax. The stigma is yellowish-brown

and not remarkably large; the wings, on the distal half, are almost imperceptibly tinged with greyish. About 6 millim. long.

The *Chrysopila apicalis*, v. d. Wulp, Tijdschr. &c. xxv. p. 119 (Guadeloupe), is still nearer; but I am by no means certain of the identity. Van der Wulp's name is pre-occupied by Rondani for a South-American species.

2. *Chrysopila* — ?

Hab. MEXICO, Northern Sonora (*Morrison*).

A pair (♂ ♀) from the above locality cannot be identified with any of the described species. Blackish-grey, with hyaline wings, yellowish tibiæ, black halteres, &c.

3. *Chrysopila* — ?

Hab. COSTA RICA, Irazu 6000 to 7000 feet (*Rogers*).

A pair (♂ ♀) from Irazu are certainly different from all the described species, but too badly preserved for description. The wings have a brown cross-band issuing from the darker brown stigma, crossing the middle of the first posterior cell, and reaching, somewhat attenuated, the cross-vein at the base of the fourth posterior cell; between this cross-band and the apex, which is likewise brown, there is a distinct hyaline cross-band. In our male specimen the brown is more spread out than in the female, and the hyaline band is cut off posteriorly by an infuscation of the last of the veins, issuing from the discal cell; in the female the brown markings are fainter and narrower, and therefore the hyaline cross-band broader, but less distinctly marked. Anal cell short, petiolate; a distinctly yellowish tinge at the proximal end of the stigma. Body brown in the female, with a golden-yellow pubescence, apparently forming double spots at the bases of the abdominal segments; I do not perceive any traces of this in the male. Halteres with a brown knob; legs brownish-yellow, the tarsi darker. Antennæ brown, the second joint reddish. Length 7–8 millim.

A third specimen (R. Sudio, Costa Rica, *Rogers*), a female, apparently belongs to the same species, but the brown markings on the wings are still fainter, and the brown cross-band almost obliterate.

4. *Chrysopila* — ?, ♂ ♀.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

Two specimens. Body brown (♂), or greyish-brown (♀), with very scarce yellowish pile; antennæ dark brown; femora brown, the tibiæ brownish-yellow. Wings altogether hyaline, the stigma brown. Length 6–7 millim.

ATHERIX.

Atherix, Meigen, in Illiger's Mag. ii. p. 271 (1803).

1. *Atherix longipes*?

Atherix longipes, Bellardi, Saggio &c. ii. p. 94, t. 2. f. 17 (♀)¹.

Hab. MEXICO, Cordova (*de Saussure*¹); COSTA RICA, Irazu 6000 to 7000 feet (*Rogers*); PANAMA, Bugaba (*Champion*).

I have a single male from Bugaba and a female from Irazu. They agree tolerably well with Prof. Bellardi's description, but the thorax and the proximal half of the abdomen are more reddish-yellow, the tip of the wings not hyaline; the hind tibiæ and tarsi of the female are not infuscated. It may be a paler variety. The male specimen has the thorax altogether black, with silvery pleuræ; the hind femora have a brown band in the middle, the intermediate femora a similar band nearer the base. Both sexes have a large hyaline spot at the distal end of the stigma, which is not figured by Bellardi. Do our two specimens belong to the same species? Unfortunately the type of *A. longipes* is not in Prof. Bellardi's collection.

The other Leptidæ previously recorded from Mexico (there are none from other parts of Central America) are:—

Chrysopila basalis, Walk. Trans. Ent. Soc. n. ser. v. p. 285.

— *mexicana*, Bellardi, Saggio &c. ii. p. 96.

— *nigra*, Bellardi, Saggio &c. App. p. 27.—Tuxpango, Mexico.

— *trifasciata*, Walk. Trans. Ent. Soc. n. ser. v. p. 284.

Leptis bitæniata, Bellardi, Saggio &c. App. p. 26, f. 14.—Tuxpango, Mexico.

— (?) *cinerea*, Bellardi, Saggio &c. ii. p. 95.—Cordova, Mexico.

— *politæniata*, Bellardi, Saggio &c. App. p. 27.—Tuxpango, Mexico.

Atherix latipennis, Bellardi, Saggio &c. ii. p. 93.—Oaxaca, Mexico.

Fam. XYLOPHAGIDÆ.

RHACHICERUS.

Rachicerus (Haliday), Walker, List &c. v. p. 103 (1854).

1. *Rhachicerus bellus*, sp. n., ♀.

Black; hind tibiæ white at the base; wings black, with subhyaline spots in the middle of the cells; halteres pale yellowish.

Length about 15 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Altogether black, shining; front with a silvery reflection immediately above the

antennæ. Antennæ pectinate; the length of the branches of the joints gradually diminishing towards the tip; the longest branch, that on the first joint of the flagellum, equal in length to 5 or 6 joints (the number of joints cannot be stated, as the tips of both antennæ are broken off at the same place; it must be over thirty; 28 joints of each antenna are remaining). The posterior margins of the three intermediate abdominal segments are fringed with white hairs. Coxæ and femora black, shining; the four anterior tibiæ and the base of the tarsi have a pale ground-colour, darkened by a dense microscopic appressed pubescence, the rest of the tarsi black; hind tibiæ and tarsi black, the former with a white ring at the base, occupying about one third of their length. Wings black, darker towards the anterior margin and the base; subhyaline streaks in the middle of the marginal, second basal, anal, third, fourth, and fifth posterior cells; the streak on the latter is triangular in shape; venation like the other species of the genus; fourth posterior cell and anal cell closed; anterior cross-vein at about the middle of the distance between the tip of the præfurca and the bifurcation of the third vein. A single female specimen.

N.B.—This is the eleventh species described of this remarkable genus. It has the excision of the inner orbit of the eye, the short basal joints of the antennæ, and the other characteristic marks of *Rhachicerus*. I regret not to have any of the other species at hand for comparison.

Besides this, the only species of Xylophagidæ described from Mexico or Central America is:—

Rhachicerus nigripalpus, Loew, Berl. ent. Zeit. 1874, p. 378.—Mexico.

N.B.—In the Berl. ent. Zeit. 1882, pp. 364–366, I have expressed my doubts about the constitution of the family Xylophagidæ, and said that after the elimination of the forms foreign to it, the genus *Xylophagus* would have to be brought into closer connection with the Leptidæ. I still hold this opinion, although I am not prepared to give it an immediate practical application.

Fam. ACANTHOMERIDÆ.

Although a good many species of this family have been described, very little has been done in the way of generalizing the characters of the family and of the two genera now composing it—*Acanthomera* and *Rhaphiorhynchus*.

This is so far true that even the sexual characters have not been clearly defined; in several cases the sexes of the same species have been described under different names, and even placed in different genera.

The sexes in this family, as in many other families of Diptera, are easily distinguishable by the contiguity or non-contiguity of the eyes and by the shape of the abdomen. The difference in the structure of the antennæ has never been distinctly

stated, and was so far ignored, that Bigot, in his monographic essay on "*Acanthomeridæ*," has proposed a separate genus for the male sex. The only comparative statement about the structure of the male and female antennæ we possess is that of Wiedemann (in the description of *A. vittata*), and that is not very clear: "beim ♂ viel kürzer und bei weitem nicht so deutlich geringelt, als beim ♀, der Endgriffel nicht ein Viertel der Länge erreichend."

The antennæ of *Acanthomera* consist:—1, of the two-jointed scapus; 2, of a flattened compound joint of seven segments, the first of which is the longest; 3, of the style. In the male of many species the compound joint has the shape of a flat disc, rounded at the base, more or less attenuated at the distal end; in most cases its ending is abrupt; the setiform style, considerably longer than the compound joint, is inserted upon it. But in other species the compound joint of the male does not end abruptly, but tapers gradually into a point, which merges into the last joint, corresponding to the style. *A. picta*, Wiedem., male, and several undescribed or unnamed species which I have seen in collections have such antennæ. It is very probable that species will be found forming the transition between the two forms.

The antennæ of the female are very like the antennæ of the second form of the male, only distinctly broader; the flattened, tapering, compound joint gradually merges into a long terminal joint, corresponding to the style in the male, but comparatively stouter and less setiform. The sutures between the segments of the compound joint are more or less distinctly marked in different species, and are characteristic of the species.

Bigot established the genus *Megalemyia* (Ann. Soc. Ent. Fr. 1881, p. 455) on those *Acanthomeræ* which have a disciform compound joint with a setiform style at the tip, that is on specimens of the male sex only. His *Megalemyia seticornis* is the male of the species which, in the same paper, he describes as *Acanthomera rubriventris*, ♀, n. sp.

Wiedemann mentions the subfemoral spine on the hind femora as a character of the genus *Acanthomera*, and even derives the generic name from it. In reality, the minority of the species only have a spine; and among the three species described by Wiedemann himself in his first volume, *A. vittata* has none. It remains to be ascertained whether this spine is a constant character in those species in which it appears, or whether its presence depends on the development of individuals, so that in some specimens it may be wanting; also whether its development in both sexes is equally strong. The presence of this spine is difficult to ascertain in cases when it is small and concealed among the hair on the underside of the femora. In order to discover its presence or absence, it may be necessary sometimes to detach the leg and to rub the under surface of the femur with the tip of one's finger. This difficulty must be borne in mind in identifying descriptions.

There is another spine at the end of the femur, in a line with its longitudinal axis, on the outer side; when small it may be sometimes overlooked on account of the tibia

being closely applied to it. Here likewise it must be ascertained whether the presence or absence of the spine is a constant specific character.

A peculiar pointed projection of the face, sometimes straight-conical, sometimes curved at the tip, which occurs in some species, was taken by Wiedemann, in connection with a peculiar structure of the palpi, as a character of the genus *Rhaphiorhynchus*. Later, species were discovered in which this projection exists, while the palpi show the ordinary structure. Is this beak a constant character in the same species? If it exists in the female, does it also necessarily appear in the male? The latter is the case with specimens of *Rhaphiorhynchus planiventris* before me. But I have seen in the British Museum a female *Acanthomera* which I would feel inclined to place with a male in the same collection, but for the beak which exists in the former and not in the latter. There seems to also exist a correlation between the beak and the subfemoral spine. *A. magnifica*, Walk., *A. frauenfeldi*, Schin., *A. picta*, Wiedem., and some unnamed species which I have seen in collections have both the beak and the spines; they seem to form a natural group, distinguished by a more slender body and more projecting humeral callosities. It remains to be seen whether these coincidences are constant.

The sides of the abdomen in some specimens have sharp edges, generally beset with a more or less dense fringe of hairs easily rubbed off. These sharp edges are produced by the expansion of the dorsal abdominal plates beyond the membrane connecting them with the ventral plates. In other specimens the sides of the abdomen are blunt, and look as if the sharp edges had been bent under or crumpled. It seems evident to me that this difference is not merely accidental, produced in the process of drying, but that it is a real, specific, or may be generic difference. I believe even that I notice a certain degree of coincidence between the presence of the sharp edges and the absence of subfemoral spines and of facial projections. This point remains also to be investigated. If a generic subdivision should be attempted, the name *Acanthomera* should be retained for the group with rounded edges and subfemoral spines, and *Pantophthalmus*, Thunb., the older name, for the species with sharp edges.

The breadth of the front in the female should be noted; it seems to be a good distinctive character between closely allied species. The comparative size of the head of the male and the structure of the hind femora, sometimes linear, sometimes attenuated at the base, and slightly club-shaped on the latter half, also offer characteristic differences.

The arrangement of the stripes and spots on the thorax, an apparent monotony notwithstanding, offers excellent characters for the recognition of the species, and especially for the assorting together of male and female specimens of the same species. They should therefore be carefully described, and, if possible, figured.

The genus *Rhaphiorhynchus* is based on the peculiar structure of the palpi, which are stout and pointed, and not linear as in *Acanthomera*. These palpi, so far as I can judge from male and female specimens of *R. planiventris* before me, are in the male fusiform, and end in a straight point (correctly represented by Macquart, Dipt. Ex.

i. 1, t. 20. f. 3 *b*); in the female they are much stouter, and the end is curved. But I have seen in the collection of the Berlin Museum a large female *Acanthomera* from Brazil, unnamed, dark-coloured like my *A. championi*; it has the last joint of the palpi button- or club-shaped, and a beak-like protuberance on the face. Must it be taken for a *Rhaphiorhynchus*?

If all the *Acanthomeræ* existing in European collections could be brought together, it would perhaps be an easy matter to draw comparative descriptions, and to unravel the confusion now existing in books and collections. Until such a monographic work is rendered possible, the hints and remarks which I have given, the result of notes taken for several years past in the principal museums of Europe, may be of use to the future describers of new species; nevertheless it will remain a difficult task to describe new *Acanthomeridæ*.

The species of this family hitherto found occur within the tropics, in South America and Mexico. I have never seen specimens from the West Indies, nor are any mentioned in existing publications; two specimens in the British Museum are labelled "Trinidad," an island which is so near the coast of South America that, zoo-geographically, it forms a part of that continent. The statement that Thunberg's *Pantophthalmus tabaninus* comes from the West Indies, therefore, still requires confirmation.

Mr. Champion tells me that *Acanthomeræ* are found in the forests, alighting on trunks of trees.

RHAPHIORHYNCHUS.

Rhaphiorhynchus, Wiedemann, Dipt. Exot. p. 59 (1821).

1. *Rhaphiorhynchus planiventris*.

Rhaphiorhynchus planiventris, Wiedem. Dipt. Ex. p. 60; id. Aussereur. zweifl. Ins. i. p. 106, t. 1. f. 4 & ii. p. 622¹.

(?) *Rhaphiorhynchus planiventris*, Macq. Dipt. Ex. i. 1, p. 170, t. 20. f. 3 (♂).

Acanthomera bigoti, Bellardi, Saggio &c. App. p. 16, f. 10 (♀)².

Acanthomera crassipalpis, Macq. Dipt. Ex. Suppl. ii. p. 27, t. 1. f. 3; Bigot, Ann. Soc. Ent. Fr. 1881, p. 458 (*Rhaphiorhynchus*) (♀)³.

Hab. MEXICO, Chinantla (*Sallé*)²; GUATEMALA³; PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).—GUIANA, Surinam¹; BRAZIL.

I have a male (from Chiriqui) and a female (from Bugaba); the female is much darker in the colour of the thorax; the venter is dark brown, which colour is also seen from the upperside as a narrow margin of the abdomen; the palpi of the female are much stouter than in the male, and the end is curved; the fusiform palpi of the male end in a straight point (correctly represented by Macquart, Dipt. Ex. t. 20. fig. 3 *b*). The second posterior cell is almost closed in the male (as Bellardi figures it), and much more open in the female; this character seems to be variable (*cf.* Macq. Dipt. Ex. i. 1, p. 170).

I have compared my specimens with the types in Berlin, in Vienna, and in Turin, as well as with all the descriptions. The female in Vienna has the venter less dark than mine. The expression in Bellardi's description, "palpis longiusculis" must be taken in connection with his figure, which shows the palpi of a *Rhaphiorhynchus*. The femoral spines, mentioned in the description, are omitted in the figure; they exist nevertheless in the type specimen.

Macquart's *R. planiventris*, male (in Mus. Paris), judging by the short description and the bad figure, may not be the same species; I do not recognize the stripes of the thorax; the intermediate and posterior legs are described as being brown, while in *R. planiventris*, Wiedem., the posterior pair alone have that colour.

There is no reason for considering *R. crassipalpis*, Macq. (a female), as a distinct species. The difference indicated in Bigot's table (Ann. Soc. Ent. Fr. 1881, p. 458)—"tibias d'un jaune pale (*planiventris*); tibias postérieurs noirâtres (*crassipalpis*)"—is merely based on the fact that Wiedemann omitted (Aussereur. zweifl. Ins. i. p. 107) to describe the hind tibiæ; but they are represented as dark on the figure (t. i. f. 4), and described as such in Aussereur. zweifl. Ins. ii. p. 622. A female in the Berlin Museum, agreeing with mine, is determined as *R. crassipalpis*, Macq.

ACANTHOMERA.

Acanthomera, Wiedemann, Dipt. Exot. p. 60 (1821).

1. *Acanthomera championi*, sp. n. (Tab. III. fig. 16, ♀.)

Acanthomera picta (non Wiedem.), Bellardi, Saggio &c. i. p. 76¹.

Female. Thoracic dorsum showing a greyish-pollinose dorso-central stripe, with parallel sides, and a shining spot in the middle (from abrasion of the pollen?); the stripe is longitudinally bisected by a velvety blackish-brown stripe, attenuated where it crosses the shining spot; on each side the dorso-central stripe is bounded by broad velvety-black stripes, broadest in front (where they reach the whitish pollinose humeral callosity), gradually attenuating towards the scutellum; the rest of the space between the thoracic suture and the humerus is clothed with a greyish-brown pollen, and therefore opaque; behind the thoracic suture there is a shining chestnut-brown spot, oblong, nearly reaching the scutellum; the latter dark brown, yellowish-pruinose at the base. Pleuræ dark brown, beset with black hairs. Knob of the halteres brown, the stem reddish. Abdomen black, shining; posterior and lateral margins of the segments velvety-black, opaque; the lateral edges of segments 3 and 4 are sharp, and beset with a dense fringe of black hairs; segment 5 is abruptly narrower than the preceding, occupying about one quarter of its breadth; segments 6, 7, and 8 are each narrower than the preceding, forming a kind of ovipositor-like tail; segment 8 is much longer than broad; segment 9 is very small, and ends in a pair of minute valvules; venter black or dark brown, with a brownish, velvety reflection. Legs black or dark brown; hind femora linear, not incrassate, and without spines, either subfemoral or terminal. Face and front velvety-black or brown, the latter with parallel sides; the breadth of the front is less than half, but more than one third of the distance between the root of the antennæ and the front ocellus; lower part of the face reddish-brown in the middle, with a slight gibbosity. Antennæ dark brown; third joint flattened, showing eight distinct subdivisions, the last of which (homologous to the style of the male) is awl-shaped, pointed at the end, and nearly two thirds as long as the seven preceding ones taken together. Wings infuscated, darker on the antero-proximal portion, with yellowish spaces along some of the veins; especially conspicuous is a large spot in the shape of a jagged half cross-band between the anterior margin and the proximal end of the discal cell; other yellowish spots on the cross-veins at the base of the second, third, and fifth posterior cells, and on the

bifurcation of the third vein. Two specimens—the one nearly 40 millim., the other about 28 millim. long, both without counting the terminal segments forming the ovipositor.

Hab. MEXICO (*Sumichrast*¹); NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba (*Champion*).

This species seems to be common; there is a specimen in the British Museum, and another in the Berlin Museum (under a collection name), both from Mexico. Bellardi's *A. picta*, which I have compared, is the same species. Professor Bellardi thought that the white abdominal spots mentioned in Wiedemann's description were rubbed off in his specimen (he says, "maculis albidis nullis, quia detritum"); but they do not exist even in well-preserved specimens.

A. picta, Wiedem., is known in the male sex only; besides the white abdominal spots, it has a more whitish thorax.

I have little doubt that the male of *A. championi* has the antennæ like those of *A. seticornis*, that is, with a long setiform style.

I take pleasure in dedicating this species to Mr. George C. Champion.

2. *Acanthomera* — ?

Hab. GUATEMALA, Panima in Vera Paz (*Champion*).

A single male, about 27 millim. long; third antennal joint disciform, with a bristle at the tip one and a half times the length of the joint; sides of the abdominal segments flattened, with sharp edges, those of segments 3 and 4 with fringes of short hair; the hind femora have neither subfemoral nor terminal spines, the latter are replaced by a blunt projection; palpi linear; face not projecting. Thorax rich brown, with paler stripes, with a brownish, rather dense pubescence; abdomen uniformly ferruginous, the short hairy lateral fringes on segments 3 and 4 of the same colour; legs rather uniformly reddish chestnut-brown; wings like those of *A. championi* in colour, that is brownish with paler spaces on the cross-veins and bifurcations.

I cannot identify this male with any of the existing descriptions, nevertheless I do not describe it as a new species, because the discrepancies consist principally in the colouring, which may be variable. The specimen may perhaps be the male of some of the species in the vicinity of *A. bellardii* or *A. fulvida*, Bigot.

Fam. MIDAIDÆ.

LEPTOMIDAS.

Leptomydas, Gerstaecker, Stett. ent. Zeit. 1868, p. 81.

1. *Leptomydas sponsor*, sp. n., ♀.

Thorax brownish-red, with yellow stripes; pleuræ nearly black; abdomen brown, with well-marked yellow cross-bands on the margins of the segments; legs pale reddish; wings yellowish; proboscis black.

Length 15 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Head black, shining; facial, frontal, and occipital orbits with a moderately broad border of orichalceous-yellow pollen; proboscis black; antennæ reddish, the rather broad and flat club, and a part of the joint preceding it, brown, the underside of the club reddish. Thorax brownish-red, with four orichalceous-yellow stripes; the outer stripes short (being included between the humerus and the root of the wing), the inner ones slightly diverging in front and their anterior end a little expanded, posteriorly they do not reach the scutellum; pleuræ and pectus black, moderately shining; pteropleura dark chestnut-brown; scutellum reddish-brown, with a slight yellow margin in front; metanotum reddish-brown in the middle, browner laterally, anteriorly with a yellow border slightly interrupted in the middle. Abdomen dark brown, more reddish-brown towards the end; segments 1-5 each with a yellow cross-band on the posterior margin, visible also on some of the ventral segments (especially 3 and 4); the cross-band of segment 2 bears on its hind margin two oblong, black, shining spots; on segment 5 the cross-band is much narrower than on the others; the coronet of spines at the end of the abdomen (♀) is rufous. Halteres black, reddish at the root. Coxæ and trochanters dark brown; legs rufous; proximal half of the hind femora whitish, their distal half but very little incrassate and without any teeth on the underside; tibiæ straight. Wings with a slight yellowish tinge, more saturate anteriorly between the costa and the fourth vein; the branches of the fork of the third vein slightly clouded with brownish. A single female.

N.B.—The long proboscis, with small lips at the end, the ovipositor with a coronet of spinules, the absence of the connecting little cross-vein on the hind margin of the wings, &c. characterize this species as a *Leptomidas*. The vein following the forked vein (Gerstaecker's "Parallelader;" it is a branch of the fourth vein) ends here in the first vein a short distance before its end, and *not* in the margin, as in the typical species of the genus. (See Gerstaecker, Stett. ent. Zeit. 1868, p. 81, t. 1. fig. 3.)

2. *Leptomidas brachyrhynchus*, sp. n., ♀.

Proboscis red, unusually short; thorax brownish-red, with yellow stripes; pleuræ and abdomen red; segment 2 with a pair of well-marked black spots on the posterior margin; legs pale reddish; antennæ red. Length 16 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Proboscis rufous, unusually short for a *Leptomidas*, as its end does not reach beyond the second joint of the antennæ. Antennæ rufous; the scapus and the coarctation of the third joint a little brownish; the club moderately expanded. Sides of face and front densely covered with a yellow pollen, beset with scattered golden-yellow hairs; the middle of the face, between the mouth and the antennæ, rufous, with a tuft of rufous-golden hairs on each side; the middle of the front and the vertex black, shining; the sides of the vertex show traces of rufous; occiput densely yellow-pollinose. Thorax brownish-red, with four stripes of yellow pollen; the intermediate stripes expand anteriorly

and do not reach beyond the suture posteriorly, the lateral ones run from the humerus to the scutellum; humeri yellow; pleuræ rufous, mixed with yellow and brown; sternum brownish; metanotum reddish-yellow, darker under the scutellum. Halteres pale rufous. Legs pale rufous; proximal half of the femora and tibiæ still paler, almost whitish-yellow on the hind pair; hind femora with a few short bristles on the under-side of the incrassation towards the end; hind tibiæ distinctly curved, beset with scattered weak bristles; hind tarsi comparatively short. Abdomen rufous; hind margins of segments 3–7 ill-defined yellowish; the lateral margins of segments 2–7 have a black stripe, interrupted by the yellow on the sutures; on the hind margin of segment 2 there is a pair of deep-black oblong spots (corresponding to similar spots in *L. sponsor* and *L. pantherinus*). The coronet of spines at the end of the abdomen (♀) is black. Wings with a pale brownish tinge; veins clouded with a darker brown; costal vein yellowish. A single female.

N.B.—This is undoubtedly a *Leptomidas*, its short proboscis notwithstanding. The vein following the forked vein ends at the very tip of the first vein, on one of the wings almost in the alar margin. It is very probable that in this species, like in some other Midaidæ of the same colour, the distribution of the rufous and darker tints is not altogether constant, and this circumstance must be taken into account in identifying such species.

MIDAS.

Mydas, Fabricius, Ent. Syst. iv. p. 252 (1794).

Midas, Wiedemann, Aussereur. zweifl. Ins. i. p. 239 (1828).

1. *Midas rubidapex*.

Midas rubidapex, Wiedem. Mon. Midar. p. 40, t. 52. f. 2; Bellardi, Saggio &c. ii. p. 5¹.

Hab. MEXICO (*Sallé*¹); GUATEMALA, San Gerónimo (*Champion*).

I have three male specimens from San Gerónimo, agreeing with the descriptions, except that the unguis are not “flavescentes, ad apicem nigri,” as Bellardi describes them, but altogether black, slightly chestnut-brown about the middle. The antennal scapus alone is black, the rest of the antennæ yellowish-orange; according to Wiedemann the colour varies, the club alone being sometimes yellow. All our specimens have a tuft of white hairs above the hind coxæ.

2. *Midas dives*.

Midas dives, Westw. Arcana Ent. i. p. 50, t. 13. f. 1.

Hab. PANAMA, Bugaba (*Champion*), near the city (*J. J. Walker*).—BRAZIL (*Berl. Mus.*).

This species is exceedingly like *Midas rubidapex*; the differences are:—(1) the two basal segments of the abdomen are clothed on the dorsal side with golden down, which

is shorter and appressed on the second segment; (2) the alula, which in *M. rubidapex* is blackish, like the whole base of the wing, is reddish here—this character becomes especially apparent when the wings are folded over the back of the insect and the large alulae cover the scutellum; (3) in *M. rubidapex* the limit between the reddish-yellow, opaque anterior and the subhyaline posterior portion of the wing is marked by an irregular, but continuous blackish line of cloud, which runs from the costa towards the anal angle of the wing—in *M. dives* this continuous line of cloud does not exist, only disconnected vestiges of it are visible in the shape of small clouds in some of the cells. Prof. Bellardi, in his description of *M. rubidapex*, mentions a specimen he had received from the Museum in Paris, which had the second abdominal segment clothed with a yellow tomentum; this was probably *M. dives*. Mr. Westwood gives no locality; Dr. Gerstaecker had *M. dives* from Brazil; it agrees with our specimens.

3. *Midas decor*, sp. n., ♂.

Black, shining; a pair of abbreviated, indistinct hoary lines on the front part of the thorax; wings pale yellowish-brown, somewhat darker anteriorly, the fork of the third vein rather ventricose.

Length 21 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Not unlike *M. crassipes*, Westw. (*Arcana Ent.* i. t. 13. f. 3, from ? North America), in shape and colour, but much smaller; the abdomen has the same shape, that is, its sides are almost parallel, with a slight coarctation a little beyond the base; the forked cell is much more ventricose than in the figure of *M. crassipes*; the weakness of the hind femora, the presence of the hoary stripes on the anterior part of the thorax, of a tuft of white hairs above the hind coxæ, &c., seem to prove the specific distinctness. It cannot be the same as *M. bitæniatus*, Bell., which has thoracic stripes much more distinct, the face with hoary stripes along the orbits, and the abdomen conical. *M. carbonifer*, O. Sack. *Catal. N. Am. Dipt.* p. 236 (New York), has an opaque thorax and darker wings; *M. virgatus*, Wiedem., has the lateral thoracic margins and the abdominal incisures whitish hoary, the wings more evenly brown, &c.

Head black, the face shining; all the hairs upon it black, except a few white ones on the underside of the occiput; white hairs in the mystax are perceptible in a certain light only; no hoary stripes along the orbits, except a trace on the occipital orbits; antennæ black. Thorax black, the dorsum shining, with two feebly marked hoary stripes (visible in an oblique light only) on the anterior portion; pleuræ opaque, with a slight hoary bloom on their lower parts, above and between the coxæ; the latter black, shining. Legs black; hind femora very little incrassate, but with very sharp spines on the underside; terminal hook of the tibiæ small; a tuft of white hairs above the hind femora. Halteres black. Abdomen black, shining. Wings tinged with pale yellowish-brown; subcostal, marginal, and a part of the first submarginal cells a little darker brown; second submarginal cell expanded before the middle, coarctate

towards the tip; connecting cross-vein near the posterior margin present. A single male.

4. **Midas chrysites**, sp. n., ♂.

Altogether black, the wings brown; abdominal segments 2–5 covered with short, appressed, golden-rufescent pile, not dense enough to modify much the black ground-colour.

Length 32 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

A little smaller than *M. clavatus*, the thorax and abdomen much narrower, the latter gradually tapering from the base to the tip.

Head, antennæ, occiput, &c. altogether black, clothed with black pile, forming a dense, dependent tuft on the facial gibbosity. Thorax and pleuræ black, moderately shining, without any trace of a hoary pollen (the thoracic dorsum being somewhat greasy, I am unable to describe it more accurately). Abdomen black, moderately shining, towards its end and in the middle of the ventral segments some bluish reflections are visible; the dorsal segments 2–5 (except the hind margins) clothed with a short, appressed, golden-rufescent pubescence, especially perceptible in an oblique light, but not dense enough to conceal the black and shining ground-colour much when viewed in a vertical direction; the corresponding pubescence on segments 6 and 7 is black. Halteres black. Legs black; hind femora a little less incrassate than in *M. clavatus*, ♂, beset with spines on the underside; hind tibiæ with the hook at the tip. Wings infuscated; the anterior margin, between the second vein and the costa, and also the third vein, before the fork, are slightly tinged with ferruginous, and therefore less dark than in *M. clavatus*; venation like that of *M. clavatus*; the stump on the fork and the connecting cross-vein on the hind margin are present. A single male.

N.B.—When I examine the specimen from behind, in the direction of the axis of the body, I perceive that the edge of the third abdominal segment is red; this is not the case with the other segments; but I do not know whether this is a permanent character or not.

5. **Midas cleptes**, sp. n., ♂.

Black, thorax opaque, segments 2–4 rufous on the dorsal side; wings infuscated.

Length 25 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Head and antennæ altogether black, clothed with black hairs; a slight brownish-grey pollen along the facial orbit and in the depression on each side of the upper part of the face; a narrow margin of greyish pollen along the occipital orbit. Thorax deep black and opaque. Halteres black. Abdomen very gently tapering, black, with distinct bluish reflections on the venter, less distinct on the last two dorsal segments; dorsal segments 2–4 red, the second more or less darkened at the base; a scarce microscopic

appressed rufous pubescence is perceptible on the red ground, as also on the black ground of the fifth segment; last segment black, beset with black pile. Legs black; hind femora moderately incrassate, with the usual rows of spines; tibiæ with hooks at the end. Wings infuscated, but less dark than in *M. clavatus*; venation normal. A single male.

N.B.—A female from Dallas, Texas, which apparently belongs to this species, has no rufous tomentum on segments 2–5 of the abdomen; the wings are less dark, more reddish-brown. A female in the Berlin Museum, from the same locality, has the facial orbit more white.

The other Midaidæ previously described from Mexico (there are none from other parts of Central America) are:—

- Midas annularis*, Gerst. Stett. ent. Zeit. 1868, p. 100.
- *basalis*, Westw. Arc. Ent. i. p. 53; Bellardi, Saggio &c. ii. p. 10.
- *bitæniatus*, Bellardi, l. c. ii. p. 7, t. 1. f. 1.—Playa Vicente, Mexico. *p. 107 of Bell.*
- *interruptus*, Wiedem. Monogr. Mid. p. 46, t. 53. f. 12. (Syn. *M. trincinctus*, Bellardi, l. c. ii. p. 8, t. 1. f. 2.)
- *militaris*, Gerst. l. c. p. 99. (Syn. *M. vittatus*, Macq. Dipt. Exot. Suppl. iv. p. 60, t. 4. f. 6; Bellardi, l. c. ii. p. 7.) (A male and a female in the British Museum agree with the descriptions; they were collected by M. Sallé.)
- *senilis*, Westw. Arc. Ent. i. p. 52.
- *subinterruptus*, Bellardi, l. c. ii. p. 10, t. 1. f. 3.—Patzcuaro, Mexico.
- *lavatus*, Gerst. l. c. p. 96. (I am not quite sure whether this is a synonym of *M. xanthopterus*, Loew, as I stated in my Catal. N. Am. Dipt. p. 85.)
- *tibialis* (Wiedem. Monogr. Mid. p. 42, t. 53. f. 6.—Maryland, Michigan), Bellardi, l. c. ii. p. 6. (*p. 106*)
- *incisus* (Macq. Dipt. Exot. ii. p. 11, t. 1. f. 1.—Carolina), Jaennicke, Neue exot. Dipt. p. 46.

Fam. NEMESTRINIDÆ.

RHYNCHOCEPHALUS.

Rhynchocephalus, Fischer, Mém. Soc. Imp. des Natur. de Moscou, p. 217 (1806).

1. *Rhynchocephalus* — ?

Hab. GUATEMALA, San Gerónimo (*Champion*).

A single female. Not unlike *R. volaticus*, Willist. (Canad. Ent. 1883, p. 71), from Florida, but the size is a little larger (13–14 millim.); wings comparatively longer

BIOL. CENTR.-AMER., Dipt., November 1886.

(13.5 millim.); the upper part of the front and the vertex clothed not with black but with thin brownish-rufous pile. The abdominal segments beyond the second clothed with an appressed rufous tomentum, mixed with pale-yellow hairs; along the hind margins the yellow hair becomes more dense, and produces, in an oblique light, the appearance of pale golden-yellow fringes. The tufts of black hair on the sides of segments 3 and 4 are quite conspicuous. The antennæ agree with the description, the venation with the figure.

HIRMONEURA.

Hirmoneura, Meigen, System. Besch. ii. p. 132 (1820).

1. *Hirmoneura psilotes*, sp. n., ♀.

Brown, with a brownish-yellow pollen; legs pale rufous; antennæ and palpi rufous wings tinged with pale brownish, brownish-yellow along the costa; eyes glabrous.

Length, without the ovipositor, about 13 millim.

Hab. MEXICO (*Sumichrast*).

Proboscis rufous, short, the large lips but little projecting outside of the oral opening; last joint of the palpi long, cylindrical, pale rufous, closely applied to the facial orbit of the eye and almost reaching the antennæ; antennæ rufous, beset with rufous hair; face and front densely covered with a yellowish-grey pollen; the face beset with pale rufous hairs, the front with black hairs mixed with rufous ones, the latter especially visible in front of the ocelli; front nearly parallel, the vertex very little narrower; eyes glabrous. The brown ground-colour of the thoracic dorsum is modified by a brownish-yellow pollen and yellowish hairs, which cover its surface; the hairs longer on its sides; pleuræ and sternum more grey, with paler yellow hairs; post-alar callosities reddish; scutellum brown. The abdomen, like the thorax, derives its colouring from a brownish pollen, which is darker on the posterior half of segments 2, 3, 4 (these segments thus showing slight traces of darker cross-bands); the base with longer pale yellowish-rufous hairs; the posterior half of segment 2, as well as the two following segments, beset with short, semierect black hairs; the three following segments (5-7) are shorter and narrower and end in an ovipositor, which, so far as I can see, consists of a short tube, longitudinally split in two. Legs pale rufous; hind femora slightly brownish at the tip; hind tarsi brown. Wings with a pale brownish tinge, more yellowish along the costa; veins on the antero-proximal half rufous, on the remainder of the wing dark brown; venation like that of the European *H. obscura*, only the handle of the fork of the third vein is straighter. A single female in Prof. Bellardi's collection.

The only species of Nemestrinidæ hitherto described from Central America is *Hirmoneura brevirostris*, Macq. (Dipt. Exot. Suppl. i. p. 101, t. 20. f. 1), which has pubescent eyes, hyaline wings, &c.

Hardly distinct from *Williston's flavipes* (1886) ^{ocv.} - Jma

Fam. BOMBYLIDÆ.

The materials I had at my disposal in working up this family consisted principally of a fine series of mostly well-preserved 'Anthracina' from Northern Sonora, collected by Mr. Morrison. I have improved this rather rare opportunity for describing and figuring a number of new species. Professor Bellardi very kindly lent me the 'Anthracina' of his Mexican collection, the descriptions of which I incorporated in my work. The materials from other parts of Central America were comparatively of less importance.

The section "Bombylina" was very little represented in all these collections.

I have attempted to give a closer definition of some of the existing genera, and have for this purpose introduced characters that had not been used before.

A great deal remains to be done towards developing the classification of the Bombylidæ; but this is the work of the monographer, and requires a larger material than I have at hand. The mere describer of a limited collection, who attempts at the same time to improve the classification, is like the traveller who has his own road to make—his progress will be very slow, and his road very bad.

The following table refers to North- and Central-American genera and species only:—

Analytical Table of the North- and Central-American Genera of Bombylina^{dae}.

- 1 (18). The bifurcation of the second and third veins taking place opposite, or nearly opposite, the small cross-vein; the second vein forming a knee at its origin from the præfurca; the third vein in a straight line with the præfurca.
- 2 (11). Three or more submarginal cells.
- 3 (4). Four, sometimes five, submarginal cells *Hyperalonia*, Rond.
- 4 (3). Only three submarginal cells.
- 5 (8). Third joint of the antennæ elongate-conical.
- 6 (7). The conical third joint bearing a more or less long style, separated by a distinct suture *Exoprosopa*, Macq.
- 7 (6). The conical third joint bearing no elongate style at the end; second vein strongly contorted, in the shape of a recumbent S *Dipalta*, O. S.
- 8 (5). Third joint of the antennæ short, onion-shaped, with a very long style, not bisected by a suture.
- 9 (10). Proboscis long, projecting far beyond the oral margin . . . *Stonyx*, O. S.
- 10 (9). Proboscis withdrawn within the oral cavity; rudimentary pulvilli *Isopenthes*, O. S. 76
- 11 (2). Two submarginal cells.
- 12 (13). The style of the third antennal joint distinctly bisected by a suture, and bearing a pencil of hairs at the tip *Argyramæba*, Schin.

- 13 (12). The antennal style not bisected, and with a microscopic bristle, but no pencil of hairs, at the tip.
- 14 (15). Eyes of the male contiguous on the vertex; anal cell closed . *Astrophanes*, O. S.
- 15 (14). Eyes of the male not contiguous on the vertex; anal cell open.
- 16 (17). The contact of the discal cell with the third posterior not much longer than its contact with the fourth posterior cell; proboscis long, projecting far beyond the oral margin; sides of the abdomen with a fringe of scales, and not of hairs only *Lepidanthrax*, O. S.
- 17 (16). The contact of the discal cell with the third posterior at least twice as long as its contact with the fourth posterior cell; the latter contact often merely punctiform *Anthrax*, Scopoli. 111
- 18 (1). The bifurcation of the second and third veins taking place some distance before the small cross-vein, at an acute angle; the second vein not forming a knee at its origin from the præfurca.
- 19 (24). Body *Anthrax*-like; frontal triangle in the male large; frontal space in the female of a corresponding size.
- 20 (21). Antennæ approximate at the base; third antennal joint gradually attenuate *Oncodocera*, Macq.
- 21 (20). Antennæ remote at the base.
- 22 (23). Pulvilli distinct *Aphæbantus*, Loew.
- 23 (22). Pulvilli none *Epacmus*, O. S.
- 24 (19). Body not *Anthrax*-like; frontal triangle in the male small.
- 25 (28). Body (antennæ, thorax, abdomen) clothed with more scales than hairs, gibbose, the abdomen hanging down; antennæ long, first joint unusually long.
- 26 (27). Four posterior cells *Lepidophora*, Westw.
- 27 (26). Three posterior cells *Toxophora*, Meig.
- 28 (25). Body clothed with hairs, or else nearly glabrous.
- 29 (50). Four posterior cells.
- 30 (39). First posterior cell closed.
- 31 (38). Two submarginal cells.
- 32 (35). First basal cell longer than the second.
- 33 (34). Head comparatively small; the emargination of the occipital orbit almost imperceptible; contact between the second submarginal cell and the first posterior more than punctiform . *Bombylius*, Linn.
- 34 (33). Head comparatively large; the emargination of the occipital orbit distinct; contact between the second submarginal cell and the first posterior cell often only punctiform *Comastes*, O. S.
- 35 (32). Both basal cells of equal length.
- 36 (37). Underside of the head moderately pilose, and hence its different parts (including the base of the antennæ, the oral edge, &c.) easily perceptible *Systæchus*, Loew.

- 37 (36). Underside of the head densely pilose, the root of the antennæ,
epistoma, mouth, &c. being completely hidden *Anastæchus*, O. S.
- 38 (31). Three submarginal cells *Pantarbes*, O. S.
- 39 (30). First posterior cell open.
- 40 (47). Two submarginal cells.
- 41 (42). Both basal cells of equal length *Sparnopolius*, Loew.
- 42 (41). First basal cell longer than the second.
- 43 (44). Third antennal joint not truncate at the tip *Epibates*, O. S.;
Eclimus, Loew.
- 44 (43). Third antennal joint flattened, truncate at the tip.
- 45 (46). Proboscis short *Paracosmus*, O. S.
- 46 (45). Proboscis very long *Phthiria*, Meig.
- 47 (40). Three submarginal cells.
- 48 (49). The rather narrow marginal cell very much expanded at the
end *Lordotus*, Loew.
- 49 (48). The marginal cell only moderately expanded *Ploas*, Latr.
- 50 (29). Three posterior cells; anal cell closed.
- 51 (52). Proboscis much longer than the antennæ; small, *Bombylius*-
like pubescent insects *Geron*, Meig.
- 52 (51). Proboscis shorter than the antennæ; long, *Ammophila*-like,
almost glabrous insects; four basal segments of the abdomen
very narrow *Systropus*, Wiedem.

EXOPROSOPA.

Exoprosopa, Macquart, Dipt. Exot. ii. 1, p. 35 (1840).

Trinaria, Mulsant, Mém. Acad. de Lyon, 1852, p. 18.

Under this name Macquart separated from the old genus *Anthrax* those species which have *three* or *four* submarginal cells. As further characters he mentioned "a more or less projecting, conical face; antennæ with an elongated, subulate third joint, and with a distinct style, ordinarily half as long as that joint." He was aware of the numerous structural modifications occurring in the genus, especially in the venation.

Loew, Südafr. Dipt. p. 223 (1860), pointed out that thus far the presence of three submarginal cells is the only trustworthy character; he added to it the absence of pulvilli (but this character is common to the majority of the 'Anthracina'); the other characters mentioned by Macquart occur, says Loew, in most, but not in all, the species of *Exoprosopa*, and are also found in some species of *Anthrax*. He mentions incidentally that some species have a tooth at the base of the ungues, but takes no further notice of this character, which, as will be shown below, I found quite useful for the definition of the groups of the North-American *Exoprosopæ*. He rejects the genus *Litorhynchus*, Macq., merely distinguished by a longer proboscis; neither does he admit *Argyrospila*, Rond., in which, as will be shown below, I fully concur with him.

Schiner (Fauna Austr. i. p. 54, 1862) did not do anything towards the closer defini-

tion of the genus. In his generic definition the statement "pulvilli present, but generally small and narrow" is not correct.

Rondani attempted a subdivision of the genus, based on differences in the venation; in the absence of specimens, however, he established his new genera merely upon the figures of the wings as given in Macquart's 'Diptères Exotiques'; the rest of the organization he therefore entirely ignored*. As might be expected, the result of this attempt is far from happy (comp. Rondani, 'Archiv. per la Zool.' iii. 1, Modena, 1863).

Argyrospila, Rond. (Prodr. i. p. 162, and Archivio, *l. c.*), is based solely upon the first posterior cell being closed—a character of secondary importance, which occurs in species that would find themselves far apart in a natural grouping; and this is the case with the very species enumerated by Rondani as belonging to his new genus:—*E. pandora* (Europe), *E. limbipennis*, Macq. (Mexico), *E. olivieri* and *E. lugubris*, Macq. (Arabia). The last two I have never seen (nor Prof. Rondani either); in *E. jacchus* (syn. *pandora*) and its close relatives *E. cleomene* &c. all passages occur between a closed and petiolate first posterior cell and an open one. It would be as unnatural to place those species in different genera on that ground as to form a separate genus for *E. pandora* and the totally different *E. limbipennis*, merely because both have that secondary character in common. Even as a specific character the open or closed first posterior cell is sometimes but of little value. Of *E. cleomene*, Egger, this author says, "the first posterior cell is open in most, but closed in some, specimens" (Verh. zool.-bot. Ges. Wien, 1859, p. 398). The same is said by Loew about some other species of the same relationship; compare Loew, Besch. eur. Dip. i. p. 212. (In the species allied to *E. limbipennis*, Macq., this character is more constant.) The genus *Argyrospila*, Rond., can, therefore, not be maintained.

The genus *Hyperalonia* was introduced by Rondani for certain species with *four* submarginal cells, due to the presence of a supernumerary cross-vein within the third submarginal. In examining the species of this group which I have before me I observe that they all have the ungues on the posterior legs without tooth at the base, which tooth characterizes the true *Exoprosopæ*. I find the same character in the Asiatic *Exoprosopæ* with four submarginal cells which I am able to compare (*Doryca*, Boisd., *Ænomaus*, Rond.; no *Exoprosopæ* with four submarginal cells are known from the Cape yet). These two characters, taken in conjunction, may justify the establishment of this group, which I have adopted below.

Heteralonia was introduced by Rondani for *Exoprosopa oculata*, Macq. Dipt. Ex. ii. 1, p. 45, from Senegal (not *occulta*, as Rondani has it), merely on the strength of the figure of the wing in Macquart, which shows a supernumerary cross-vein bisecting the second submarginal cell. (Rondani, in consequence of an erroneous interpretation, describes this venation—the fourth vein joining the third, or, in his own terminology, "vena

* A similar proceeding by Rondani in the family Micropezidæ has been noticed by me in the Berl. ent. Zeit. 1882, p. 199.

quarta tertiæ conjuncta ad apicem.”) As I have never seen this species (and neither did Rondani), I cannot decide upon this genus.

Thus of the three genera introduced by Rondani, I adopt only one, and give it a closer definition—*Hyperalonia*, with four submarginal cells and toothless unguis; in other respects like *Exoprosopa*.

I call genuine *Exoprosopæ* those species which have three submarginal cells; the third antennal joint in the shape of an elongate cone, with a more or less long style, separated from the cone by a distinct suture, and ending in a microscopic bristle; a tooth at the base of the unguis, which, in the majority of cases, is large and distinct; and no pulvilli. This definition, as we shall presently see, excludes from the genus *Exoprosopa*, as understood by previous authors, certain species that have three submarginal cells, but are nevertheless much nearer related to *Anthrax* than to real *Exoprosopæ*.

Hyperalonia and *Exoprosopa* have in common the strong posterior legs, contrasting with the small front pair; the latter are remarkable for their smoothness and the absence of the stronger bristles and spinules which occur on the other pairs, especially on the tibiæ. The structure of the front tarsi is peculiar—gradually tapering and beset on both sides with numerous short, delicate hairs; the articulations are indistinct; the unguis small.

If *Hyperalonia* is closely related to *Exoprosopa*, so that both genera might, not unnaturally, remain united as subdivisions of the same genus, there are two other groups of American *Exoprosopæ*, in Macquart's sense, which have very little in common with that genus besides the artificial character of the presence of a third submarginal cell. These species differ from the true *Exoprosopæ*—1, in the shape of the antennæ, the third joint being short, onion-shaped, with a very long style, not bisected by a suture (differing in this from the style of *Argyramæba*): 2, in the absence of a tooth at the base of the unguis: 3, in the more delicate structure of the legs; the difference in size and structure between the front pair and the posterior ones is much less marked; the front legs less smooth than in *Exoprosopa*, and beset with bristles or spinules, besides the microscopic pubescence; the front tarsi do not show the peculiar structure of those of *Exoprosopa*, their joints are more distinctly marked, and their unguis comparatively larger: 4, in the general appearance, the species are smaller than the genuine *Exoprosopæ*, their colouring is different, the cross-bands, spots, &c., common among the latter, are wanting here.

With these characters in common, the two groups just alluded to differ from each other as follows:—

1. Very long proboscis and narrow lips; no pulvilli.

2. Short and retractile proboscis, with fleshy lips; distinct, although small, pulvilli.

1. The first of these subdivisions reproduces some of the characters of the South-African genus *Litorhynchus* as given by Macquart, Dipt. Ex. ii. 1, p. 72 (long proboscis

shape of antennæ and face; whether the ungues of *Litorhynchus* are provided with teeth or not, Macquart does not mention). Loew rejected *Litorhynchus*, and it is not probable that the generic character is applicable to the American species of the group just defined, but a final decision cannot be arrived at without comparing South-African specimens. In the meantime I will call this group STONYX.

2. The second group, if it was not for the presence of three submarginal cells, might be taken for the genus *Hemipenthes*, Loew; it has the same colouring of the body and wings, antennæ of the same structure, and rudimentary pulvilli.

A similar although perhaps not exactly parallel case is afforded by *Anthrax ocyale*, Wiedem. (Nubia), which, according to Loew, is an *Anthrax*, although it has three submarginal cells (*cf.* Loew, Südafr. Dipt. p. 223). This group I will call ISOPENTHES.

Synopsis of the Species of Exoprosopa (in the sense of Macquart) hitherto described from Mexico and Central America (including the New Species described below).

In this synopsis the numbered species are those of which I have specimens before me; the other species are placed in brackets, without numbers. *Anthrax orcus*, Walk. List &c. ii. p. 237, described as being from Mexico, is omitted, because the type in the British Museum is labelled "Para."

I. Four, sometimes even five, submarginal cells. (*Hyperalonia*, Rond.)

II. Three submarginal cells.

A. Third joint of the antennæ elongate-conical, with a more or less long style, separated from the cone by a distinct suture; distinct teeth at the base of the ungues. (*Exoprosopa*, sensu stricto.)

a. The pattern of the wings consisting of more or less distinct brown cross-bands.

1. *caliptera*, Say; 2. *pueblensis*, Jaenn.; 3. *iota*, sp. n.; 4. *rhea**, sp. n.

b. No cross-bands on the wings, but merely a more or less broad brown anterior margin; sometimes with infuscated cross-veins.

a. First posterior cell closed.

5. *limbipennis*, Macq.; 6. *procne*, sp. n.; 7. *anthracoidea*, Jaenn.

β. First posterior cell open †.

8. *rostrifera*, Jaenn.; 9. *filia*, sp. n.; 10. *socia*, sp. n.; 11. *pardus*, sp. n.; [*sordida*, Loew, Cent. viii. p. 21.—Matamoros].

B. Third joint of the antennæ short, onion-shaped, with a very long style, not bisected by a suture; no teeth at the base of the ungues.

a. Proboscis long; no rudimentary pulvilli. (*Stonyx*, gen. nov.)

1. *clotho*, Wiedem.; 2. *clelia*, sp. n.; [*Anthrax lacera*, Wiedem. Auss. zweifl. ii. p. 634.—Mexico].

b. Proboscis short, with fleshy lips; rudimentary pulvilli. (*Isopenthes*, gen. nov.)

1. *blanchardiana*, Jaenn.; 2. *jaennickeana*, sp. n.

* Placed hypothetically in this group, the antennæ of both my specimens being broken.

† This is the general rule; I have seen a specimen of *E. rostrifera* where the first posterior cell was closed on the margin and on one wing only.

EXOPROSOPA
(sensu stricto).

Three submarginal cells; third joint of the antennæ in the shape of an elongated, irregular cone, with a more or less long style, separated from the cone by a distinct suture, and ending in a microscopic bristle; a distinct tooth at the base of the unguis; no pulvilli; strong posterior legs; front legs generally as in *Hyperalonia* (compare below).

The length of the antennal style is variable, and usually in an inverse ratio to the length of the third joint itself: *E. sima*, O. S., has a long third joint with a very short style; *E. socia*, O. S., on the contrary, has the style twice as long as the rather short third joint. There is a South-European species (*E. stupida*, Rossi) which, with all the apparent characters of a true *Exoprosopa*, and even very small, but sharp teeth on the unguis, has no distinct antennal style; the third joint is a long, gradually tapering cone, ending in a microscopic bristle.

The eyes are but moderately approximate on the vertex, and there is in this respect but little difference between the sexes.

The face is generally, but not always, conically projecting; in the group *E. rostrifera*, *E. filia*, and *E. socia* it is merely convex. The length of the proboscis is also variable: sometimes it is withdrawn within the oral opening, sometimes it projects beyond it; it is longer than usual in the above-mentioned group of species (*E. rostrifera* &c.). The structure of the front legs and tarsi is the same as in *Hyperalonia*; the tibiæ are smooth, without spinules; the tarsi have rather indistinct articulations, and are beset on both sides with numerous short, delicate, erect hairs; the unguis are small. But there are exceptions to this structure of the front legs: the three above-mentioned species (*E. rostrifera* &c.) have the front tibiæ beset with spinules, and the unguis larger. I also find both characters in the South-European *E. algira*, Fabr., which, like those species, has a face not conically projecting, but in other respects differs from them.

The tooth at the base of the unguis is in some cases very small, but in all the specimens examined I have found a sharp projection, and not merely an incrassation. On the front unguis, owing to their smallness, the tooth is difficult to perceive, yet I have distinctly seen it in several species. In the male the front tarsi are more tapering towards the tip than in the female.

The generalities which I have given above are the results of the examination of the American species accessible to me, of a few European ones, and of the Australian *E. marginicollis*, Gray, and another species, related to *E. adelaidica*, Macq.

1. **Exoprosopa caliptera.** (Tab. I. fig. 12.)

Anthrax caliptera, Say, Compl. Wr. ii. p. 62.

Exoprosopa caliptera, O. Sacken, Western Dipt. p. 233.

Hab. WESTERN UNITED STATES.—MEXICO, Northern Sonora (*Morrison*).

A single male specimen from Northern Sonora agrees with the descriptions, except

BIOL. CENTR.-AMER., Dipt., November 1886.

that I do not perceive the silvery longitudinal stripes of the abdomen mentioned by me (*l. c.*).

Two specimens from Tehuacan, Mexico (*Sumichrast, coll. Bellardi*), seem likewise to belong here; only one of them, marked as the female (I cannot make out the sex in its present dilapidated condition), has a pair of white spots on each of the segments 5 to 7, forming two converging rows. Thus the abdomen of this specimen answers the description I have given of the abdomen of *E. dorcadion* ('Western Diptera,' p. 232), while the wings answer better the description given there of the wings of *E. caliptera*. In the absence of my original specimens I cannot solve this difficulty, the more so as I did not mention in my description the sex of the specimens I had before me. Was I wrong in separating *E. dorcadion*? and is it merely the female of *E. caliptera*?

2. *Exoprosopa pueblensis*, ♂ ♀.

Exoprosopa pueblensis, Jaennicke, Neue exot. Dipt. p. 34, t. 2. f. 21.

Hab. MEXICO, Tehuacan (*Sumichrast*); GUATEMALA, San Gerónimo (*Champion*).

Two male and two female specimens from Tehuacan, in Bellardi's collection. A specimen from San Gerónimo, Guatemala, has much darker legs. Two smaller specimens (14 millim.), from Ciudad in Durango, Mexico (*Forrer*, 8000 feet altitude), and from Northern Sonora (*Morrison*), represent a closely allied, if not the same species; the brown spot at the proximal end of the second posterior cell is small, and disconnected from the rest of the brown.

E. eremita, O. Sack., West. Dipt. p. 256, from Northern California, must be a closely allied species; in the absence of specimens I cannot say much about it. Judging from the description, it has the proximal end of the marginal cell hyaline, and differently coloured hairs on the body.

E. (Anthrax) ignifer, Walk. List &c. ii. p. 243 (Jamaica), has the same venation and the same distribution of the spots on the wings, but the body and the hairs upon it are more rufous. I am unable to tell whether it is a different species, or merely a local variety.

3. *Exoprosopa iota*, sp. n., ♂ ♀. (Tab. I. fig. 13.)

Pattern of the wings of the type of *E. (Anthrax) fascipennis*, Say, but with the expanded portion of the marginal cell hyaline; an isolated brown spot at the proximal end of the second posterior cell; first posterior cell closed, petiolate.

Length 7-9 millim.

Hab. MEXICO, Tehuacan (*coll. Bellardi*).

The three specimens (♂ ♀) in Prof. Bellardi's collection are in a very indifferent state of preservation and rather abraded; however, the venation and the pattern of the wings render them easily recognizable.

Face conically protruding; face and front black, with appressed, scale-like golden

hairs and an erect black pubescence; proboscis but little, or not, projecting beyond the oral edge. Antennæ dark brown, reddish at the base; third joint of the usual elongated conical shape, with a style less than half its length, and a bristle at the end of the style (the bristle seems to be longer than in the cognate species, but, owing to the dust which covers the specimens, I cannot be very positive about it). The ground-colour of thorax and abdomen is black; the distal half of the scutellum reddish. Round the thorax are the usual tufts of yellowish hairs, and black, rather long, bristles on the præ-alar and post-alar callosities and on the scutellum. On the abdomen the usual whitish cross-band on the second segment; silvery scales on the last two segments in the male, yellowish-white ones (?) in the female; the intermediate segments show traces (rather rubbed off) of black and yellow scale-like hairs, and tufts of black hairs on the sides. Legs brown, more reddish on the tibiæ, beset with yellowish scales. Wings with the first posterior cell closed and petiolate; apex, including the expanded portion of the marginal cell, and the distal ends of the inner submarginal and first posterior cells, hyaline; a brown spot, isolated from the rest of the brown, at the proximal end of the second posterior cell; distal (larger) half of the discal cell, and the third and fourth posterior cells (except the proximal end of the fourth), hyaline; a brown cross-band begins with two brown spots upon the origins of the second and third veins, covers the proximal end of the discal cell and the great cross-vein, and crosses the middle of the anal and axillary cells; root of the wings brown.

4. *Exoprosopa rhea*, sp. n., ♀. (Tab. I. fig. 14.)

Wings black, the apex hyaline, hyaline spots forming two cross-bands, the one nearest the base very narrow; body black, with tufts of bright rufous hair on the sides of the thorax and on the base of the abdomen; the latter bluish.

Length of the body 11–12 millim.

Hab. MEXICO (*Craveri*).

Face and front bluish-black, beset with black hair; antennal scapus black, with black hairs (third joint broken). Thorax black; collar beset with rufous hair, forming a tuft on each side in front of the wings; similar tufts behind the root of the wings and at the base of the abdomen (on the sides of the first and second segments), the rest of the abdominal margin beset with long, black hair, forming a dense fringe round the whole abdomen; surface of the latter bluish-black; small white spots, formed by white scales, on each side of segments 3 to 5, a pair of similar spots in the middle of each of the segments 4 and 5. Halteres brown. Legs brown. Wings black, except the apex, beyond the end of the first vein, and with two cross-bands of hyaline spots arranged as follows:—the *first* narrow, and formed by a series of disconnected spots, one in the proximal half of the first basal cell, a larger one in the second basal cell, and two others not far from the proximal ends of the anal and axillary cells; the *second* consisting of three small spots in the marginal cell, placed near the proximal ends of

the submarginal and first posterior cells, and a larger spot (separated by a broader brown interval from a trapezoidal spot on the posterior margin, which is bisected by the posterior branch of the fourth vein) in the middle of the discal cell. Besides the spots forming the cross-bands, a small spot is visible near the proximal end of the marginal cell, and two, still smaller ones, within the distal ends of the anal and axillary cells. First posterior cell coarctate at the end, but open; the second vein, issuing from the discal cell, runs very obliquely, and ends in the margin very near the first vein (the figure does not render it quite correctly).

Two females, one in Prof. Bellardi's collection, the other in the British Museum. The figure of the wing was drawn from the former, and represents the distal limit of the black, with an indentation that does not exist in the specimen in the British Museum; in the Turin specimen the white abdominal spots are abraded; in both the antennæ are damaged.

5. *Exoprosopa limbipennis*, ♂ ♀.

Exoprosopa limbipennis, Macq. Dipt. Ex. Suppl. i. p. 110, t. 20. f. 3¹.

First posterior cell closed; wings with a brownish tinge, darker along the costa; abdomen with a broad cross-band of whitish-yellow scaly hairs on the second segment, and a narrower cross-band of similar hairs on the fourth segment, the sixth and seventh segments with silvery scales.

Length 15–17 millim.

Hab. MEXICO, Yucatan¹, Ventanas 2000 feet (*Forrer*), Solco? (*coll. Bellardi*).

Face conically protruding; the proboscis projecting a little beyond the oral edge; antennæ dark brown or black, the scapus often reddish, the style at least two thirds the length of the third joint; the dark brown face and front densely clothed with appressed fulvous scaly hairs, and the space between them with short, erect black hairs, which extend over the vertex; occipital orbits with a yellowish or silvery fringe of scaly hairs. Thorax brown, with the usual yellowish-fulvous hairs in front and on the sides, and black macrochætæ on the callosities; the dorsum with shorter, appressed, rather scarce, scaly fulvous hairs, more dense in front of the scutellum; the latter reddish-brown, with black scales at the base and a fringe of fulvous, short, scaly hairs along the posterior margin. Abdomen black, with black, appressed scaly hairs, and tufts of longer black hairs on the sides of the segments, beginning with the posterior margin of the second; the usual yellowish cross-band occupies the proximal half of the second segment, and bears a tuft of pale yellowish hairs at each end; a similar, much narrower, cross-band on the third segment (in most specimens it is abraded, and only a spot of whitish scaly hairs at each end remains visible); a more whitish cross-band on the fourth segment; the sixth and seventh segments in the male are entirely covered with silvery scaly hairs; in the female these hairs are white rather than silvery, and form a cross-band on the sixth segment, the posterior margin of which is black. Halteres with a brown knob. Legs black. Wings subhyaline, with a slight brownish tinge; the costal margin

infuscated, the brown colour limited by the fourth vein before the anterior cross-vein, and filling the marginal cell (except its distal end) encroaches on the inner submarginal, reaching the tip of the first vein; the posterior cross-vein is very slightly clouded; the first posterior cell is closed, its petiole being almost as long as the posterior cross-vein.

I have before me four males and two females from Ventanas, and three specimens from Prof. Bellardi's collection. The cross-band on the second segment in these last-named specimens is broader than in the others.

N.B.—The venter in some specimens has a dense covering of yellowish-white appressed hairs, and longer, erect hairs of the same colour between them; in other specimens the prevailing colour of the hairy covering is black, or at least the black ground-colour is distinctly visible among the scattered whitish hairs. I do not know what to make of these differences.

Macquart's description is rather unmeaning, the "noir bleuâtre" of the abdomen is almost imperceptible; nevertheless the figure he gives of the wings renders the identification almost certain. The *E. argentifasciata*, Macq. Suppl. i. p. 109 (Colombia), also very insufficiently described, seems to be a closely allied species.

6. *Exoprosopa procne*, sp. n., ♀.

Closely allied to *E. limbipennis*, but nevertheless different. The antennal style is, comparatively, a little shorter, that is, a little more than half the length of the third joint; the colour of the body is darker, more decidedly black; the tufts of hair on the sides of the thorax more rufous; the scaly hairs along the lower occipital orbit more golden; the tufts of hair at each end of the yellowish-white cross-band of the second segment are white; the rest of the abdomen is deep black, covered with a black, scaly tomentum; an elongate silvery spot at each end of the anterior margin of the fourth segment; segments 6 and 7 with silvery cross-bands (in the male they are probably altogether silvery); on the venter a silvery spot on the penultimate segment. Wings like those of *E. limbipennis* in coloration and venation, only the second basal cell is a little more brownish.

Length 15 millim.

Hab. GUATEMALA, Coatepeque 1300 feet (*Champion*). A single female.

The most striking difference between *E. procne* and *E. limbipennis* is in the coloration of the abdomen, the fourth segment of which, instead of having a whitish cross-band, shows only beginnings of a silvery one on each side.

7. *Exoprosopa anthracoidea*.

Exoprosopa anthracoidea, Jaennicke, Neue exot. Dipt. p. 32, t. 2. f. 18 (1867).

Exoprosopa trabalis, Loew, Cent. viii. # 20 (1869)¹.

Hab. MEXICO, Jalapa¹.

Loew's description together with Jaennicke's figure will be sufficient for the recognition of this species. I have a specimen before me from Jalapa which I have compared with Loew's type.

The scales of the last abdominal segment, which Loew describes as white (he had

a female), are decidedly silvery in the male. I have also seen four specimens in Professor Bellardi's collection labelled Mexico (*Sumichrast*).

N.B.—Professor Bellardi's collection contains two more species belonging to the division of *Exoprosopa* with a closed and long petiolate first posterior cell, but they are represented by single specimens in a very poor condition:—

1. Specimen without head from Mexico (*Sumichrast*). This has a rather large round brown spot on the bifurcation of the second vein, which spot coalesces with the rather dark brown of the costa; the veins at the base of the third and fourth posterior cells clouded; a broad white cross-band on the second abdominal segment, the seventh also with white hairs; the long hairs on the thorax and at the base of the abdomen more yellow than red; the posterior margins of the abdominal segments with fringes of short, rufous hair, &c. Of the size of the larger specimens of *E. limbipennis*.

2. A single specimen, without locality, 10–11 millim. long; with a broad yellowish-silvery cross-band on the second abdominal segment, a narrower one on the fourth; traces of silvery hairs on the sixth and seventh segments; the petiole of the first posterior cell rather long; the stump within the discal cell; the wings with a pale brownish tinge, the brown band of the costa not very dark; the antennal style rather long, &c.

Among the described South-American species the following seems to belong to this group:—*E. argentifasciata*, Macq. Dipt. Ex. Suppl. i. p. 109 (Colombia).

8. *Exoprosopa rostrifera*, ♂ ♀.

Exoprosopa rostrifera, Jaenicke, Neue exot. Dipt. p. 33, t. 2. f. 19.

Hab. MEXICO, Northern Sonora (*Morrison*), Oaxaca (*Sumichrast*, coll. *Bellardi*).

The description agrees well: the white scaly hairs on the last abdominal segment are almost silvery in some specimens, and much less so in others; white hairs are also visible along the posterior margin of the penultimate, and on the lateral margins of segments 3 to 6. The stump of a vein within the discal cell, which appears (*l. c.*) on the figure, but is not mentioned in the description, is absent in most specimens. The third antennal joint is elongate conical, the style at its end is as long, or longer, than the joint. Length 12–13 millim. Eight males, two females.

N.B.—The broad white cross-band on the second segment, which is not narrowed in the middle, and therefore has nearly parallel sides, renders this species easily recognizable. There is a specimen in the British Museum in which the first posterior cell is closed in one wing, very narrowly open in the other.

9. *Exoprosopa filia*, sp. n., ♂ ♀.

Very like *E. rostrifera*, but certainly different:—1, the proboscis is much shorter, projecting less than the length of the head beyond the oral margin: 2, the size is smaller, 10–11.5 millim.: 3, the wings are comparatively shorter and broader: 4, the cloud on the posterior cross-vein is a little larger, and there is a vestige of a cloud at the proximal end of the third posterior cell, much more distinct than in *E. rostrifera*: 5, the

coloration of the abdomen is different—the cross-band of the second segment is more yellowish and less broad (it occupies about one third of the breadth of the segment in the middle in the male specimen before me; in *E. rostrifera* it is nearly one half); it is distinctly narrower in the middle than on the sides, its posterior margin forming an arc (and not being straight as in *E. rostrifera*); there is another similar whitish-yellow cross-band on the fourth segment, and some whitish scale-like hairs on the seventh segment; the other segments have a black tomentum anteriorly, and brassy-yellow scale-like hairs along the posterior margins: 6, there is a slight difference in the length of the antennal style; it is a little shorter than in *E. rostrifera*, that is, in most specimens the style appears shorter than the third joint, while in *E. rostrifera* it seems, in most specimens, to be longer.

Length 10–11.5 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

I have eleven specimens of both sexes before me, but the surface of most of them is abraded; I drew the description of the abdomen from two tolerably preserved males.

The shortness of the proboscis easily distinguishes this species from *E. rostrifera*. When we examine the proboscis of *E. filia* from the side, we find that the little suture marking the beginning of the labella is before the middle of the proboscis, as it is seen projecting beyond the oral margin; in *E. rostrifera* that suture is far beyond the middle.

10. *Exoprosopa socia*, sp. n., ♀.

Allied to *E. rostrifera* and *E. filia*, especially to the latter. The differences from both are:—1, the conical third antennal joint is but little longer than broad at its base, but the style at its end is twice as long as the joint: 2, the appressed tomentum on the head, the thorax, and the abdomen is more rufous than brassy-yellow; the rufous covering on the abdomen is rather dense; the yellowish cross-band on the second segment has no white or whitish in it; there are no white scales on the last abdominal segments; black erect hairs are interspersed between the rufous appressed scaly hairs on the abdomen, and form inconspicuous tufts on the sides: 3, the brown of the wings has a strong admixture of yellowish-rufous, especially along the costa; the cloud on the great cross-vein is rather large, rounded; the veins are distinctly more slender than in the other two species: 4, legs rufous, the tarsi darker: 5, the proboscis is longer than in *E. filia*, about as long as in *E. rostrifera*; the face convex, but not conical.

Length 11 millim.

Hab. MEXICO, Ciudad in Durango (*Forrer*). A single female.

N.B.—This and the two preceding species may be tabulated as follows:—

- I. Style of the third antennal joint nearly as long as or longer than the joint itself.
- | | |
|--|---------------------|
| The length of the proboscis projecting beyond the oral margin less than the length of the head | <i>filia</i> . |
| The length of the proboscis projecting beyond the oral margin more than the length of the head | <i>rostrifera</i> . |
- II. Style of the third antennal joint twice as long as the comparatively short joint *socia*.

These three species form a natural group, differing from the typical *Exoprosopæ* by their front tibiæ being beset with distinct spinules, and by the ungues of the front tarsi

being comparatively larger. All three have a face which is not conically projecting, and a comparatively long proboscis.

11. ***Exoprosopa pardus***, sp. n., ♂ ♀. (Tab. I. fig. 15.)

Abdomen with alternate cross-bands of whitish, yellow, and black tomentum; wings pale brown between the costa and the fourth vein, as far as the proximal end of the second submarginal cell, the second basal cell subhyaline, the posterior cross-vein distinctly, the cross-vein at the proximal end of the second posterior cell feebly, clouded with brownish.

Length 13–15 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Antennæ black; third joint elongate-conical, the style about half the length of the joint. Face conically protruding, beset with an orichalceous tomentum; proboscis hardly projecting beyond the oral margin. Thorax greyish-black, the collar-like hairs in front and above the root of the wings yellow; the dorsum with a sparse yellow tomentum; scutellum reddish, with yellow scales and black bristles along the edge. Abdomen: the black ground-colour in well-preserved specimens almost concealed under cross-bands of whitish and yellow scaly hairs, disposed as follows:—on the second segment a broad whitish cross-band, the posterior margin of which is yellow; on the third segment a similar cross-band, in which, however, the yellow predominates; the fourth segment, again, is whitish, with only a trace of yellow posteriorly; the fifth and sixth yellow, the seventh white. The posterior margin of all the segments is black, but this black has not always the same breadth: sometimes it forms a distinct crescent on the second and third segments; in other specimens a narrow margin only (the specimen represented on the figure is of the latter class). Venter densely covered with a white tomentum. Legs black. Wings pale brown between the fourth vein and the costa, as far as the tip of the first vein and the proximal end of the second submarginal cell; the root is brown within the basal cross-veins; the second basal and the whole discal cells subhyaline; proximal ends of the third and fourth posterior cells with dark brown clouds; the cross-vein at the proximal end of the second posterior cell slightly clouded. Two males and five females.

N.B.—A specimen from the same locality (a female) is larger, about 17 millim.; the proboscis projects about 1.5 millim. beyond the oral margin; the usual tufts of black hair on the sides of the segments are more conspicuous; the scaly hairs on the sixth segment are more white; the style of the third antennal joint is a little longer. I have little doubt that it is the same species. It is singular that this specimen has small, but distinct, spinules on the front tibiæ, while I do not see such spinules in the other specimens.

The group of *Exoprosopæ* with an open first posterior cell, a brown antero-proximal portion of the wings, and sometimes with clouded cross-veins, is numerous represented in Mexico and the adjacent regions of the United States; but the species are rather

difficult to distinguish. Many species belonging here have been described before, and would hardly be recognizable without the comparison of typical specimens. A large material brought together from an extensive territory would enable one to draw comparative descriptions, which alone would be recognizable. I therefore abstain from describing some species of this group which I find among my material or in Professor Bellardi's collection.

HYPERALONIA.

Hyperalonia, Rondani, Archivio per la Zool. Modena, iii. p. 1 (1864).

Four submarginal cells; no teeth at the base of the unguis; no pulvilli; strong posterior legs; small bristleless front tibiae, with indistinctly marked joints of the tarsi and minute unguis; the front tarsi have no stronger bristles, but are provided on both sides with delicate, erect hairs; the third antennal joint in the shape of an elongate cone, separated by a distinct suture from a style nearly as long as the cone, a minute appendage at the tip of the style; the face but moderately projecting.

All the *Hyperaloniae* I have had occasion to examine (from the warmer regions of America and Asia; I have seen no others) partake of the above characters. The genus is very closely allied to *Exoprosopa*. (Compare the introductory paragraph to that genus, *ante* p. 81.)

The species described below form two natural groups:—

A. Abdomen with a white cross-band on the second segment, but without distinctly marked white spots.

1. *albiventris*, Macq. (v. d. Wulp); 2. *pilatei*, Macq.; 3. *dido*, sp. n.

B. Abdomen with distinctly marked white spots on the sides.

4. *proserpina*, Wiedem.; 5. *latreillei*, Wiedem.; 6. *kaupi*, Jaenn.

1. *Hyperalonia albiventris*.

(?) *Exoprosopa albiventris*, Macq. Dipt. Exot. Suppl. iii. p. 33, t. 3. f. 8¹.

Exoprosopa albiventris, Van der Wulp, Tijdschr. &c. xxiv. p. 164, t. 15. f. 11².

Anthrax hela, Erichs., in Schomburgk's Reise in Brit. Guiana, iii. p. 608³.

Four submarginal cells; wings greyish-hyaline, with brown spots on most of the cross-veins; abdomen with a broad white cross-band on the second segment, and with silvery scales towards the tip.

Length 15–18 millim.

Hab. MEXICO, Northern Sonora (*Morrison*); GUATEMALA, Teleman (*Champion*).—VENEZUELA²; GUIANA³; BRAZIL¹, Rio Negro¹.

Macquart's description¹ is unmeaning, and I take that of Van der Wulp² as a basis of comparison.

1. A female from Teleman, Vera Paz, Guatemala, agrees with the description; but the spots on the wings are smaller, and some of the shadows, represented on the figure, are wanting; the anterior cross-vein corresponds exactly to the bifurcation of the second and third veins; some of the veins are less wavy. The long hairs on the thorax are

BIOL. CENTR.-AMER., Dipt., November 1886.

rufous, rather than golden-yellow; the abdomen (somewhat abraded) has scales of an impure whitish colour, rather than silvery; the white cross-band is on the second, not on the first segment (which I suppose is a *lapsus calami* in the letterpress?).

2. Two (much better preserved) males from Northern Sonora have the spots on the wings as large as in Van der Wulp's figure, but in both there is a spot in the anal cell, connected with that at the distal end of the fourth posterior cell: one of the specimens only has a dot on the vein separating the second and third posterior cells; the shadows on the longitudinal veins between the submarginal cells, represented on the figure, are hardly visible. The ground-colour of the wing is less greyish. The second abdominal segment bears a broad white cross-band (a little broader on the sides than in the middle) occupying the whole segment, except a margin posteriorly; segments 5, 6, and 7 have a dense covering of white, almost silvery, scales; similar scales on the sides (in one of the specimens even in the middle) of the fourth segment; the interval between the white cross-band of the second and the white covering of the apical segments (including the posterior margin of the second segment) is occupied by yellowish scales; all the segments have a covering of black, semierect hairs, especially visible along the posterior margins, and forming tufts on the lateral margins. This black pile is distinctly shorter here than in the Guatemalan specimen. The venter is pale reddish, clothed with dense whitish tomentum, and with pale yellowish erect, longer hairs, arranged in rows, which appear distinctly from a side view.

In the three specimens the antennal style is about two thirds the length of the third joint.

The female from Guatemala, on account of its greyish wings, with an unspotted anal cell, is nearer to Van der Wulp's specimens (Venezuela) than the two males from Sonora. *Anthrax hela*, Erichs. (Guiana), the type of which I have compared in Berlin with one of our specimens from Sonora, also differs from them in the absence of the brown spot across the anal cell; nevertheless it struck me as being the same species. Erichson's description is very short and even misleading, and cannot have any claim to priority. If all the above-mentioned specimens belong to the same species (which I deem very probable) it should be called *H. albiventris* (Macq. ?), Van der Wulp. Whether the synonymy from Macquart holds good or not is an indifferent matter, because there is an earlier *Exopr. albiventris*, Macquart, Dipt. Exot. ii. 1, p. 39; this is an *Exoprosopa* and not a *Hyperalonia*, and, moreover, is a synonym of *E. germari*, Wied. (comp. Schiner, Fauna &c. i. p. 56). *Hyperalonia albiventris*, Van der Wulp, represented by a good description and a figure, may keep its name.

2. *Hyperalonia pilatei*. (Tab. I. fig. 16, var.)

Exoprosopa pilatei, Macq. Dipt. Exot. Suppl. i. p. 110, t. 20. f. 2¹.

Four submarginal cells; wings brown, except the apex and the posterior margin, often (but not always) pale brown spots along the latter; abdomen with a narrow white cross-band on the second segment, and with silvery scales towards the tip, but without well-marked white or silvery spots.

Length 16 millim.

Hab. MEXICO (*Sumichrast, de Saussure*), Tres Marias Islands (*Forrer*), Merida¹ in Yucatan.

Antennæ dark brown, the basal joint reddish; style of the third joint nearly as long as the joint itself. Head brown, with reddish appressed scales and black erect pile on the front; face and environs of the mouth more reddish; proboscis not protruding. Thorax dark brown, anteriorly with a collar-like fringe of dark rufous hairs, hedged in posteriorly by a similar fringe of black hairs; tufts of rufous hairs behind and below the humeri; black hairs on the humeri, as well as below, in front of the front coxæ; a bright rufous tuft between the tegula and the haltere; similar tufts on the sides of the abdomen, on segments 1 and 2. Abdomen: first segment black; second anteriorly with a narrow cross-band of yellowish-white scales, expanded on the sides; the ground-colour of the following segments is reddish-brown, darker in the middle, but more or less concealed under a dense covering of scales and hairs; the scales become more distinctly white towards the end of the abdomen, especially on the last two segments; the hairs are black, erect, rather uniformly spread over the whole surface, forming a distinct black fringe on the sides, beyond the tufts of rufous hair already mentioned. Venter brown on the three basal segments, the remainder red, with appressed yellowish-white scales. Legs: front pair dark brown; tibiæ of the middle pair, and femora and tibiæ of the hind pair, more rufous, partly on account of the appressed rufous scales which cover them. On the wings the brown colour reaches the tip of the costal cell, slightly encroaches upon the proximal ends of the second and third submarginal cells, thus leaving the whole apex hyaline; a large hyaline spot in the distal part of the discal cells, coalescing with the hyaline posterior margin, produces a deep excision in the brown (see Macquart's figure); the posterior margin, which is hyaline in Macquart's type, is often spotted with brown as follows—a large spot on the coarctate portion of the first posterior cell, and paler ones along the margin in the third and fourth posterior cells and at the end of the anal cell (some of them sometimes wanting); a subpellucid small spot near the proximal end of the discal cell, and another in the distal portion of the first submarginal, seem to be more constant.

I had for comparison three specimens, apparently males, from Prof. Bellardi's collection; and a single male from the Tres Marias Islands, Western Mexico.

N.B.—In Macquart's figure the tip of the costal cell is represented as hyaline; this is not quite correct, as it is always more or less encroached upon by the brown.

3. *Hyperalonia dido*, sp. n., ♂ ♀. (Tab. I. fig. 17.)

Four submarginal cells; wings hyaline with a brown basis, an oblique brown cross-band across the proximal end of the discal cell, and a second one across the middle of the marginal cell, two brown dots on the margin of the wing; abdomen with a broad white cross-band on the second segment, and with silvery scales towards the tip, but without well-marked white or silvery spots.

Length 19 millim.

Hab. MEXICO (*Truqui, Sumichrast, coll. Bellardi*), Tres Marias Islands (*Forrer*).

Head and thorax very much like *H. pilatei*, but the rufous colour more prevalent; the collar-like fringe of rufous hair on the anterior part of the thorax is more red, and is not hedged in by a fringe of black hair posteriorly; the black hairs on the humeri and in front of the anterior coxæ are less apparent. Antennal style equal to at least two thirds of the third joint. The brown surface of the thorax shows a pair of darker stripes; the reddish-brown minute semi-erect hairs covering it are rather dense, and the black erect pubescence short and inconspicuous. The white stripe on the second segment is broader than in *H. pilatei*, and occupies nearly the whole segment, except its hind margin, which bears a fringe of black hair; on the three or four last segments white scales predominate; the surface of the abdomen, beginning with the third segment, is covered with semi-erect black pile, which is shorter and much less conspicuous than in *H. pilatei*; the sides of the abdomen show rufous tufts at the base; white tufts on the second segment, and a black fringe, mixed with some white and reddish hairs, on the following segments. Venter pale brownish-red, clothed with pale red and whitish hairs. Legs reddish-brown, with red scales and black bristles; tarsi darker. Wings hyaline, spotted with brown; basal portion brown, which colour reaches a little beyond an ideal line connecting the humeral cross-vein with the axillary excision; a brown spot at the origin of the second vein, and usually another one at the proximal end of the discal cell; a cross-band beginning in the distal end of the anal cell reaches across the discal cell to the first vein, where it coalesces with the brown of the costal cells; a second cross-band occupies the middle of the marginal cell, the distal end of the first submarginal cell, and the proximal ends of the second and third submarginal cells, and coalesces more or less with a brown spot of variable size at the end of the first posterior cell; there is a brown dot at the tip of the second vein, and another one at the tip of the vein between the second and third posterior cells; second costal cell (that is, the interval between the humeral cross-vein, the costa, and the auxiliary vein) subhyaline; third costal cell (interval between the auxiliary and the first veins) infuscated.

I had for comparison three specimens from the collection of Prof. Bellardi, and one from Tres Marias Islands.

4. *Hyperalonia proserpina*.

Anthrax proserpina, Wiedem. Aussereur. zweifl. Ins. i. p. 257.

Exoprosopa proserpina, Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 117; Arribáizaga, El Naturalista Argentino, i. p. 266; Van der Wulp, Tijdschr. &c. xxiv. p. 165, t. 15. f. 12¹.

Anthrax klugii, Wiedem. Aussereur. zweifl. Ins. ii. p. 632 (teste Schiner).

Anthrax rufescens, Walker, List &c. iii. p. 238 (sine patria).

Hab. GUATEMALA, San Gerónimo, El Reposo (*Champion*); COSTA RICA, Cache (*Rogers*).
—SOUTH AMERICA, as far as the Argentine Republic¹.

My specimens, four females, have the brown spot at the tip of the second vein, which, according to Schiner, was wanting in most of his specimens. They differ from

Van der Wulp's figure in the extent of the brown within the third posterior cell, which, besides the base, occupies only a small space in the distal corner of that cell; the hind margin, within the fourth posterior cell, has no pale brown border, nor is the vein crossing the hyaline space clouded with brown, but there is a small cloud at the tip of that vein. As Macquart observed, this species seems to be subject to variation. It seems to be rather common in all parts of South America, down to Buenos Ayres, and even further south.

Anthrax rufescens, Walk., is an immature rubbed specimen of *H. proserpina*; I have seen the type in the British Museum.

5. **Hyperalonia latreillei**, ♂ ♀. (Tab. I. fig. 18, ♂; Tab. II. fig. 1, ♀.)

Anthrax latreillei, Wiedem. Aussereur. zweifl. Ins. ii. p. 633¹.

Four submarginal cells; thorax and abdomen with rufous hairs along the margins; abdomen with white spots on the sides of segments 3, 6, 7 (♂) and 6, 7 (♀); wings brown, with a large subhyaline space along the posterior margin and a subhyaline apex; in the male this apex is crossed by thickly clouded veins. Length 18-19 millim.

Hab. MEXICO¹ (*coll. Bellardi*); GUATEMALA, Cubilguitz (*Champion*); PANAMA, Bugaba (*Champion*).

Male. Antennal style about two thirds the length of the third joint; base of the first and second joints reddish. Head brown, more reddish about the mouth, beset on the front with black, erect pile. Thorax greyish-brown or black, beset with short black erect pile, especially in front; collar with a fringe of rufous pile, which reaches over the humeri to the root of the wings; a tuft of similar rufous hairs between the root of the wings and the base of the abdomen, continued, gradually attenuating, along the edge of the abdomen nearly to its end. Scutellum reddish-brown. Upper surface of the abdomen black, but, at the anterior margins of the segments, with traces of narrow cross-bands formed by rufous, hair-like scales; an uninterrupted cross-band of that kind on the second segment, expanding towards the lateral margins; on the two following segments the cross-band is dissolved into four spots; large spots of white scales on each side of the third, sixth, and seventh segments. Venter black, with rufous pile. Legs brownish-black, partly rufous, with yellowish-red scales and black bristles. Wings brown, slightly rufescent at the base; subhyaline spaces within the second, third, and fourth submarginal cells form an apical subhyaline spot, trisected by the more or less clouded veins; a small subhyaline spot within the expanded portion of the marginal cell; a still smaller one in the distal half of the first submarginal; a large one in the distal half of the discal cell coalesces more or less with the subhyaline disc of the third posterior cell; the latter again is separated by an infuscated vein from the hyaline disc of the fourth posterior cell; the subhyaline distal half of the axillary cell coalesces with an oval spot in the distal half of the anal one; a small subhyaline spot in contact with the proximal end of the discal cell.

Female. It differs from the male as follows:—

1. There are no white lateral spots on the third abdominal segment; the rufous hair along the sides of the abdomen encroaches upon the spaces occupied in the male by those white spots; there is no rufous pile on the venter, but traces of white scaly hairs on the last ventral segment.

2. The legs are altogether black.

3. The apex of the wings is hyaline, in other words the subhyaline spaces within the apical cells (including the expanded end of the marginal) are not separated here by thickly clouded veins; there is no hyaline spot within the anal cell; that at the end of the axillary cell is small.

N.B.—I have seen Wiedemann's type specimen in Berlin, and the identification is certain, the discrepancies of the description notwithstanding. The pattern of the wings in this species is variable, especially in the intensity of the clouds on the veins near the apex.

6. *Hyperalonia kaupi*.

Exoprosopa kaupi, Jaenicke, Neue exot. Dipt. p. 32, t. 2. f. 17.

Hab. MEXICO, Tehuacan (*Sumichrast*).

A specimen from the above locality in Prof. Bellardi's collection, and another (♀) in the British Museum, agree with the description. The species differs from its congeners in having *five* submarginal cells.

STONYX, gen. nov.

Three submarginal cells; third joint of the antennæ short, onion-shaped, with a very long style, not bisected by a suture, and ending in a minute appendage, the first joint very short. Legs delicate; the difference in size and strength between the front and hind pairs less striking than in *Exoprosopa*; front tibiæ beset with spinules; front tarsi of the ordinary structure, that is, with distinctly marked joints, and a brush of microscopic bristles on the underside of the first joint; front ungues not unusually small; no tooth at the base of the ungues; no pulvilli. Proboscis projecting considerably beyond the oral margin (in the species before me the length of the head or more); lips narrow. The interval between the eyes, on the vertex, comparatively broad in both sexes. The male forceps withdrawn within the body, in the usual, unsymmetrical position. The ovipositor of the female has the usual coronet of spinules, but very small, usually withdrawn, and difficult to perceive.

The three known American species I refer to this genus are clothed with a dense reddish-brown silky tomentum, not variegated by cross-bands or spots, like most *Exoprosopæ*; they have the wings brown, variegated with hyaline.

That these species cannot remain in the genus *Exoprosopa* is evident; but whether the definition of the genus *Litorhynchus*, introduced by Macquart for certain African species, should be applied to them cannot be settled without comparison of specimens. The fact that Loew (*Südafr. Dipt.* p. 223) rejects the genus seems to prove that it is not identical with *Stonyx*, because he would not have rejected the latter. (Compare

above, *ante* p. 81, the introduction to the genus *Exoprosopa*.) Moreover, the character of the colouring and hairy covering of the two species of *Litorhynchus*, described by Macquart, is quite different from those of *Stonyx*.

1. **Stonyx clotho**, ♂ ♀. (Tab. II. fig. 2.)

Anthrax clotho, Wiedem. Aussereur. zweifl. Ins. ii. p. 635.

Hab. MEXICO, Orizaba, Tuxpango (*Sumichrast*).

I reproduce Wiedemann's description, which is quite recognizable; the state of preservation of the specimens before me does not enable me to prepare a more complete one:—

“Nigra; alis nigris, excisura magna marginis interni, duobus punctis notata, altera minore apicis maculaque ad marginem externum limpidis. Long. corp. 7 millim.

“Antennæ black, third joint globose, with a setiform style; proboscis rather long, projecting. Face in part rufous. Front with a rufous cross-band in the middle. Thorax black, with black pile, a rufous collar, but with black hairs above it. Abdomen with a brownish appressed pubescence and black hairs, which form distinct tufts on the sides; I do not perceive any white spots. Wings brownish-black, on the distal half of the posterior margin a broad, triangular hyaline excision, marked with two distinct black dots; in front of this excision, near the anterior margin, there is a large hyaline spot, which touches the end of the costal cell; a narrow brown band separates this spot from the hyaline excision; immediately behind the hyaline spot there is a rounded spot of darker, blackish hue, which covers the bifurcation of the third vein; beyond the large excision there is a smaller one, truncate at the tip, which occupies the posterior margin before the apex; several small hyaline drops in the brown near the apex; in the dark portions of the proximal half of the wing some small, pale yellowish marks.—Mexico (Berlin Museum).”

I have seven (♂ ♀) specimens before me measuring 7–11 millim., all from Prof. Bellardi's collection. The pattern of the wings is variable; sometimes there is a brown spot on the bifurcation of the second vein; the hyaline drops in the brown near the apex are very inconstant in their number and position; the intensity of the darker portions of the brown is also variable.

2. **Stonyx clelia**, sp. n., ♂ ♀. (Tab. II. fig. 3.)

Head brown, face and cheeks more reddish; the face and anterior part of the front covered with rufous (almost copper-coloured) scales; the short erect pile on the front a little longer and more dense on its middle portion, where the ground-colour is black; vertex dark, greyish-pollinose on both sides of the ocelli. Third antennal joint broader than long, short bulbiform, the style 4–5 times longer than the joint, with a minute bristle at the tip. The brown thorax densely beset in front, on the sides and below, with long brownish-rufous hair, between which, on the humeri, some black hairs are visible; a paler tuft under the insertion of the wings; the disc of the mesonotum and the scutellum covered with scattered, appressed, scale-like, rufous copper-coloured hairs, among which a delicate pubescence of erect black pile is

visible. The brown abdomen densely clothed with rufous appressed scale-like hairs concealing the ground-colour; in the middle of each segment a row of long erect, black hairs is visible (some specimens show traces of transverse rows of yellowish-white hairs); the sides have a fringe of rufous hairs, longer towards the base, and within which, on segments 2-5, tufts of black hair are visible; venter with rufous hair. Legs rufous, the tips of the tarsi black; bristles black; femora and tibiae covered with scales, which in a certain light appear yellowish. The brown portion of the wings variegated with yellowish-brown, ill-defined spots, especially on the humeral and the other cross-veins, near the origin of the second vein, at the distal end of the second basal cell, &c.; the origin of the third vein is covered by a dark brown spot, on both sides of which, within the marginal and submarginal cells, there are lighter shades of brownish; the hyaline spots are as follows—a small double one across the anal and axillary cells, a large triangle on the posterior margin (the apex of which crosses the discal cell, but does not reach beyond it), a spot across the distal portion of the inner submarginal cell varying in size and sometimes disappearing altogether; the brown pattern of the apex of the wing is very variable—generally, the brown fills out the distal end of the marginal cell, except an irregular hyaline spot across it, between the tips of the first vein and the second; the second submarginal cell is likewise brown, with a hyaline space on its distal side; but in some cases the hyaline space of the marginal cell communicates across the second submarginal with the hyaline of the posterior side of the wing (the figure represents this variety); adventitious spots sometimes occur—for instance, in one specimen there is a double spot at the end of the first posterior cell.

Length 8-12 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Twenty specimens of both sexes.

N.B.—*Anthrax lacera*, Wiedem. Auss. zweifl. Ins. ii. p. 634 (Mexico; Berlin Mus.), is very like *S. clelia*, but a distinct species; the difference in the coloration of the abdomen is especially striking.

ISOPENTHES, gen. nov.

Three submarginal cells; third joint of the antennæ short, onion-shaped, with a very long style, not bisected by a suture; no tooth at the base of the unguis; distinct, although very small, pulvilli; proboscis short, retractile, with fleshy lips. Legs delicate; front legs beset with spinules; joints of the front tarsi distinctly marked; front unguis not unusually small.

The two species described below show, in their structure and colouring, a most remarkable resemblance to the genus *Hemipenthes*, Loew, which I have included in the group *Anthrax*, sensu stricto; the presence of *three* submarginal cells seems to be the only difference. (Compare this group.)

1. *Isopenthes blanchardiana*, ♂ ♀.

Exoprosopa blanchardiana, Jaennicke, Neue exot. Dipt. p. 33, t. 2. f. 20¹.

Body black, with some yellowish pile on each side; wings dark brown, except the margin between the apex and the fourth posterior cell, only the end of the first posterior cell (about one fifth of its length) remains hyaline.

Length 8-10 millim.

Hab. MEXICO¹, Northern Sonora (*Morrison*), Oaxaca (*coll. Bellardi*).

Five specimens (♂ ♀) from Northern Sonora enable me to complete the description of the body, which Jaennicke drew from abraded specimens. The prevailing colour of the body is black; the usual collar in front, as well as the long hair on the

sides of the thorax and of the abdomen, yellowish, more or less mixed with black hair; more distinct tufts of black hair appear on the sides of the abdomen at the end of the first segment, and especially on the sides of the distal half, where the black hair decidedly prevails over the yellow, and forms a conspicuous fringe. The surface of the thorax and abdomen shows (under the magnifying-glass) a scattered, appressed scale-like tomentum of a coppery-red colour, not dense enough to cover up the ground-colour; the long, soft, erect hair upon the abdomen is blackish, but shows in a certain light whitish reflections. Venter greyish, with hair of the same colour, or more yellowish. Head black, with short, erect, black pile; a thin covering of scale-like golden hairs on the face and on the occiput; on the front the scales are more coppery-red and less numerous. Proboscis withdrawn within the oral opening. Antennæ with the third joint short bulbiform, with a style three or four times the length of the joint, ending in a minute bristle. Legs brownish-yellow, covered with yellowish scales, and beset with black bristles; tarsi darker. The brown colour on the wings, whether seen in a light transmitted through it or reflected from its surface, appears uneven, and shows, in the former case, numerous transverse streaks of a slightly paler shade, rather evenly scattered between the veins, over the whole surface; when a strong light is reflected from the surface these paler spots show a golden sericeous reflection; the paler spots on the anterior and posterior cross-veins, and near the origin of the second vein, are very little apparent.

In my specimens the encroachment of the brown upon the third submarginal (next to the first posterior) cell is almost imperceptible, or none at all; in the six specimens from Oaxaca, in Prof. Bellardi's collection, this encroachment is greater and more in conformity with Jaennicke's figure.

2. *Isopenthes jaennickeana*, sp. n., ♂ ♀. (Tab. II. fig. 4.)

Body black; a stripe of whitish pile on each side of the thorax; wings dark brown, except the margin between the apex and the tip of the axillary cell, the distal half of the first posterior cell remains hyaline.

Length 8-11 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Exceedingly like *I. blanchardiana*, but easily distinguished by the indicated difference in the coloration of the wings and by the distinct stripe of whitish pile on each side of the thorax. The scale-like, scattered, appressed, coppery-red tomentum on the thorax and abdomen mentioned in the description of *I. blanchardiana* is very inconspicuous here, though some traces of it are perceptible on the thorax. The boundary of the dark colour of the wings shows the following differences:—it does not encroach upon the third submarginal cell; the hyaline spot in the expanded portion of the marginal cell is slightly larger; likewise the hyaline space at the end of the first (or inner) submarginal cell; the distal half of the first posterior cell is hyaline; within the fourth posterior cell the black does not reach the margin of the wing.—Twenty-five specimens (♂ ♀).

BIOL. CENTR.-AMER., Dipt., *November* 1886.

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N.B.—About the remarkable resemblance between this species and *Anthrax sinuosa* see the latter species.

DIPALTA.

Dipalta, O. Sacken, Western Diptera, p. 236 (1877).

“Differs from *Exoprosopa* in the course of the second vein, which is strongly contorted, in the shape of a recumbent S, near its point of contact with the cross-vein which separates the first submarginal cell from the second.

“A still more important difference lies in the structure of the antennæ, the third joint of which does not bear the terminal style so apparent in *Exoprosopa*, and is more like that of the genus *Anthrax*. Examined attentively, that joint shows, on its incrassate, basal part, a more or less distinct transverse suture, which also exists in *Anthrax*, and may indicate that the third joint is very much shortened here and coalescent with the style, their suture being very near the base of the joint. The joint is onion-shaped at the base, with a slender, gently tapering, almost linear, prolongation, ending in a point. I do not see any bristle at the end. The body is more slender than in *Exoprosopa*, and the hairy covering of a more uniform colour.

“*Diplocampta*, Schiner (Reise d. Novara, p. 119, t. 2. f. 9), from Chili, resembles *Dipalta* in the curvature of the second vein; nevertheless, it is evidently different; the abdomen is not longer than the thorax, and narrower, being gradually attenuated posteriorly; the structure of the antennæ is different; the species is small ($1\frac{1}{2}$ to 2 lines long), with nearly hyaline wings; the position of the cross-vein between the second and third veins is different.”—*Western Diptera*, l. c.

To this I may add that there are no pulvilli, and that the base of the unguis shows an incrassation, but no tooth.

1. *Dipalta serpentina*.

Dipalta serpentina, O. Sack. Western Dipt. p. 236¹.

Hab. UNITED STATES, California, Colorado, Texas¹.—MEXICO (*Sumichrast, in coll. Bellardi*). Two specimens.

ARGYRAMŒBA.

Argyramœba, Schiner, Wiener ent. Monatschr. iv. p. 51 (1860).

Schiner established this genus on the following characters:—“A pencil of hairs at the tip of the antennæ; distinct pulvilli; the presence of a stump of a vein on the fork of the third vein, and on the knee-shaped curvature of the second.” The last character is very generally, although not always, present; in some American species (*A. georgica*, Macq., *A. acroleuca*, Wiedem., &c.) either one of these stumps or often both are wanting. To these characters may be added:—1. The structure of the male forceps, placed symmetrically with regard to the abdomen (and not unsymmetrically as in *Exoprosopa* and

Anthrax); it is more protruding, sometimes quite large, and hanging outside of the abdomen; its structure is for this reason more apparent, and the ascertaining of the sex of a specimen more easy here than in the other genera. 2. The structure of the ovipositor of the female, the orifice of which is protected by those silky converging fibres that distinguish the ovipositors of *Lomatia*, *Bombylius*, &c. 3. The shape of the antennal style, which is bisected by a distinct suture; this character, as I will presently show, is perhaps the most important distinctive mark of the genus. 4. The shape of the front legs; the tibiæ beset with spinules (not smooth as in most species of *Exoprosopa*); the tarsi with distinct joints, beset with spinules at the tip; unguis comparatively large (in *Exoprosopa* the joints are indistinct, the unguis very small, &c.); in the male the front tarsi are generally longer and more slender than in the female. 5. The face is short, not protruding, rather withdrawn; the proboscis withdrawn within the mouth, with spongy lips.

The basal joints of the antennæ are very short. The third joint has in most cases the shape of a short cone, or of a flattened onion, prolonged into a more or less long slender style; this style has a distinct suture in the middle, and the relative length of the two portions of the style affords in some cases a useful specific character. Sometimes the stout basal portion of the third joint is more elongate, more gradually attenuate, with a short pencil-bearing style at the end, thus showing that the portion of the style before the suture, in the ordinary *Argyramœbæ*, is nothing but a portion of the third joint, and that the style beyond the suture alone is homologous to the style of *Exoprosopa* (compare the antennæ of *A. hetrusca* and of *A. cephus*, described by me in the 'Western Diptera,' p. 242; I have no specimens of this latter species now before me). This structure, the bisection of the antennal style, is perhaps the most important character of the genus. Schiner, who made a very happy hit in introducing the genus *Argyramœba*, overlooked it, and hence did not fully grasp the limits of his own genus. This is proved by the passage in 'Fauna Austr. Dipt.' i. p. 50, footnote, "that if subsequent investigations revealed the presence of a pencil of hairs at the end of the antennæ of *Anthrax velutina* it should be transferred to the genus *Argyramœba*." *Anthrax velutina* has an undivided, filiform style; the front legs and the structure of both male and female genitals different from those of *Argyramœba*; it belongs to the subgenus *Anthrax*, within the definition adopted by me in the present work.

The præ-alar hook peculiar to the 'Anthracina' exists here too, but is rather small. The unguis are comparatively large, curved, without tooth at the base; the pulvilli large.

The prevailing colour of the body is more or less black, often with white spots on the abdomen; the male in some species has the last segments of the abdomen silvery, while the female is altogether black. The wings are variegated with black in different ways; often the antero-proximal portion is deep black, with a distinct boundary separating it from the postero-distal portion, which is pure hyaline. It is worthy of notice

that in such *Argyramæbæ* the intensity of the black on the wings is rather uniform, while in the species of *Anthrax* of a similar pattern the black on the antero-proximal half of the wing is more or less spotted with paler shades on the cross-veins. The wings of the European *A. heirusca* are altogether without black spots. The great resemblance between *Argyramæbæ* from distant parts of the world is remarkable.

The larvæ of *Argyramæba*, as far as known, prey upon the brood in the nests of Hymenoptera (*cf.* 'Western Diptera,' p. 243). Schiner's statement ('Fauna,' i. p. 52) that they are parasites in the pupæ of Lepidoptera is erroneous. In the 'Western Diptera' I have given a tabular arrangement of the species from the United States. The species mentioned below may be tabulated as follows:—

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|---|--|
| Third posterior cell bisected by a cross-vein | 1. <i>simson</i> , Fabr. (?) |
| Third posterior cell not bisected. | |
| Antero-proximal portion of the wings uniformly deep black,
the postero-distal portion hyaline | 2. <i>acroleuca</i> , Wiedem.
3. sp.?
4. <i>analís</i> , Say (?) |
| Antero-proximal portion of the wings not uniformly deep
black, nor the postero-distal portion uniformly hyaline. | |
| Costal cell checkered with black and hyaline | 5. <i>ædipus</i> , Fabr. |
| Costal cell not checkered. | |
| A stump of a vein on each of the two sinuosities of
the anterior branch of the third vein | 6. <i>pluto</i> , Wiedem.
7. <i>seriepunctata</i> , sp. n. |
| A stump of a vein on the proximal sinusity only,
or no stump at all | 8. <i>daphne</i> , sp. n.
9. <i>fur</i> , O. S. |

1. *Argyramæba simson*.

Anthrax simson (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 259, t. 3. f. 2; Macq. Dipt. Exot. ii. 1, p. 59, t. 16. f. 2.

Anthrax scripta, Say, Compl. Wr. ii. p. 59.

Nemotelus tigrinus, de Geer, vi. t. 29. f. 11 [teste Wiedem.].

Hab. UNITED STATES.—MEXICO (?).—COLOMBIA (teste Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 120).

I refer to this species, but with a doubt, two specimens from Jalapa, Mexico (*Höge*), and two others, in Prof. Bellardi's collection, from Mexico (*Sallé*). They are smaller than the average specimens from the United States; the pattern of the wings differs in having the vein separating the discal cell from the third posterior cell not clouded with brown, except at both ends; the same is the case with the portions of the fourth vein separating the discal and the second posterior cells from the first posterior; they are not clouded, except at both ends. Is it a different species? The imperfect preservation of the bodies does not allow a close comparison.

A. simson in the United States is said to be a parasite in the nests of *Xylocopa virginica*.

2. *Argyramœba acroleuca*.

Anthrax acroleuca, Wiedem. Aussereur. zweifl. Ins. i. p. 311¹.

Anthrax gideon, Macq. (nec Fabr.) Dipt. Exot. i. 1, p. 64, t. 20. f. 11 (♀); Schiner (nec Fabr.), Reise d. Novara, Zool. iii. Abth. i. p. 122².

Hab. GUATEMALA, San Gerónimo (*Champion*).—SOUTH AMERICA^{1 2}.

There is no doubt, I think, that the species provisionally named by Wiedemann *A. acroleuca*, upon a specimen in the Berlin Museum, is different from *A. gideon*, Fabr. I have a male and two females from San Gerónimo, Guatemala; the male has the end of the wings chalky-white, as described by Wiedemann, the female not; the abdomen of both sexes and the hairs upon it are altogether black. My specimens differ, however, from the type, which I saw in Berlin, in having the boundary of the black across the discal and the fourth posterior cells straight, and not concave, as represented in Macquart's figure. Both Macquart's and Schiner's specimens belong to *A. acroleuca*. I do not understand what Schiner means when he says that the present species, with *A. propinqua*, Schin., and *A. luctuosa*, Macq., form a separate group, distinguished by the position of the small cross-vein; I do not perceive any such peculiarity in my specimens. The suture on the antennal style is remarkably distinct in this species, and the distal portion of the style cut off by it is much shorter than half the proximal portion. There is no stump of a vein on the knee of the second vein; that on the fork small.

3. *Argyramœba* —?

Hab. GUATEMALA, El Tumbador 2500 feet (*Champion*).

I have a single specimen, which is exceedingly like *A. acroleuca* in general appearance, shape, and colour, but it has long white hairs on the sides of the proximal half of the abdomen; the black on the wings encroaches slightly on the second submarginal cell and, within the first posterior cell, reaches a little beyond the discal; this makes the hyaline sinus within the black appear deeper; the distal portion of the antennal style, cut off by the suture, is longer than half the proximal portion. This must be a distinct species, but can hardly be *A. gideon*. The stumps of the second and third veins are as in *A. acroleuca*.

4. *Argyramœba analis*?

Anthrax analis, Say, Compl. Wr. ii. p. 60; Wiedem. Aussereur. zweifl. Ins. i. p. 313.

(?) *Anthrax georgica*, Macq. Hist. Nat. Dipt. i. 406; Dipt. Exot. ii. 1, p. 68, t. 21. f. 11.

Hab. CANADA and UNITED STATES.—MEXICO?; CENTRAL AMERICA?

A female from Dueñas, Guatemala (*Champion*), and two males and two females from Orizaba, Mexico (*coll. Bellardi*) may be doubtfully referred to *A. analis*, Say; the white hairs on the sides of the abdomen, near the base, mentioned both by Say and by Wiedemann, do not however exist in my specimens. Three females from Dallas, Texas (*J. Boll*), which I can compare, agree with the specimens from Orizaba, only the anal cell in the latter is closed, while it is slightly open in the former. These specimens, especially those with an open anal cell, agree quite well with Macquart's *A. georgica*, if we assume that Macquart described not a male, as he stated, but a female.

5. *Argyramœba œdipus*.

Anthrax œdipus (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 262.

Argyramœba œdipus, Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 121; O. Sacken, Western Dipt. p. 243; Arribáizaga, El Naturalista Argentino, i. p. 273; Van der Wulp, Tijdschr. &c. xxv. p. 85, t. 9. f. 9¹.

Anthrax irrorata, Say, Compl. Wr. ii. p. 61; Macq. Dipt. Exot. ii. 1, p. 60, t. 20. f. 6.

Anthrax œqua, Walk. Ins. Saund. p. 192.

Anthrax punctum, Walk. List &c. ii. p. 253.

Hab. NORTH and SOUTH AMERICA, everywhere, from the British possessions in the north to the Argentine Republic¹.—MEXICO, Northern Sonora (*Morrison*), Presidio (*Forrer*); GUATEMALA, San Gerónimo (*Champion*).

6 *Argyramœba pluto*.

Anthrax p'uto, Wiedem. Aussereur. zweifl. Ins. i. p. 261; O. Sacken, Western Dipt. p. 244¹; Van der Wulp, Tijdschr. &c. xxv. p. 85, t. 9. f. 10².

Hab. CANADA¹ and UNITED STATES.—MEXICO, Northern Sonora (*Morrison*).

A single specimen from Northern Sonora before me agrees with my description (*op. cit.*), only the front and the face below the antennæ are covered with a slight brownish-yellow pollen, which is not mentioned in it; the frontal orbits are whitish. I reproduce the description from the 'Western Diptera,' with a few slight emendations:—

“The basal half of the wing is more or less like the darker-coloured specimens of *A. limatulus*; the hyaline portion has nine or ten small black spots—one at the extreme end of the first vein in the shape of a small cloud, two on the concave end of the second vein, two on the anterior branch of the third vein, the one at its origin being large; a spot, sometimes double, on the cross-vein at the base of the second posterior cell, often coalescent with a small spot on the vein separating this cell from the third posterior; a spot on the curvature of the cross-vein at the base of the third posterior cell; another at the proximal end of that cell; and one a little before the tip of the fifth vein. The large spot on the cross-vein at the base of the fourth posterior cell is usually coalescent with the black on the anterior half of the wing. A long stump of a vein on the geniculate part of the second vein; two stumps on the sinuosities of the anterior branch of the

third vein, one on each side; a small stump on the cross-vein at the base of the third posterior cell. Body deep black; face and front with short, erect, black pile, mixed with some white hair, especially around the mouth. Abdomen with tufts of white pile on each side of the first segment and some white hairs along its hind margin; small patches of white scaly hairs on the sides and the hind margin of the third and fourth segments; the end of the abdomen in the male densely beset with white scales.

“This description applies to specimens, about 11 millim. long, which I have from Canada (*F. X. Bélanger*), Pennsylvania (*E. T. Cresson*), and Waco, Texas (*Belfrage*). But I have two other specimens, from Illinois (*Le Baron*) and Texas (*M. C. Z.*), in which the black spots on the distal half of the wings are so much enlarged that they coalesce and form an irregular, broad cross-band, bifurcate at both ends; only three brown dots on the apex of the wing are not confluent with this cross-band.” (This variety is figured by Van der Wulp².)

“A specimen from Georgia (*H. K. Morrison*) holds the middle between these two forms, its spots being larger than in the first form, and less coalescent than in the second. This last specimen, as well as that from Illinois, measures only 8–9 millim. I have little doubt now that all these specimens belong to *A. pluto*.”

7. *Argyramœba seriepunctata*, sp. n., ♂ ♀. (Tab. II. fig. 5.)

Head black, the front and face beset with black, erect hairs, amongst which on the front, near the orbits, a few white hairs are mixed; antennæ black, the third joint very short, almost flattened, hemispherical, and with the usual elongate style. Thorax greyish-black, on the dorsum with traces of brownish pollen, beset with longer black and shorter white or greyish-white hairs. Abdomen black, but little shining; tufts of white hair on each side of the first, and of black hair on each side of the second, segment; the two following segments, besides the black erect hair, have tufts of white hair on each side, and cross-bands of such hair connecting these tufts; the following segments have black tufts on the sides, but the same narrow cross-bands of white hairs; at the end of the abdomen a large tuft of white hair on each side (I describe a well-preserved female; the pubescence of the male is somewhat rubbed off, but seems to have been very like that of the female). Male genitals black. Legs black, the tibiæ and tarsi brown. Halteres brown, white at the tip. Wings greyish hyaline; besides the usual stumps of veins on the knee of the second vein and on the fork of the third, there is another stump on the knee, formed by the same fork, which knee, in this species, is particularly salient; also a trace of a stump within the third posterior cell. Root of the wings brownish; a brown spot at the extreme proximal end of the basal cells; a series of four brown spots in a straight line—1, between the origin of the second vein and the proximal end of the discal cell; 2, on the anterior cross-vein and the one adjoining it; 3, on the third vein, in the middle between the second and fourth spots; 4, at the base of the fork; a more or less faint cloud between the third spot and the first vein; a spot at the proximal end of the fourth posterior cell; smaller spots at the proximal ends of the second and third posterior cells, and on the minute stump within the third cell; in some specimens, especially in the females, a faint cloud across the proximal half of the sixth vein is visible. The spots and clouds are a little longer in the female than in the male specimens. The costal cell is subhyaline.

Length 10–11 millim.

Hab. MEXICO, Northern Sonora (*Morrison*), Tehuacan (*Sumichrast, coll. Bellardi*).

I have a male and a female from Northern Sonora and two females from Tehuacan.

N.B.—The body of this species is most remarkably like that of *A. pluto*; the venation is the same; the whole difference consists in the extent of the dark colour on the

antero-proximal half of the wings: in *A. pluto* the dark spots on that portion of the wings are larger and more or less coalescent; in *A. seriepunctata*, on the contrary, the antero-proximal half of the wings is prevailingly hyaline. I strongly suspect that *A. seriepunctata* is nothing but a variety of *A. pluto*; nevertheless, I have not seen any intermediate forms, and the four specimens of the former species which I have before me are identical in colouring, although taken in two rather distant localities. Until further evidence is forthcoming I prefer to treat *A. seriepunctata* as a distinct species.

8. *Argyramœba daphne*, sp. n., ♂ ♀. (Tab. II. fig. 6.)

Male. Head black, the face and front beset with black, erect hair, between which shorter, pale yellow, scaly hairs are visible (especially on the front); frontal orbits hoary; antennæ black, of the usual structure; occipital orbits with rare, pale-yellow, scaly hairs. Thorax greyish-black, with a black, erect pubescence of delicate hairs and a rather rare and easily rubbed-off brownish-golden appressed tomentum, forming in well-preserved specimens a pair of very indistinct stripes; on the scutellum this same tomentum, mixed with whitish scaly hairs, forms a border all around and a median line, bisecting the scutellum; the upper part of the pleuræ, especially the interval between the humerus and the base of the wing, is beset with long black hair, mixed with shorter white hairs; the latter form an indistinct stripe passing from the humerus, above the root of the wing, to the post-alar callosity. First segment of the abdomen with a tuft of white hair on each side; the following three segments have, besides the usual black, erect pile, a rather rare covering of yellowish-brown, short, semiappressed hairs, visible especially on the second and the anterior portion of the third segment; on each side of the third segment a large spot of white scaly hairs; a fringe of similar whitish scales, interrupted in the middle, along the posterior margin of the same segment; posterior half of the fourth segment, except in the middle, and all the following segments, covered with white, almost silvery scales; the black erect pile of the abdomen is especially visible on the third segment and along the lateral margins, where it forms tufts, the largest of which is on the second segment; venter with rare appressed yellowish hairs and longer black ones. Forceps protruding, black; a pair of upper valves rufous, black at the tip; lower valve sometimes also rufescent. Tegulæ whitish; knob of the halteres brown, edged with whitish. Legs black, the tibiæ and tarsi more brownish, with black spines and scattered yellowish scales. Wings hyaline, brown at the base as far as the humeral cross-vein, beyond which the interval between the costal and auxiliary vein is only greyish, while that between the auxiliary and the first vein is darker brown; a square brown spot in the middle of the first basal cell, leaning on one side on the second vein, near its origin, on the other on the fourth vein, immediately before its bifurcation; this spot is connected with the brown at the base by a narrow stripe of the same colour running along the first and second veins; thus in the proximal half of the first basal cell only an elongated, narrow hyaline space is left along the fourth vein; second basal, anal, and axillary cells hyaline; a brown spot on the small cross-vein, covering also the bifurcation of the second and third veins; smaller, but distinct dark brown clouds on the vein separating the second basal from the fourth posterior cell, and on the bifurcation of the third vein; the other clouds are pale, small, often altogether indistinct (at the proximal end of the third and second posterior cells, the cloud on the latter especially, is, in most specimens, altogether obsolete). Stumps of veins (rather long) on the knee of the second vein and on the fork of the third; none elsewhere.

Length 9–10 millim.; smaller specimens occur, down to 5 millim.

Female. Differs principally in the absence of the covering of white scales on the distal half of the abdomen; the yellowish-brown semiappressed hairs form indistinct cross-bands on the anterior portion of the intermediate segments, expanding into broader patches in the middle of the segments; large spots formed by white scales on each side of the third and fourth segments; a few white scales along the hind margins of the same segments; segments 6 and 7 likewise with some white scales on the sides. Wings as in the male, except that there is a brown cloud within the marginal cell, connecting the brown spot at the base of the first submarginal and first posterior cells with the brown of the costa (in the male this interval is

always perfectly hyaline). All the brown spots are somewhat darker and the hyaline space within the basal cell is much smaller, sometimes very small.

Length 10 millim.; but much smaller specimens occur.

Hab. MEXICO, Northern Sonora (*Morrison*).

I have twelve males and six females.

Two males in Prof. Bellardi's collection, from Tehuacan, Mexico (*Sumichrast*), may perhaps belong to this species; they show, however, the cloud in the marginal cell which, in the specimens from Sonora, is peculiar to the female only (see above); the brown spot at the origin of the second vein is much larger, fills out the distal end of the second basal cell, and coalesces with the brown on the posterior cross-vein; there is a cloud in the middle of the anal cell; no stump on the fork of the third vein. The dusty condition of the specimens renders a further comparison impossible.

N.B.—Adventitious spots, cross-veins, and stumps are rare; one male has a brown spot at the end of the stump on the fork of the third vein, and a pale dot on the fourth vein instead of the small cross-vein, &c.

It is very probable that this species, which seems to be common, has already been described, but from some rubbed specimens: I have not been able to recognize it from the descriptions. As I have a considerable number of well-preserved specimens of both sexes before me, I thought it worth while to give a complete description.

9. *Argyramœba fur*.

Argyramœba fur, O. Sack. Western Dipt. p. 244.

Hab. UNITED STATES, Texas.—MEXICO (*Sumichrast*, coll. *Bellardi*), Northern Sonora (*Morrison*).

A male and a female from Mexico in Prof. Bellardi's collection, and a female from Northern Sonora, belong to this or to a closely allied species. The brown of the wings is paler than in the original specimens from Texas, and encroaches much less upon the two basal cells; the dusty condition of the body of the Mexican specimens does not allow a closer comparison. The individual from Sonora is cleaner, and answers the description quite well, with the exception of the difference in the extent of the brown on the wings, already noticed. The size of the latter specimen is only 8 to 9 millim. I reproduce the description from the 'Western Diptera':—"Face and front pollinose with yellowish-grey, and clothed with short black pile; on the front, some very minute pale yellow hairs are mixed with the grey ones; the grey occiput is more or less clothed on the orbits with hair of this latter description. The dull greyish-black ground-colour of the thorax and scutellum is in part covered with a short, yellow, appressed tomentum; a large tuft of yellowish-white pile between the humerus and the root of the wings, extending to the upper part of the pleuræ; a frill of whitish hairs, mixed with black ones, on the anterior margin of the thorax, opposite the occiput; the edge of the scu-

tellum with a yellowish-white tomentum and a row of stiff black bristles. Ground-colour of the abdomen black; first segment on each side with a tuft of yellowish-white pile and a sparse fringe of them along the hind margin; second segment black, with a faint streak of microscopic fulvous tomentum in the middle; the following segments are densely clothed with a recumbent, short, yellowish tomentum, more whitish on the hind margins of the segments; in the middle of each segment the tomentum, being less dense, leaves a dark spot, which, in connection with similar spots on the next segments, forms an ill-defined longitudinal dark stripe; rows of black erect pile on each segment above the yellow pubescence; the black pile is more dense on the sides and at the end of the body; the sides of the two last segments are clothed with whitish, scale-like pile; the same whitish scales form subtriangular spots on the hind corners of the third and fourth segments, connected with the fringes of whitish hairs on the hind margins of the segments. Femora black; four front tibiae and tarsi dark brown; front femora sparsely beset on the anterior side with whitish-grey scales. Halteres yellow, the knob with a brown spot. Wings greyish-hyaline; their root, the costal cells, the two basal cells, and the proximal ends of the anal and axillary cells pale reddish-brown; a transverse darker brown cloud on the small cross-vein, and on the bifurcation of the second and third veins; another darker cloud, coalescent with the brown of the base of the wings, lies between the origin of the præfurca and the cross-vein at the base of the fourth posterior cell. The stump of a vein on the anterior branch of the third vein is small, sometimes obsolete; that on the curvature of the second vein is moderately long; there is none in the third posterior cell. Length 10 to 11 millim.

“*Hab.* Dallas, Texas (*Boll*). Three specimens, male and female. The description was drawn from a well-preserved female.”

The larva of *A. fur* in Texas lives in the nest of a mud-wasp (*Trypoxylon*, as stated by Prof. Riley, not *Pelopæus*, as I had supposed in the ‘Western Diptera’), forming tubes of clay, five or six inches long, pasted together like organ-pipes. The specimen described by me was pinned immediately after escaping from the nest, and was therefore more intact than an ordinary collection specimen. For this reason my description of the hairs and scales of the body cannot be expected to agree in every point with every specimen. Specimens of *Argyramœba cephus* were bred from the same nest.

ASTROPHANES, gen. nov.*

The contact of the eyes on the vertex, the almost rudimentary development of the enlargement at the base of the costa, and the closed anal cell are the most striking characters which separate this genus from *Anthrax*. The contact of the eyes and the large triangular front of the male constitute apparently a point of relationship with *Oncodocera* and *Lomatia*; but in *A. adonis* the anterior cross-vein coincides with the

* *Astrophanes* means shining like a star.

bifurcation of the second and third veins, and the second vein, at the bifurcation, has the regular knee-shaped bend; the antennæ are distinct at the base, and the male forceps withdrawn within the abdomen in an unsymmetrical position—characters which belong to *Anthrax* and not to *Lomatia*. Again, the colour of the body, and especially of the abdomen, of *A. adonis* reminds us of some *Argyramœbæ*, but the absence of pulvilli, the not-bisected antennal style, which ends in a microscopic bristle and not in a brush of hairs, constitute abundant differences.

The face of *A. adonis* is gently convex, not conically projecting; the proboscis withdrawn; the lips comparatively fleshy; the antennæ have very short basal joints, the third joint is so very short-conical as to be almost disciform and its slightly tapering style rises abruptly in the middle; the front legs have smooth tibiæ and distinct joints of the tarsi; the occiput is much less developed here than in most species of *Anthrax*; the macrochætæ on the præ- and post-alar callosities are weak; the contact of the fourth posterior cell with the discal is comparatively long (nearly twice as long as the posterior cross-vein), and the anal cell is closed (it is open in most species of *Anthrax*).

1. *Astrophanes adonis*, sp. n., ♂ ♀.

Male. Ground-colour black; abdomen with the distal half densely clothed with recumbent silvery hairs, which begin on the latter half of the fourth segment and form a dense and comparatively long fringe round the apex; the long, dense, soft and erect hairs on the thorax, in an oblique light, have a whitish reflection; a tuft of hair behind the humerus and above the root of the wing is snow-white; face and front black, with black erect pile; traces of silvery spots on the sides of the face and of the front, spots which are much more distinct in the female; antennæ black; lower occipital orbit with some silvery scales, the upper one with a fringe of black hair. Legs dark brown. Wings hyaline, the veins brownish-yellow. Knob of the halteres ivory-white.

Female. Face and front black, shining; on the face a spot of silvery scales on each side, about the middle of the facial orbit; a pair of similar, but larger, silvery spots on the front, immediately above the antennæ, and again another pair about the middle of the distance between the antennæ and vertex; occipital orbit beset with silvery scales. Thorax, as in the male, with a tuft of white hairs on each side between the humerus and the root of the wing; a whitish collar of hair in front, and a very scarce, microscopic, whitish (somewhat iridescent) tomentum on the dorsal surface. Abdomen with a cross-band of white appressed hair on the anterior half of the second segment; a tuft of white hairs on each side of the first and second segments, and a covering of orichalceous scales on the last three segments (the abdomen of my only specimen is somewhat greasy, and I describe it as far as I see it). Legs black. Halteres with an ivory-white knob. Wings as in the male.

Length of both sexes 4–5 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

I have but a single specimen of each sex.

LEPIDANTHRAX, gen. nov.

Antennæ widely separated at the base, inserted quite near the orbits; third joint short, onion-shaped, with a long filiform style, undivided by a suture, and with a microscopic bristle at the tip. Front comparatively broad in both sexes. Proboscis considerably prolonged beyond the oral margin, slender. Front tibiæ with a series of distinct spinules on the upperside; front tarsi varying in structure, stout or slender, always with

distinct joints; the minute hairs and bristles of the underside distinctly differentiated from those of the upper; no pulvilli; ungues without teeth. The contact of the fourth posterior cell with the discal is unusually long, about as long as the third vein, issuing from the discal cell; the distal end of the discal cell is not expanded, its sides being more or less parallel; anal cell open. The sides of the abdomen are fringed, not with hairs only, but with real scales.

Such are the characters which define a natural group of at least three species, all from Northern Mexico. The prevailing colour of the hairs of the body is brown and yellowish-brown, the abdomen sometimes with paler cross-bands and silvery scales. The wings, by gradual transition, pass from hyaline, with a few brownish spots along the costa (*L. angulus*), to a broad dark brown band along the costa and a broad cross-band before the apex (*L. disjuncta*). *Lepidanthrax* will be easily distinguished from the genus *Anthrax*, not only by the general appearance and colouring, but by its long proboscis, the more distinct spinules on the front tibiæ, and the venation.

1. ***Lepidanthrax disjuncta***. (Tab. II. fig. 7.)

Anthrax disjuncta, Wiedem. Aussereur. zweifl. Ins. ii. p. 639¹.

Hab. MEXICO¹, Orizaba, Tuxpango (*Sumichrast*).

I reproduce Wiedemann's description:—

“Nigella; abdomine utrinque strigis transversis argenteis; alis ad costam, fascia obliqua ante-apicali punctoque nigris. Length 6 millim.

“Antennæ black; third joint globular, with a slender style. Face, front, and thorax with greyish-yellow pile. The hairy collar is rubbed off; some white hairs on the sides, below. Abdomen with fallow-brown, appressed, felt-like pile; on the three penultimate segments on each side are silvery cross-marks, which become longer on each succeeding segment, so that the last form a cross-band interrupted in the middle; these cross-marks alternate along the lateral edges with deep black hairy tufts; behind the fallow-brown felt-like pile there are, on each segment, deep black cross-lines or spots. The brownish-black of the wings reaches from the root to about two thirds of the length, forms two flat curves, and contains, under the second vein, a triangular hyaline spot. Beyond the brown, before the apex, there is a cross-band of the same colour; it runs obliquely, irregularly, covers the bifurcation of the third vein, is much broader anteriorly than posteriorly, where it does not reach the margin; it contains a distinct clear drop; its distal side reaches the end of the anterior branch of the fork; near the posterior end of this cross-band, on the proximal side, there is a black spot. Legs yellowish-red.

“*Variety*. Without drop on the apex of the wing, in specimens where the black of the apex is less extended.”

Half a dozen specimens from the above-named localities in Prof. Bellardi's collection agree with this description. The silvery abdominal spots are placed on segments 3–5, and not on the penultimate segments (which would be 4–6). Wiedemann's specimen must have been a male and not a female, as he says. The three females which I have

before me being very much abraded, I cannot say anything about their scaly covering, except that I do not see any trace of silvery scales on their sides. The portion of the proboscis projecting beyond the oral margin is not longer, rather shorter, than the head. The black tufts on the sides of the abdomen, between the silvery spots, are composed of scale-like hairs, not unlike the scales of a butterfly; on the second segment there is a weakly-marked cross-band of yellowish-white hairs. All these specimens (except one) have the first posterior cell bisected by a cross-vein, a character which may be very easily overlooked, as the cross-vein is situated within the dark brown stripe. The discal cell of *L. disjuncta* is longer, that is, its distal end is nearer the alar margin, than in the other species of the group; and for this reason the second posterior cell is shorter.

2. *Lepidanthrax proboscidea*, ♂. (Tab. II. fig. 8.)

Anthrax proboscidea, Loew, Centur. viii. no. 27 (♀)¹.

Hab. MEXICO¹, Northern Sonora (*Morrison*).

Face, front, and occipital orbits clothed with yellowish-white scaly hairs; upper part of the front less densely covered, showing the black ground-colour; face moderately projecting; the portion of the proboscis projecting beyond the oral margin rather longer than the head. Antennæ black; third joint short, onion-shaped, with a long, slender style. Thorax with the usual collar-like fringe of yellowish hairs in front, its surface clothed with a scattered, appressed, reddish-yellow tomentum, except an arcuate cross-band of white tomentum reaching from the root of the wings on one side to the other; similar white hairs along the base of the scutellum; a tuft of longer whitish hairs on the pleuræ, especially below the humeri. Abdomen clothed with a yellowish-red and white tomentum; the white hairs forming a distinct cross-band at the base of the second segment, and a less distinct one at the base of the third; on each of the same segments, in the middle, a pair of small tufts of black, erect, partly scaly hairs; segments 4–6 thickly covered with silvery scales (the small tufts of black erect hairs in their middle, similar to those on segments 2 and 3, are much less perceptible here); the sides of the abdomen have a fringe of hairs among which tufts of large black scales are conspicuous; the latter alternate with yellowish-red hairs on the anterior and with silvery ones on the posterior portion of the abdomen; venter clothed with yellowish-red scales. Legs clothed with similar scales, covering the more or less dark ground-colour; tarsi black. Halteres with a dark brown knob. Wings hyaline, spotted with brown; the brown at the root encroaches upon the proximal end of the second basal and anal cells; costal cell yellowish-brown, its tip hyaline; a large brown spot, in contact with the costal brown, more or less connected with the infuscated posterior cross-vein; another brown spot covers the bifurcation of the second and third veins; a small cloud in the marginal cell, below the tip of the auxiliary vein; an irregular cross-band of more or less coalescent spots begins at the tip of the first vein and reaches the cross-vein at the base of the

second posterior cell (it is often interrupted in the first posterior cell); small brown clouds at the end of the second vein and of the anterior branch of the third; a brown dot at the proximal end of the third posterior cell. Length 6–7 millim.

N.B.—The description is drawn from four male specimens. A fifth specimen, about 8 millim. long, differs in the coloration of the last segments of the abdomen: there are no silvery hairs on segment 4, which segment, like the preceding ones, has a covering of yellowish, appressed, scaly hairs, among which, in the middle, a pair of whitish scaly spots are visible; segment 5 has a similar covering, but the whitish spots are replaced by a pair of larger, silvery spots; on segments 6 and 7 there are many more silvery scales, except in the middle; the seventh segment is more protruding here than in the other specimens. No perceptible difference in the other characters. I suppose it is the female, although I cannot ascertain it from the structure of the genitals. A similar specimen in Prof. Bellardi's collection, from Tehuacan (*Sumichrast*).

Loew described this species from a single, abraded specimen; for this reason I give a more complete description and a figure.

The close relationship between *L. proboscidea*, Loew, and *L. disjuncta*, Wiedem., is evident; the difference, however, does not consist in the greater extent of the brown pattern of the wings only, but also in other characters. The silvery scales in the male begin on the third segment in Wiedemann's species, and only on the fourth in Loew's; the proboscis is considerably longer in the latter; the first posterior cell, which is bisected by a cross-vein in most specimens of *L. disjuncta*, is not bisected in my specimens of *L. proboscidea*.

I have eight (♂ ♀) specimens from Tres Marias Islands, Western Mexico (*Forrer*), which may be either a variety of *L. proboscidea* or a different species still. These have all the brown marks of the wings larger, so as to produce a somewhat different appearance of the whole pattern, the antero-proximal portion of the wing especially containing much more brown. In this respect they are intermediate between *L. proboscidea* and *L. disjuncta*. The first posterior cell is not bisected; the scaly covering of the body seems to be the same, but the specimens are not very well preserved, and do not allow a close comparison.

An individual from Northern Sonora (*Morrison*) has the brown pattern of the wings somewhat different from the typical specimens—all the veins ending in the posterior margin (except the very last) having a small, round, pale brown spot close to the tip, the other spots somewhat larger, and the five spots on the principal bifurcations and cross-veins paler in the centre and, for this reason, appearing ocellate. The scaly covering of the abdomen is more uniformly fulvous, and I do not see any silvery scales. This may, again, be a different species.

3. *Lepidanthrax angulus*, sp. n., ♂. (Tab. II. fig. 9.)

Face and front densely clothed with golden-yellow, appressed, scaly hairs, the black ground-colour appearing on the vertex only; antennæ with the basal joints red, the third joint black, subglobular, and with a long style; the portion of the proboscis reaching beyond the oral margin shorter than the head; oral margin reddish; occiput with greyish, appressed, scaly hairs. Thorax with a collar-like fringe of long pale-fulvous hair in front; a cross-band of whitish-grey, short, appressed tomentum between the roots of the wings, broad in the middle, attenuate on the sides; a similar whitish cross-band runs from side to side across the scutellum; in the interval between these two cross-bands a short, appressed, fulvous tomentum. Abdomen with an appressed, dense, fulvous tomentum, and with cross-bands of a whitish tomentum on the second, third, and fifth segments, that on the second segment being the most distinct; the lateral fringe consisting of black and fulvous scaly hairs, the black ones being real cuneiform scales, a side-view showing long, black, erect hairs along the edges of the segments; the tip sometimes rufous. Legs reddish, with black bristles; tarsi darker. Halteres brown. Wings hyaline; the root and the costal cell yellowish-brown; a pale brown spot on the anterior cross-vein and on the bifurcation near it; a brown cloud between this spot and the brown on the costa; a small spot near the end of the first vein, and another on the tip of the second vein; the cross-veins and bifurcations faintly clouded; the usual sinuosity of the second vein, nearly above the bifurcation of the third, sometimes forming an angular indentation, provided with a minute stump of a vein; second submarginal cell unusually short, the third posterior cell likewise (this is owing to the comparative shortness of the whole wing).

Length about 7 millim.

Five male specimens.

Hab. NORTH AMERICA, California (*O. Sacken*).—MEXICO, Northern Sonora (*Morrison*).

Two specimens from the same locality are only 3.5 to 4 millim. long; they have no brown spots at the tip of the first and second veins; and the spots on some of the bifurcations and cross-veins are absent, or almost imperceptible (the wing is figured, Tab. II. fig. 10). I believe these specimens to be merely a variety of *L. angulus*. I have a specimen obtained by myself on Lone Mountain, San Francisco, June 29, 1876, which is larger, but has the same coloration of the wings.

ANTHRAX.

Anthrax, Scopoli, Entomol. Carniol. 1763.

The genus *Anthrax*, as understood after the separation of *Exoprosopa* and *Argyramæba*, is not homogeneous; it is merely a residue of species which could not be referred to other genera. Its characters are principally negative: it differs from *Exoprosopa* in having only two, not three, submarginal cells, and the styliform prolongation of its antennæ not separated from the basal portion of the third joint by a distinct suture; and from *Argyramæba* by its antennal style not being bisected by a suture, and the tip not bearing a tuft of hairs, but only a single microscopic bristle. To this negative definition may be added: the species have the eyes separated on the vertex in both sexes, and that the anal cell, as far as I have observed, is always open. The other characters vary in different species: the face is sometimes conically projecting, sometimes only gently convex; the antennæ have the third joint in all transitions from

an elongate cone to a flattened onion with a filiform style; the front tibiæ are either smooth or beset with spinules; the front tarsi vary in shape and in the nature of their pubescence; the front ungues vary in size; the pulvilli, generally absent, are in some species fully developed; the proboscis, usually withdrawn within the mouth, in some cases projects considerably beyond the oral margin.

The number of species from all parts of the world which belong to the genus *Anthrax* thus circumscribed is still very large, and the next step to take would be to arrange them in natural groups; to define, as far as possible, these groups; to point out which of them are cosmopolitan and which only peculiar to certain countries; and to discover the conditions of life of each group. With the small materials before me I cannot, of course, accomplish such an undertaking; I have nevertheless attempted to pave the way towards it by grouping the small number of species which I can examine, and have even given names to two or three groups which I thought sufficiently well characterized; but I treat them merely as subgenera, with the exception of *Lepidanthrax*, which I thought sufficiently distinct for an immediate separation.

In the subgenus *Anthrax*, sensu stricto, I place the species in the relationship of the original *Anthrax*, the European *Anthrax morio*, Scopoli, and the North-American *A. morioides*, Say, and *A. seminigra*, Loew. Their face is only slightly convex, and not conically projecting; their proboscis withdrawn; their antennæ have the third joint more or less short-conical, with a more or less abruptly beginning, long, undivided style; their front tibiæ are provided with very minute, easily abraded spinules; the front tarsi have, above and below, the characteristic pubescence of minute, erect hairs; some of the species have very distinct and others only rudimentary (although perceptible under a magnifying-power) pulvilli; the prevailing colour of the body and wings is black. (The details will be given below.)

My subgenus *Hyalanthrax* contains the group with hyaline wings and a yellow fur on the body, a group equally well represented in Europe and North America, the species having been bred from pupæ of 'Lepidoptera,' principally Noctuæ. The species have some characters in common, which will be detailed below.

A considerable number of the species described by me (sub Nos. 1-13) belong to a large group which have a conical face; smooth front tibiæ; tapering front tarsi, with more or less indistinct joints, a characteristic delicate pubescence above and below, and very small ungues; a more or less elongate-conical third joint of the antennæ, gradually merging into a style, &c. In all these characters this group shows, if not some relationship, at least some analogy, to *Exoprosopa*. Within this group several smaller groups can be formed, like that of *A. alcyon*, &c. (Nos. 3-5), which seems peculiar to America, and has a characteristic coloration of body and wings; the group of *A. selene*, sp. n. (No. 11), also represented by a series of species in Europe (*A. fenestrata* &c.), with characteristic fenestrate spots on the wings and white cross-bands on the third and fourth, and not on the second, abdominal segments; the group of *A. fulvohirta* (see

Anthrax, Nos. 8–10) &c. A species of tropical aspect, *A. cyanoptera*, Wiedem., belongs in the same relationship of species with a conical face and *Exoprosopa*-like front legs and tarsi; its proboscis is much more elongated than that of the other species, its colours metallic.

All the above-mentioned groups have smooth front tibiæ. A smaller number of species have the front tibiæ beset with spinules. Among these, *Anthrax cuniculus*, *A. consul*, and *A. palliata* (Nos. 15–17), besides some common characters in the coloration of the body and wings, have the front tarsi with very distinct joints, the underside beset with minute, dense bristlets and hairs, while the pubescence on the upperside is inconspicuous, and comparatively large unguis; in the structure of the third joint of their antennæ (more or less elongate-conical gradually merging into a style) and their conical face they resemble the group of species sub Nos. 1–13. Their wings are brown on the antero-proximal half, the brown encroaching but little on the axillary cell, and not showing any darker or paler spots, except the usual subhyaline spot before the discal cell. The *A. ephesus* (No. 14) seems to be closely allied, but has the cross-veins infuscated in the brown as well as in the hyaline portion.

Anthrax castanea (No. 18) has the same conically projecting face and the conical third joint of the antennæ; the structure of the front tarsi is likewise the same as in the preceding group, but the coloration of the wings is different (brown cross-bands, alternating with hyaline ones).

Finally, *A. rex* (No. 19) and *A. parvicornis*, Loew, have nearly the same structure of the front legs and coloration of the body and wings as Nos. 15–17; but in these species the face is rounded and not conically projecting, the third joint of the antennæ is almost onion-shaped and with an abruptly beginning filiform style, and the proboscis projects far beyond the oral margin.

Thus, among a comparatively small number of species, we find structural differences which, in other families than the present, would justify a generic separation. It is possible, however, that, with the increase in the number of species known and studied, intermediate forms may occur. The best course to pursue, in order to avoid uncertainties, as well as a too great multiplication of genera, will be to go on with the formation and definition of groups, but to treat such groups merely as subgenera; intermediate forms of uncertain location thus would be left in the genus *Anthrax* in the wider sense. The subgenera, admitting of a closer definition, may receive names formed of combinations of the word *Anthrax*, like *Lepidanthrax*, *Hyalanthrax*, *Thyridanthrax*, *Pæcilanthrax*, *Chrysanthrax*, &c. The advantages of such a grouping within a large genus for purposes of describing and identifying species are evident. The genus *Trypeta* has been treated in the same fashion; its numerous subdivisions are mere subgenera, and the genus *Trypeta*, sensu latiori, is still maintained; but these subdivisions have greatly simplified descriptions, and rendered determinations more easy.

I continue to use *Anthrax* as feminine, as it has been used since Fabricius and Meigen, although the Greek word is masculine.

For the easier determination of the species described, or merely mentioned by me, I have constructed an analytical table, based on a purely artificial grouping:—

Analytical table of the species of Anthrax described below.

- 1 (36). Wings not altogether hyaline.
- 2 (3). Wings without any hyaline spaces.
 - Wings uniformly dark brown, with bluish reflections . . . 1. *cyanoptera*, Wiedem.
 - Wings uniformly grey, somewhat ferruginous towards the base 2. *lucifer*, Fabr.
- 3 (2). Wings partly dark-coloured, partly hyaline.
 - Wings with alternate brown and hyaline cross-bands . . . 18. *castanea*, Jaenn.
 - Wings variegate, but not with alternate brown and hyaline cross-bands . . . 3. *arethusa*, sp. n.; 4. *pæcilogaster*, sp. n.; 5. *fuliginosa*, Loew.
 - Wings black, brown or brownish on the antero-proximal half, hyaline or subhyaline on the postero-distal (4).
- 4 (5). Cross-veins and bifurcations (within the brown of the antero-proximal part) distinctly clouded with a darker shade of brown 6. *edititia*, Say; 7. *paradoxa*, Jaenn.
- 5 (4). Cross-veins and bifurcations (within the brown &c.) not, or indistinctly clouded with a darker shade of brown.
- 6 (11). The enlarged distal end of the marginal cell containing a brown spot.
- 7 (8). Fourth posterior cell altogether hyaline 23. *scylla*, sp. n.
- 8 (7). Fourth posterior cell more or less encroached upon by the brown.
- 9 (10). A brown spot on the costa at the distal end of the first submarginal cell 24. *sinuosa*, Wiedem.
- 10 (9). No brown spot on the costa at the distal end of the first submarginal cell 25. sp.?
- 11 (6). The enlarged distal end of the marginal cell hyaline.
- 12 (35). The brown of the wings not encroaching upon the second submarginal cell.
- 13 (20). The anterior and posterior cross-veins, although on dark ground, having a distinct pale aureole around them.
- 14 (15). Proboscis projecting a long distance beyond the oral margin. 19. *rex*, sp. n.
- 15 (14). Proboscis short, mostly withdrawn.
- 16 (19). Anal and axillary cells infuscated (except their extreme ends).
- 17 (18). Third antennal joint in the shape of a long cone, ending in a style 11. *selene*, sp. n.
- 18 (17). Third antennal joint short, onion-shaped, with a long style . 21. *chimera*, sp. n.

- 19 (16). One third or more of the distal end of the anal and axillary cells hyaline 26. sp. ?
- 20 (13). The anterior and posterior cross-veins on dark ground, and without any pale aureole around them.
- 21 (24). Anal and axillary cells altogether filled with brown (the extreme distal end sometimes hyaline).
- 22 (23). Thorax black, with a stripe of white hair on each side . . . 22. *eumenes*, sp. n.
- 23 (22). Thorax black, with more or less fulvous pile 8-10. spp. ?
- 24 (21). A considerable portion of the anal and axillary cells hyaline.
- 25 (28). A brown spot on the bifurcation of the third vein.
- 26 (27). The cross-vein at the base of the second posterior cell bearing a brown spot as large as the spot on the bifurcation of the third vein; tibiae without spinules; tarsi with indistinct joints 12. sp. ?
- 27 (26). The cross-vein at the base of the second posterior cell bearing a brown cloud, much weaker than the spot on the bifurcation of the third vein; tibiae with spinules; tarsi with distinctly marked joints 14. *ephebus*, sp. n.
- 28 (25). No brown spot on the bifurcation of the third vein.
- 29 (30). Face not conically projecting; abdomen black, with two distinct white cross-bands 20. *lepidota*, sp. n.
- 30 (29). Face conically projecting.
- 31 (34). Prevailing colour of the abdominal pubescence yellowish.
- 32 (33). Abdominal segments 6 and 7 without white tomentum . . . 17. *palliata*, Loew.
- 33 (32). Abdominal segments 6 and 7 with a white tomentum . . . 16. *consul*, sp. n.
- 34 (31). Prevailing colour of the abdominal pubescence whitish . . . 15. *cuniculus*, sp. n.
- 35 (12). The brown of the wings encroaching upon the second submarginal cell 13. *galathea*, sp. n.
- 36 (1). Wings altogether hyaline. (A separate analytical table is given below, sub nos. 26-32.)

1. *Anthrax cyanoptera*.

Anthrax cyanoptera, Wiedem. Aussereur. zweifl. Ins. ii. p. 638¹.

Hab. MEXICO¹ (*Truqui*, coll. *Bellardi*).

“Nigro-chalybescens, collari rufo; alis chalybeis.—Long. 11-12 millim. Antennæ black; third joint in a gradually tapering point. A collar of bright rufous hairs. Thorax and abdomen bright blackish-blue; near the scutellum several whitish hairs, on the sides of the abdomen only black ones. Wings very broad, six lines long, of a handsome metallic blue; the venation of the second cell of the inner margin somewhat different from the usual form.—Berlin Museum; which also contains a variety, smaller in size, and with a greenish abdomen. This species must not be confounded with *A. ioptera* from Brazil.”

So far according to Wiedemann. A Mexican specimen (collected by Truqui) in Prof. Bellardi's collection is easily identified as belonging to this handsome species of tropical aspect.

In *A. cyanoptera* the proboscis projects considerably beyond the oral margin; the face is conical; the front tibiæ are smooth; the front tarsi slender, smooth, slightly tapering, with indistinct joints; the contact of the fourth posterior cell and the discal almost punctiform; the anterior branch of the third vein with a stump; a small stump in the third posterior cell. Wiedemann's reference to the venation I do not quite understand.

2. *Anthrax lucifer*.

Anthrax lucifer (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 294¹.

Hab. MEXICO, Cuantla (*de Saussure*¹).—WEST INDIES¹.

I translate Wiedemann's description:—

“Nigra, flavido-tomentosa; abdomine fasciis nigris; alis fuscis; basi areaque costali ferrugineis.—Long. 12 millim.

“Antennæ black, first joint reddish; face, cheeks, and front yellowish (wax-colour); the front with a black pubescence; vertex black. Thorax with a yellowish tomentum, and with paler hairs on the sides; the collar of hairs in front of the thorax yellowish; the rubbed off scutellum chestnut-brownish at the tip. Abdomen with the sides everywhere beset with golden-yellow hair, its upperside likewise clothed with appressed golden-yellow hairs; each segment, however, has a black posterior margin, which is attenuate on both sides, especially on the more proximal segments (the abdomen might just as well be described as black with yellow cross-bands at the base of the segments). Venter blackish, with pale yellow, appressed hairs. Wings brown, the costal vein blackish-brown, but the costal cells, the second, third, and penultimate veins, and the interval between these veins from the root upwards to a certain distance, ferruginous-yellowish. Halteres ferruginous-yellow, with a whitish knob. Legs black, with a yellowish tomentum (collections of Fabricius and Wiedemann).”

Two specimens from Cuantla, Mexico (*coll. Bellardi*), agree with this description. In the ‘Western Diptera,’ pp. 240, 241, I have noticed the probable occurrence of this species in Texas, and also the existence in the United States of conflicting forms. The front legs are of the *Exoprosopa*-type.

3. *Anthrax arethusa*, sp. n., ♂ ♀. (Tab. II. fig. 11.)

Hab. MEXICO, Northern Sonora (*Morrison*), Presidio (*Forrer*), Orizaba (*Sumichrast*); GUATEMALA, near the city (*Champion*); COSTA RICA, Irazu (*Rogers*).

I distinguish under this name a series of specimens, principally from Central America and Mexico, which resemble *A. alcyon*, Say, in having the third posterior cell bisected, but which, at the same time, show marked differences. *A. alcyon* has a more

northern distribution. I have seen specimens from different localities between British America and Colorado. It has been very well described by Say, Long's Exped. ii. p. 371. In Wiedemann's description (Aussereur. zweifl. Ins. i. p. 288) the statement "vom dritten Abschnitte an sind die Seitenränder schwarzbehaart" must not be taken literally: the sides of the abdomen are beset with yellow hair, but on the distal half of the segments, beginning in most specimens with the third, there is a tuft of black pile; in some specimens there are some black hairs on the sides of the second segment also. Wiedemann's other statement—"in der Mitte des Hinterleibes haben die Abschnitte am Hinterrande einen breit dreieckigen Fleckhen ohne gelbliche Behaarung"—does not apply to well-preserved specimens. That Wiedemann had the true *A. alcyon*, Say, is proved by the figure of the wing which he gives, and which shows the characteristic bisection and stump in the third posterior cell (*l. c. t. 3. f. 6.*) The bisecting cross-vein is often wanting from both wings, sometimes from one wing only.

A. arethusa differs from *A. alcyon* in the following principal characters:—The abdomen is red on the sides on all segments; the black forms a broad stripe in the middle occupying the whole breadth on the first segment, and is gradually attenuated posteriorly; on the seventh segment the black occupies but a small spot in the middle. The wings are narrower and lighter in colour; the interval between the hyaline spot in the discal cell and the posterior margin is almost altogether hyaline, crossed by two veins, the second of which is more or less clouded; the cross-vein, bisecting the third posterior cell is differently placed: in *A. alcyon* it connects the end of the discal cell with the intercalary vein, and the stump does not come in contact with it; in *A. arethusa* it connects the intercalary vein with the stump, so that the latter seems to issue from the curve of the cross-vein; in some cases the end of the stump disappears, and then the convex cross-vein alone remains (see the annexed woodcut, fig. 1, *A. alcyon*, figg. 2 and 3, *A. arethusa*.

Fig. 1. Fig. 2. Fig. 3.



In both species the subhyaline spot commonly occurring in the species of *Anthrax* near the proximal end of the discal cell is nearly obsolete; in this they differ from *A. pæcilogaster*.

In size the average *A. arethusa* is a little smaller and narrower than *A. alcyon*. I have before me six specimens from Guatemala city, five from Irazu, two from Northern Sonora, two from Presidio, and one from Orizaba (*coll. Bellardi*). A specimen which I took at Manitou, Colorado, August 17, 1876, also seems to belong here; it is larger than the average *A. arethusa*, the black dorsal stripe of the abdomen is remarkably narrow, and the tufts of black hair on the sides of the abdomen consist of a few hairs only, hardly visible among the yellow hairs.

N.B.—Say wrote *alcyon*, Wiedemann *halcyon*; both *Alcyone* and *Halcyon* occur in the classics: *alcyon*, being the original spelling of Say, is perhaps preferable.

A. alcyon, Macq., Dipt. Exot. ii. 1, p. 68, t. 19. f. 7, is certainly not Say's species, but *A. ceyx*, Loew.

A. alcyon, v. d. Wulp, Tijdschr. voor Ent. xxv. t. 9, f. 1, from Arizona is, I suspect, my *A. pæcilogaster*.

4. **Anthrax pæcilogaster**, sp. n., ♂ ♀. (Tab. II. fig. 12.)

Head yellowish, almost wax-colour, with an appressed, golden pubescence, and black, erect hairs; vertex black, the upper part of the occiput greyish, beset with pale orichalceous appressed hair; basal joints of the antennæ reddish, the third joint black. Thorax greyish-brown, with an appressed fulvous pubescence forming a pair of indistinct stripes in the middle, and longer, erect fulvous hairs in front and on the sides (when the pubescence of the thoracic dorsum is abraded and the surface is not greasy, two darker stripes are visible on the greyish-brown ground-colour). Scutellum reddish, black at the base. First segment of the abdomen black, the others rufous, with a transverse black spot in the middle of each, beginning with the second (these spots are visible in abraded specimens only); the hairy covering of the abdomen consists of a partly rufous, partly yellowish-white tomentum, the latter predominating on the sides and on the anterior portion of the second segment; in well-preserved specimens, in the middle of each of the segments 2, 3, 4, there is a short, tuft-like cross-band of black hairs, broadly interrupted in the middle, the interruption being filled with a whitish tomentum; tufts of black hairs along the sides of the abdomen, beginning with the second segment; legs rufous, the tips of the tarsi darker. Knob of the halteres whitish. Wings on the pattern of *A. alcyon*, Say, but narrower; a stump of a vein within the third posterior cell; a hyaline spot close by the axillary incision across the middle of the axillary cell, sometimes reaching across the anal cell also; the ends of the second and of the upper branch of the third vein thickly clouded with brown; the hyaline space within the discal cell rather large and in contact with the anterior branch of the fourth vein; the hyaline space connecting this spot with the posterior margin rather clear, the intercalary vein crossing it being alone a little clouded; the hyaline spot at the distal end of the second basal cell very distinct; the brown colour not very dark and variegated with yellowish and rufous.

Length 11–12 millim.

Hab. NORTH AMERICA, California.—MEXICO, Northern Sonora (*Morrison*), Tehuacan (*coll. Bellardi*). Seven specimens.

A. pæcilogaster differs from *A. arethusa* as follows:—1, the third posterior cell is not bisected, but contains a stump of a vein; 2, the black tufts on the sides of the abdomen are very distinct on the second, as well as on the following segments; 3, the hyaline spot in the distal half of the second basal cell, near the proximal end of the discal, is not obsolete, but on the contrary very distinct; 4, there is a more or less distinct hyaline spot across the axillary cell, close to the axillary incision, and reaching sometimes into the second basal cell; 5, well-preserved specimens show, on segments 2, 3, 4 of the abdomen, short, tuft-like, interrupted cross-bands of dark hairs, easily abraded. I notice also that in all my specimens the ends of the second vein and of the anterior branch of the third are distinctly diverging, while they are more or less parallel in *A. arethusa*.

I have five specimens from Shasta district, California (*Edwards*), which somewhat resemble *A. pæcilogaster*, but are, on the average, a little larger and broader; the wings are less variegated, more uniformly brown; there is no subhyaline space in the axillary cell, the hyaline spots in the third and fourth posterior cells are smaller; the tomentum on the abdomen is principally yellow, and not mixed with whitish. The

third posterior cell is not bisected, but has a stump of a vein (as in *A. pœcilogaster*). Is this, again, a different species?

5. *Anthrax fuliginosa*.

Anthrax fuliginosa, Loew, Centur. viii. no. 31¹.

Hab. NORTH AMERICA, California¹.—MEXICO, Northern Sonora? (*Morrison*).

I refer to this species a single specimen from Northern Sonora which agrees quite well with the description. An almost exactly similar specimen from Texas (*coll. von Roeder*) has a distinct stump of a vein in the third posterior cell.

N.B.—*Anthrax alcyon, arethusa, alpha, pœcilogaster, ceyx, flaviceps, and fuliginosa* form a natural group, distinguished by the *Exoprosopa*-like front legs (short; tibiæ without spinules; tarsi very gently tapering, with rather indistinctly marked joints, and a delicate pubescence of erect hairs on both sides; unguis very small); the face conically produced, the proboscis not projecting beyond the oral margin; the third joint of the antennæ in the shape of an irregular cone, gradually tapering off into a long point (but not a style). The colouring of the wings characteristic, brown, with a clear space at the apex, traversed by the more or less distinctly clouded S-shaped anterior branch of the third vein; a clear space in the discal cell, more or less connected with the posterior margin; supernumerary cross-veins often occur, bisecting either the third posterior or the second submarginal cell; a stump of a vein in the third posterior cell is very often present. Another peculiarity of this group is that the impressed line which, in most species of *Anthrax*, issues from the emargination of the occipital orbit, and crosses a portion of the eye, is very short and almost obsolete here.

This group may be called "*Pœcilanthrax*," and, as far as known, is peculiar to the American fauna. The species seem to be numerous, and are rather difficult to discriminate and to characterize; it may be that, in some cases, constant local varieties occur; I have alluded to such a case in my 'Western Diptera,' p. 240. It may be, for this reason, difficult in some cases to determine such species without examining a considerable number of specimens.

6. *Anthrax edititia*. (Tab. II. fig. 13.)

Anthrax edititia, Say, Compl. Wr. ii. p. 353 (no locality).

(?) *Anthrax gorgon* (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 303¹.

Hab. UNITED STATES, Texas, Dallas (*Boll*).—MEXICO, Northern Sonora (*Morrison*), Tehuacan (*Sumichrast, in coll. Bellardi*).—WEST INDIES¹.

In this insect the whole body is clothed with a yellowish-fulvous, appressed tomentum, which is dense enough almost to conceal the ground-colour and to impart a uniform fulvous hue. Abraded specimens show an opaque, dull brown ground-colour of the body, rufous along the edges of the mouth and on the lower part of the face; the

posterior half of the scutellum, the sides and the tip of the abdomen also more or less rufous, the boundary of the black in the middle of the latter being ill-defined and irregular. Antennæ: basal joints pale rufous, the third joint black; the latter in the shape of an elongated cone, gradually becoming styliform, and with a microscopic bristle at the tip. Face conically projecting; front, besides the fulvous tomentum, with black, erect hair; proboscis usually withdrawn, sometimes projecting beyond the oral margin. Legs pale rufous, beset with orichalceous scale-like hairs; front tibiæ smooth; tarsi brown beyond the first joint, the front pair tapering, with indistinct joints, and beset on both sides with delicate, erect hairs; ungues very small. Halteres rufous; knob whitish-yellow. Wings pale rufous-brown on the antero-proximal half, greyish-hyaline on the postero-distal; in the dark portion the veins are mostly rufous, except in some places, especially at the origin of the second vein, and on the cross-veins near the discal cell; small rounded brown clouds on the proximal ends of the discal cell, and of the four posterior and the two submarginal cells; proximal ends of the third and fourth posterior cells coincident, or nearly so. Length 7–12 millim.—Seventeen specimens.

N.B.—It is very probable that *A. gorgon*, Fabr., from the West Indies, is the same species. Wiedemann's description agrees very well, excepting the mention of black hairs on the sides of the abdominal segments. A few such hairs can only be discovered with the magnifying-glass on the sides of *A. edititia*.

Ten specimens from Tres Marias Islands, Western Mexico (*Forrer*), have the fulvous pubescence replaced by a brownish-rufous one, which, at the same time being less dense, allows the ground-colour to be visible, and thus gives the specimens a very different appearance; they are much darker, the brown on the proximal half of the wings is darker, &c. Is it a different species?

7. *Anthrax paradoxa*.

Anthrax paradoxa, Jaenn. Neue exot. Dipt. 31, t. 2. f. 16¹.

Hab. MEXICO¹.—PORTO RICO (*v. Roeder*).

I have a single specimen from Dallas, Texas (*Boll*), which apparently belongs to this species. The wings are exactly like the figure given by Jaennicke, except the unimportant difference that the two small brown dots which, in the figure, are placed on the last sinus of the second vein, are wanting in my specimen. The ground-colour of the abdomen is not black, but reddish, the middle alone being black; it is entirely hidden under the reddish-fulvous tomentum. The legs are reddish, the tarsi brown (*Jaennicke* has "pedibus brunneis").

In general appearance this species is very like *A. edititia*, Say, but is easily distinguished by the strongly bisinuate second vein and the much more distinct brown clouds on the cross-veins. The front legs have the same structure as in *A. edititia*. The bifurcation of the second and third veins coincides exactly with the small cross-vein, both in my specimen and in *Jaennicke's* figure.

When in the 'Western Diptera,' p. 237, I compared *A. paradoxa* to *Dipalta serpentina*, I was under the erroneous impression that the spot figured by Jaennicke in the middle of the first submarginal cell represented a cross-vein. *A. paradoxa* is, however, an *Anthrax*, closely allied to *A. edititia*; *Dipalta serpentina* has quite a different appearance, comparatively larger wings, and is nearer to *Exoprosopa*.

Van der Wulp (Tijdschr. &c. xxi. p. 189) records specimens from the Argentine Republic, which he identifies with *A. paradoxa*, Jaenn., at the same time referring the latter species to the genus *Diplocampta*, Schiner (Verh. zool.-bot. Ges. Wien, 1867, and Reise d. Novara, p. 119, t. 2. f. 9). *Diplocampta*, judging from Schiner's statements and his figure, besides the presence of three submarginal cells, has a very round head, without any development of the occiput behind the eyes, the eyes almost coming in contact on the vertex, the wings broad and rounded towards the apex, the contact of the fourth posterior cell with the discal rather long; the third antennal joint is described as round with a short, stout style; the abdomen is short, rather conical; the typical species, *D. singularis* from Chili, is, for an Anthracid, remarkably small, measuring less than five millimetres. None of these characters are applicable to what I take for *A. paradoxa*, Jaenn.; for this reason I cannot refer it to the genus *Diplocampta*.

8-10. **Anthrax**, spp. — ?

Three closely allied Central-American species and another from Texas before me form a natural group, which I propose to call *Chrysanthrax*, and which is distinguished by the presence of fulvous pile on the thorax, and often of a golden-fulvous tomentum on the abdomen; a dark brown antero-proximal half of the wings, without any paler aureoles on the cross-veins within the brown; the contact of the fourth posterior and discal cells punctiform; the smooth tibiæ; the tapering and indistinctly jointed front tarsi, beset on both sides with delicate, erect hairs; the small front ungues; the third antennal joint in the shape of a cone, merging into a style; the face short, conical, &c. As my specimens of these four species are neither numerous nor well preserved enough to enable me to prepare recognizable descriptions, I will merely indicate the differences between them. *A. sagata*, Loew, Centur. viii. no. 34 (Matamoros), may, perhaps, belong to this group.

I. The boundary of the brown on the wings running some distance (at least a millimetre and a half) along the second vein.

a. Proboscis not projecting; a conspicuous yellowish spot within the boundary of the brown, across the middle of the first basal cell and the proximal end of the marginal; axillary and anal cells filled with brown, and a very small subhyaline space at their end. Length 12 millim.—Two specimens from Panama, Bugaba (*Champion*).

aa. Proboscis projecting more than a millimetre beyond the oral margin; the yellowish space within the first basal cell inconspicuous; axillary and anal cells filled with brown, but the

hyaline space at their end equal in length to the small cross-vein; third joint of the antennæ longer than in the preceding species. Length 12–13 millim.—Two specimens from Mexico, Tuxpango (*Sumichrast, in coll. Bellardi*). Very like the preceding species, but certainly distinct. This may be the *Anthrax astarte*, Wiedem. Aussereur. zweifl. Ins. ii. p. 637, from Mexico; but the projecting proboscis is not mentioned in the description, and the description of the wings is too indefinite.

II. The boundary of the brown simply crossing the second vein, or else running along it for a very short distance (less than a millimetre).

b. The fringes of hair on the sides of the abdomen containing mostly black hairs; a tuft on each side of the first segment only pure yellowish-rufous; proboscis projecting; the brown of the wings encroaching very little on the first submarginal and first posterior cells (less than the length of the anterior cross-vein); the extreme end of the anal and axillary cells hyaline. Length 14 millim.—A single specimen from Guatemala, San Gerónimo (*Champion*). This species is perhaps allied to *A. diagonalis*, Loew, Centur. viii. no. 33 (California), judging from the description, but cannot be identified with it. The abdomen of the specimen is abraded; the surface seems to have been clothed more with black than yellow hairs; I see traces of the latter on the sides only.

bb. The hair on the sides of the abdomen as well as the tomentum on its surface, on the venter, and on the thoracic dorsum golden-fulvous; the proboscis not projecting; the brown entirely filling the axillary and anal cells to their very end. This is *A. fulvohirta*, Wiedem. Aussereur. zweifl. Ins. i. p. 308, which is common in Texas, and will undoubtedly be found in Mexico. The entirely brown colour of the axillary and anal cells is characteristic and is mentioned as such by Wiedemann, Aussereur. zweifl. Ins. ii. p. 637.

11. *Anthrax selene*, sp. n., ♂. (Tab. II. fig. 14.)

The black ground-colour of the body becoming sometimes more or less rufous towards the end of the abdomen; scutellum reddish-brown, darker at the base. The collar of hair in front of the thorax very pale yellowish; two stripes of hair on the sides of the latter, passing above the root of the wings, more white; the rare, appressed tomentum on the thoracic dorsum very pale yellowish, forming two or three very indistinct stripes; the tomentum on the scutellum more whitish. On the abdomen the prevailing colour of the tomentum on the second segment is black; the sides, however, are beset with long, white hair, which partly covers the first segment, and also invades the anterior angles of the second; segments 3 and 4, and, in a lesser degree, 5–7, covered with an appressed whitish tomentum, which leaves a black, longitudinal stripe in the middle; the components of this stripe, on each segment, are black truncate triangles, the narrow side foremost, formed by the black ground-colour, covered by some black, appressed tomentum. Pleuræ and venter clothed with white hair; on the venter the penultimate segments show a patch of brown hairs in the middle; along the sides of the abdomen are tufts of black hairs, beginning at the posterior margin of the second segment. Face and front with the usual black, erect pile, and pale orichalceous, recumbent tomentum, which, along the sides of the oral aperture, becomes more whitish; ground-colour of the sides of the face more or less rufous; occipital orbits fringed with dense white scales. Basal joints of the antennæ rufous; the third joint black, and in the shape of an elongated cone, gradually becoming styliform. The brown of the antero-proximal portion of the wings is not unlike that in *A. rex* (see Tab. II. fig. 17) in its shade of colour and in the outline of its boundary; only this boundary is a little more advanced towards the apex, and the cells only partly invaded by the brown have more of it than in *A. rex*; the axillary and anal cells are thus entirely brown, except along the edge of the wing, which is sometimes subhyaline; the angle formed by the brown within the discal cell is deeper here; the paler spots or cross-veins and bifurcations are the same as in *A. rex*. The enlargement of the costa, near the root of the wings, is clothed with pale orichalceous scales, mixed with white ones, and

also with black hairs. Legs pale reddish, densely clothed with whitish scales; femora at the base and the tarsi darker.

Length 12–14 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Two male specimens.

This species belongs to the same natural group as the European *A. fenestrata* and *A. perspicillaris*, Loew. *A. elegans*, Hoffm., and its allies, and very probably the other species mentioned by Loew (*Beschr. eur. Dipt. i.*) as closely related to *A. fenestrata*, also belong here. This group may be called *Thyridanthrax* (from *Thyris*, window), and is characterized by its colouring. The antero-proximal half of the wings is more or less dark, with more or less large subpellucid spots or cross-veins and bifurcations; the dark abdomen has white stripes on the third and fourth segments; the third joint of the antennæ is in the shape of an elongate cone, gradually merging into a style, which is not longer than the cone; the face moderately projecting; the proboscis withdrawn (projecting a little in *A. elegans*, Hoffm.); the front tibiæ smooth; the front tarsi comparatively stout, slightly tapering, beset on both sides with delicate, erect hairs, but no spinules; the front ungues rather small; no pulvilli.

Those species of *Anthrax* (sensu stricto) which have the wings of nearly the same colour as *Thyridanthrax* differ from the latter in the shape of the antennæ, in the presence of spinules on the front tibiæ, in the colouring of the abdomen, and sometimes in the presence of more or less distinct pulvilli.

Anthrax pertusa, Loew, *Centur. viii. no. 28* (from Pecos River), is a *Thyridanthrax*.

12. *Anthrax* — ?

Hab. MEXICO (*Sumichrast*).

Not unlike *A. ephesus*; the differences are:—the larger brown spot on the cross-vein at the base of the second posterior cell, in size fully equalling the spot on the bifurcation of the third vein; the front tibiæ smooth, without spinules; the front tarsi with indistinct joints and small ungues; the brown on the antero-proximal half of the wings a little darker, its boundary well defined and not evanescent, a difference which is especially marked between the discal cell and the costa. The four specimens in Prof. Bellardi's collection are a little smaller than the average ones of *A. ephesus*, and measure from 6 to 8.5 millim.; they are abraded and covered with dust, so as to be unfit for description.

13. *Anthrax galathea*, sp. n., ♂. (Tab. II. fig. 15.)

Deep velvety-black; the sides of the thorax in front of the wings beset with golden-fulvous hairs, the pectus with similar but paler hairs; similar hairs, on each side, behind the wings, also at the base of the abdomen, on the sides of the first and second segments; fifth segment black in the middle, and beset on each side of the black with golden appressed scaly hairs, the hairs not quite reaching the sides of the

segment which are again black; segments 6 and 7 are black in the middle, and have tufts of yellowish-white hairs on the sides, with some golden hairs nearer the middle. The rest of the upper surface of the body black, except some scattered reddish-fulvous appressed hairs in front of the scutellum and some similar hairs along its posterior edge, and some fulvous hairs on the first abdominal segment; the rest of the surface of the abdomen clothed with short black hairs and soot-like appressed scaly pile. On the venter the hind margins of the segments have fringes of whitish hairs. Legs black. Antennæ black; basal joints very short; third joint short, conical, with a long style, tapering at its base. Face black, beset with orichalceous short hairs, the hairs whiter near the orbits; the black front with similar orichalceous hairs above the antennæ, mixed with a black pubescence; vertex comparatively narrow (σ); occiput black, the lower occipital orbits silvery. The antero-proximal two thirds of the wings of a deep brownish-black, not variegated by any darker or lighter shades on the cross-veins and bifurcations; the boundary of the black begins at the tip of the anal cell, forms an angle at the distal end of the discal cell, and then reaches the end of the first vein: thus the extreme distal edge only of the discal, the end of the first posterior, two thirds of the second submarginal, the curved portion of the first submarginal, and the enlarged portion of the marginal cells remain hyaline.

Length 11 millim.

Hab. COSTA RICA, Cache (*Rogers*).

A single male.

The front tibiæ are smooth and not beset with spinules; the front tarsi have small ungues, and a delicate, erect pubescence on both sides; the latter are less slender and less tapering than in those species which have almost *Exoprosopa*-like tarsi, and the joints are more distinct.

14. *Anthrax ephebus*, sp. n., σ ♀ .

The dark greyish-brown ground-colour more or less hidden under a yellow tomentum, which on the abdomen forms broad cross-bands occupying almost the whole segment and leaves on the posterior margins but narrow spaces clothed with a black tomentum; the sides of the abdomen have fringes of similar yellow hairs, interspersed with tufts of black hair which begin with the end of the second segment; venter with yellow hairs. Thorax beset with yellow hairs, a little more reddish in front; rufous macrochætæ on the præ- and post-alar callosities and on the scutellum. Face conically projecting; proboscis withdrawn (sometimes a little projecting); face and front with a yellow, appressed tomentum; front with a black, erect pubescence. Antennæ brown; third joint short, conical, gradually merging into a long style. Halteres with a yellowish knob; stem brown. The reddish or brownish ground-colour of the legs is hidden under reddish scales; the front tibiæ beset with spinules; tarsi brown, the front pair with distinct joints, comparatively large ungues, and beset with microscopic bristles on the underside (the delicate, erect pubescence, which, in some species, exists on both sides of the front tarsi, is not visible here); the ungues with a tooth-like projection at the base. Antero-proximal half of the wings brown, within which the bifurcations and cross-veins on both sides of the discal cell are clouded with darker brown, the boundary of the brown rather diluted; axillary cell almost entirely hyaline; the brown in the anal cell does not reach beyond the posterior cross-vein, it occupies a little of the fourth and third posterior cells, less than half of the discal, and has in the first posterior and first submarginal cells an evanescent boundary running obliquely towards the end of the first vein; in the hyaline portion there is a brown cloud on the bifurcation of the third vein, and another on the cross-vein separating the second posterior from the discal cell.

Length 9-12 millim.

Hab. MEXICO, Tehuacan (*Sumichrast*).

Two male and two female specimens in Prof. Bellardi's collection.

These specimens are dusty and abraded, especially about the thoracic dorsum and

scutellum; there are characters enough, nevertheless, to render the species recognizable. The description of *A. leucothoa*, Wiedem. Aussereur. zweifl. Ins. ii. p. 638 (Mexico), agrees quite well with this species, except "the three last segments of the abdomen densely covered with a silvery-white tomentum." I do not see any trace of such a tomentum on the four specimens of both sexes before me. The statement about the third joint of the antennæ being somewhat globular, "etwas kugelig," likewise does not agree with Prof. Bellardi's specimens.

15. **Anthrax cuniculus**, sp. n., ♂ ♀. (Tab. II. fig. 16.)

Ground-colour of the body black; the hair on the front part of the thorax very pale yellowish; on each side, above the wings, a stripe-like patch of white hairs not quite reaching the humeri; an appressed white tomentum of moderate density on the scutellum and on the abdomen; the latter with only the fourth segment darker (which, so far as I can see in two tolerably preserved specimens, is not due to abrasion); the sides of the abdomen fringed with white hair; a tuft of black hair on the fourth segment; rufous macrochætæ on the post-alar callosities; pleuræ and venter with white hair. Face conically projecting; face and front rather dark, with the usual rather dense covering of orichalceous appressed tomentum and black erect hairs; proboscis not protruding; antennæ—basal joints somewhat reddish on the underside; the third joint black, short but broad, conical, with a style not longer than the cone. The reddish or brownish ground-colour of the legs hidden under a covering of whitish or yellowish scales; tarsi dark brown. Antero-proximal half of the wings of a but moderately intense brown, which reaches but very little beyond the large and small cross-veins; the encroachment of the brown on the first submarginal and third posterior cells is also very trifling, but in the discal cell it occupies about one third; the brown nearly fades away before the end of the anal and also from the whole of the axillary cell, which is more grey than brown; the usual subhyaline spot before the proximal end of the discal cell is large and distinct, but there are no other subhyaline spots within the brown; the tip of the subcostal cell is hyaline; the contact of the fourth posterior cell with the discal is short.

Length 7–8.5 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Four specimens.

The description has been principally drawn from a well-preserved male.

16. **Anthrax consul**, sp. n., ♀.

Thorax with pale fulvous hair in front, and black hair on the pectus (dorsum and scutellum abraded); long black macrochætæ on the post-alar callosities and on the scutellum; a fringe of yellowish-white hairs on the sides of the thorax behind the wings, as well as on the sides of segments 1 and 2 of the abdomen; the sides of segments 3–7 beset with tufts of black hair; the surface of the abdomen (very much abraded) seems to have had a pale yellow tomentum on segments 2–4 anteriorly, and a covering of some black scaly hairs on the same segments posteriorly; segments 6 and 7 are covered with a white, almost silvery, tomentum, their posterior margins being beset with black hair; venter black. Legs black. Halteres with a pale brownish knob(?) Face conically projecting, black, with the usual orichalceous tomentum, and black, erect hairs; antennæ black, the first joint rather long, the third an elongated cone gradually merging into a style; occiput clothed with pale golden-yellow tomentum and pile; proboscis not projecting; the oral margin above it beset with short, black bristles. Antero-proximal part of the wings of a not very dark brown; axillary cell hyaline, except a little brown in its proximal portion. The brown in the anal cell reaches a little beyond the great cross-vein, encroaching very little upon the fourth and third posterior cells, and filling a little less than the proximal half of the discal cell; it encroaches on the first posterior cell a little more than the length of the anterior cross-vein, and then runs obliquely

towards the end of the auxiliary vein. The contact of the fourth posterior cell with the discal is shorter than the anterior cross-vein.

Length 10–11 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

A single female. In this insect the front tibiæ and tarsi are formed like those of *A. cuniculus*.

17. *Anthrax palliata*, ♂ ♀.

Anthrax palliata, Loew, Centur. viii. no. 32¹.

Hab. UNITED STATES, Illinois¹, Detroit, Michigan (*O. Sacken*).—MEXICO, Oaxaca (*Sumichrast*).

“Black, opaque, with luteo-fuscous hairs and tomentum, the thoracic dorsum mostly beset with black hair; the hind margins of the last abdominal segments beset with some black hairs; face drawn out in a cone; the third antennal joint conical; legs of a saturate luteo-testaceous; half of the wings black, the limit of the black colour subequal and very oblique.

“Allied to *A. fulvo-hirta*, Wiedem. Black, opaque, the scutellum of the same colour. Head black, the face conical, of a saturate luteous colour, except a stripe in the middle; hair of the front and of the face black, the tomentum luteo-subfuscous. Proboscis not projecting. Antennæ black; first joint dark luteous on the underside, with black pile; third joint conical. Hairs of the thorax fusco-luteous, those on the thoracic dorsum nearly all black; a good many black hairs on the pleuræ; tomentum of the thoracic dorsum fusco-luteous. The hairs on the abdomen are fusco-luteous, except a few slender black ones on the posterior angles of each and also along the hind margins of the last segments; the tomentum on the abdomen of the same colour as the hairs, whitish on the disc of the last segment. Venter black, the pile and a sparse tomentum luteous. Legs luteo-testaceous, the tarsi black towards the tip. Wings hyaline, the basal half black; the limit of the black colour subequal, very oblique, almost straight, very slightly concave anteriorly, more distinctly convex posteriorly: it reaches from the tip of the auxiliary vein to the last third of the axillary angle.”—*Loew, l. c.*

I have before me a specimen from Detroit, Mich., which I have compared with the type in Cambridge, Mass. The cone of the third joint of the antennæ is rather short, but has a linear prolongation which exceeds its own length. There are distinct tufts of whitish-yellow pile on each side of the thoracic dorsum above the roots of the wings. I do not perceive the whitish hair on the last segment which Loew mentions. The brown of the wings is rather even in colour, and has no subpellucid spots on the bifurcations and cross-veins, except the usual spot near the proximal end of the discal cell. The surface of the abdomen of my specimen is abraded, and Loew's type, so far as I remember it, is in the same condition. My specimen is 11–12 millim. long.

I have several specimens from Dallas, Texas (*Boll*), which perhaps belong to the same species, although they are only 8–9 millim. long. The well-preserved abdomen is covered with a dense, appressed, yellowish tomentum, but the first segment, the posterior half of the second and third segments, and nearly the whole of the fourth (except the anterior angles) are black.

In Professor Bellardi's collection in Turin there is a very much abraded specimen from Oaxaca (*Sumichrast*), which I take for *A. palliata*.

Painted N.B.—The three preceding species (*A. cuniculus*, *A. consul*, and *A. palliata*) form a natural group, having a conically protruding face, the same structure of the antennæ (a cone with a long linear prolongation), the same coloration of the wings (brown antero-proximal half, leaving a considerable part of the axillary cell hyaline; no subhyaline spots or cross-veins &c.), and same structure of front legs (tibiæ with spinules; tarsi with distinct joints).

18. *Anthrax castanea*.

Anthrax castanea, Jaennicke, Neue exot. Dipt. 30, t. 2. f. 15.

Hab. MEXICO (*Jaennicke*); GUATEMALA, San Gerónimo (*Champion*). Five specimens.

The original description having been made from imperfect specimens, I give a more complete one:—

Face projecting in a pointed cone, brown, reddish along the sides, the front black; both are clothed with a fulvous tomentum; short, black, erect hairs on the front; first joint of the antennæ reddish, the third black, conical, and with a long styliiform prolongation; proboscis not projecting beyond the oral margin (or projecting very little). Thorax with long fulvous pile, and a shorter, fulvous tomentum, between which two greyish stripes, interrupted some distance before the scutellum, are visible on the dark ground. Abdomen with long fulvous pile, and a shorter, fulvous tomentum; the two last segments, in the middle, are beset with white hairs, forming a conspicuous white spot. (I believe that both sexes have this spot, because one of the specimens, which I recognize as a female, shows some white hairs at the end of the rather rubbed off abdomen.) Legs reddish, the tarsi darker. The wings (very well figured by Jaennicke) have a brown base, two cross-bands, and some smaller brown spots at the ends. Length 10–14 millim.

N.B.—The front tibiæ are beset with spinules; the tarsi have distinct joints, comparatively large ungues, and no pubescence on the upperside. The interval between both eyes, in both sexes, is comparatively broad.

19. *Anthrax rex*, sp. n., ♂ ♀. (Tab. II. fig. 17.)

Ground-colour of the body black (sometimes reddish at the tip of the abdomen); face rounded, but little projecting; proboscis long, the portion reaching beyond the oral margin not quite so long as the head; face and front black, beset with black, erect pile, and a shorter, orichalceous tomentum. Antennæ black; first joint very short, slightly marked with red; third joint short, onion-shaped, with a slender style, beginning abruptly, and almost twice as long as the rest of the antenna, and a microscopic, bristle-like

appendage at the tip. Thorax with a pale fulvous fringe of hairs in front and on the sides, that on the latter passing under the wings, where it becomes whitish-yellow, and strongly contrasting with the black of the pectus; the thoracic dorsum, besides the usual pile, shows a rare, appressed, easily rubbed off, reddish tomentum. Scutellum with a conspicuous band of whitish tomentum at the base. Abdomen rather evenly covered with a dense, appressed, fulvous tomentum; the black, triangular spaces, occupying nearly the whole middle of segments 3 and 4 (sometimes also 2), show but very few fulvous hairs, which form an indistinct stripe in the middle. Venter black, beset with black hair. Legs dark chestnut-brown. Knob of the halteres pale yellow. Wings brown (not very dark) on the antero-proximal, and hyaline on the postero-distal portion; the brown does not quite cover the extreme end of the axillary and anal cells, almost reaches the middle of the discal cell, occupies a small space at the proximal end of the first posterior and first submarginal cells, and reaches the costal cell at the tip of the auxiliary vein—thus the extreme end of the subcostal cell remains hyaline; the edge of the brown is rather jagged; in the brown there are some subhyaline or simply paler spots—at the proximal end of the second anal cell, within the second anal, near the proximal end of the discal (the usual spot rather large here), in the middle of the first anal, and on the anterior and posterior cross-veins; moreover, the inner side of all the cells is a little paler. The contact of the discal and fourth posterior cells is narrow, shorter than the anterior cross-vein.

Length 7–12 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Twenty specimens of both sexes.

A. parvicornis, Loew, Cent. viii. no. 36 (Illinois), is exceedingly like *A. rex*, and I was somewhat tempted to regard the Sonoran insect as the same species. I have an example of *A. parvicornis* before me which I believe to be correctly determined, because I compared it with the type in Cambridge, Mass.; it agrees with two others from Dallas, Texas, and with some specimens from the same locality which I have seen unnamed in the Berlin Museum. All these differ from my numerous representatives of *A. rex* in having large tufts of yellow hair on the pleuræ, between the humerus and the middle coxæ (this agrees with Loew's description); while in *A. rex* there is a tuft of yellow hairs on the humerus, extending backwards to the root of the wing, but the hairs below this tuft are black. The face and legs in those specimens which I refer to *A. parvicornis* are rufous. The scutellum described by Loew as "præter basim nigram obscure rufum," has sometimes that colour, but is sometimes nearly black. Loew omits to describe the band of whitish tomentum at the base of the scutellum, which was probably abraded in his specimen; the coloration of the wings is the same in both species.

N.B.—*A. rex* and *A. parvicornis*, on account of the structure of the antennæ (which are like those of *Lepidanthrax*) and the prolonged proboscis, belong to a distinct, somewhat aberrant group. The front tibiæ are beset with spinules, principally on the upperside; the front tarsi have distinct joints, and are moderately stout. No pulvilli. Front comparatively broad, broader in the female.

Subgenus ANTHRAX.

Front tibiæ provided with minute spinules; front tarsi rather stout, furnished on both sides with the characteristic delicate, erect pubescence, the joints distinct; in some species

(genus *Hemipenthes*, Loew) with distinctly developed pulvilli, which in others are very small (*A. sinuosa*) or rudimentary (*A. lepidota*, *A. scylla*). Face very little projecting, only slightly convex; proboscis not projecting; third antennal joint short-conical, sometimes very short (*A. scylla*), with an abruptly beginning long undivided style, bearing a microscopic bristle at the tip. The prevailing colour of the known species is black, with a black pubescence, and the antero-proximal portion of the wings to a greater or lesser extent black or dark brown. White stripes on the sides of the thorax and white cross-bands on the abdomen occur in the European *A. maura* and the American *A. lepidota* and *A. chimæra*. Although, in their dark colouring, these species somewhat resemble *Argyramæba*, they are abundantly and easily distinguished by the structure of the antennæ (undivided style; no tuft of hairs at its tip), the front tarsi (much shorter, stouter, differently pubescent), the venation (none of the stumps of veins so common in that genus), &c.

Loew introduced the genus *Hemipenthes* (Centur. viii. no. 44, 1869), which he separated from *Anthrax* on account of the presence of pulvilli; he adds no other characters, and names the European *A. morio* and the American *A. seminigra*, Loew, as types. In his *Beschr. europ. Dipt.* i. p. 172, published in the same year (1869), he says distinctly that, besides *A. morio*, he knows of no other European species of *Hemipenthes*. But he seems to have overlooked the fact that distinct pulvilli exist in the European *A. velutina*, Hoffm. (as was noticed by Schiner in his 'Fauna,' i. p. 50, 1862), and in its American representative *A. sinuosa*. Still smaller are the appendages visible, under the microscope, at the base of the ungues of the European *A. maura* and its American representative, *A. lepidota*; a repeated examination convinces me, nevertheless, that they are minute pulvilli. Even in *A. scylla* I perceive something similar. Thus it seems that within the present group the development of the pulvilli is subject to variation and gradation.

I deem it preferable, therefore, to leave the genus *Hemipenthes* in abeyance, and to call the present group *Anthrax* (sensu stricto). Two reasons militate in favour of retaining the name *Anthrax* for this particular group: first, because the original *Anthrax morio*, Scopoli, belongs to it; and, second, because the name *Anthrax* (meaning coal) is the best adapted for this group of black species. In this case we have not only priority, but an appropriate name in *Anthrax*.

In speaking of my genus *Isopenthes* (comp. above, p. 96), I have alluded to the remarkable affinity between that genus and the present group of *Anthrax* (sensu stricto). *Isopenthes* has all the characters attributed above to the present group, including distinctly, although moderately, developed pulvilli. If the cross-vein bisecting the first submarginal cell were wanting in *Isopenthes*, I do not see how that genus would be distinguishable from *Anthrax* sensu stricto; *I. jaennickeana*, apart from the presence of this cross-vein, differs very little from *Anthrax sinuosa* (compare under that species, p. 133). This subject deserves the attention of those to whom fresh

specimens, fit for dissection, are accessible. The question is, whether we have here a mere outward resemblance or a real relationship.

The species belonging to this group and described by me may be tabulated as follows:—

The expanded distal end of the marginal cell hyaline.

Axillary cell and more than half of the anal one hyaline.

Abdomen with two distinct white cross-bands 20. *lepidota*, sp. n.

Abdomen almost entirely covered with a yellow tomentum 26. sp. ?

Axillary and anal cells, except their extreme ends, brown.

Cross-veins and bifurcations, within the brown, with very distinct pale margins (or aureoles) 21. *chimæra*, sp. n.

Cross-veins and bifurcations without any distinct pale aureoles (except the usual pale spot at the proximal end of the discal cell) 22. *eumenes*, sp. n.

The expanded distal end of the marginal cell more or less filled out by a brown spot.

Axillary and anal cells, except their extreme ends, brown.

The brown spot filling the expanded end of the marginal cell followed by another smaller spot at the end of the first submarginal cell 24. *sinuosa*, Wiedem.

No brown spot at the distal end of the first submarginal cell 25. sp. ?

The distal half of the axillary and anal cells hyaline 23. *scylla*, sp. n.

20. *Anthrax lepidota*, sp. n., ♂. (Tab. II. fig. 18.)

Black; a stripe of white hair between the humerus and the post-alar callosity; cross-bands of similar hair on the first and fourth abdominal segments; tufts of longer and finer snow-white pile in front of the halteres and behind them on the sides of the first and second abdominal segments; the collar-like fringe in front of the thorax and the tufts on the pleuræ pale yellowish; on the surface of the thorax are traces of an appressed reddish-fulvous tomentum (mostly rubbed off in my specimen); surface of the abdomen with a black soot-like covering of short, appressed, scaly hairs. Face and front black, with the usual black erect pile and a pale yellow appressed tomentum; face not conically protruding; proboscis withdrawn; antennæ (broken). Legs black; hind femora and tibiæ beset on both sides with conspicuous fringes of long black scales. Halteres with a yellowish-white knob. Wings: the dark brown of the antero-proximal half begins at the axillary excision, fills about one third of the anal, the whole of the second basal, and the proximal end of the discal cells; encroaches upon the first posterior and first submarginal cells a little beyond the anterior cross-vein; and reaches the costa at the tip of the auxiliary vein—thus the extreme end of the costal cell and the whole of the third and fourth posterior and axillary cells are hyaline. Except the usual subhyaline spot before the proximal end of the discal cell, there are no other conspicuous paler spots within the brown, nor any brown clouds in the hyaline portion of the wing; the contact of the fourth posterior and discal cells is short.

Length 8 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). A single male.

It is possible that the female of this species has no fringe of scales on the hind legs.

The front tibiæ (at least in my specimen, compare below) do not show any spinules; the joints of the front tarsi are rather distinctly marked; the front ungues very small;

the posterior ungues have at the base minute appendages, which may perhaps be taken for rudimentary pulvilli.

The European *A. maura* seems to be a near ally of *A. lepidota*: the colour of the body, with its white thoracic stripes and abdominal cross-bands, is nearly the same; the front legs have the same structure—only that the front tibiæ, in well-preserved specimens, show distinct, though very small and delicate, spinules. These spinules seem to fall off easily, and the same may be the case with *A. lepidota*. The posterior ungues show the same appearance of rudimentary pulvilli. The third joint of the antennæ of *A. maura* is onion-shaped, with a long style, beginning abruptly. *A. maura* is remarkable for its variable size, the specimens before me ranging from 6 to 12 millim. in length.

21. *Anthrax chimæra*, sp. n., ♂.

Hab. MEXICO, Northern Sonora (*Morrison*).

I have two specimens that are not well preserved enough for a full description, but which I have nevertheless named, in order to define at once their difference from *A. lepidota*, to which they bear a striking resemblance. The colour of the body seems to be exactly the same, only as the abdomen is somewhat abraded I cannot describe the first of the two cross-bands upon it, although I see traces of it; the second cross-band, on the fourth segment, is like that in *A. lepidota*. The principal difference between the two species consists in the extent of the black on the wings: in *A. chimæra* it fills the axillary and anal cells (except their extreme ends), a little less than half of the fourth posterior cell, and the proximal end of the third and more than half of the discal cell; paler spots, within the brown, occur on the anterior and posterior cross-veins, on the proximal ends of the first submarginal and third posterior cells, and within the first basal cell. Altogether, the colour of the wings is like that of *A. rex* (*cf.* Tab. II. fig. 17), only the brown is darker. The antennæ have a short onion-shaped third joint, with a long style, beginning abruptly (exactly like the antennæ of the European *A. maura*; see above, under *A. lepidota*); front legs as in *A. lepidota*. The size of our specimens is only 5–6 millim., but it is very probable that much larger ones occur.

22. *Anthrax eumenes*, sp. n., ♂ ♀. (Tab. II. fig. 19.)

Body black; head with the usual black erect pubescence and a scattered orichalceous tomentum on the face and front; antennæ black, the third joint short onion-shaped and with a style beginning abruptly; occiput with a yellowish tomentum. Thorax with the usual collar-like fringe of pale fulvous hairs; a stripe of impure white hair on each side, above the root of the wings, between the humerus and the post-alar callus; the dorsum and the scutellum with the usual reddish rare and scattered tomentum. Abdomen with white erect hairs on the sides of the first and second segments; distinct tufts of black hair along the sides, beginning with the end of segment 2; on segment 7, on each side, there is in the male a tuft of white hair, which I do not perceive in the female. Another difference seems to exist between the sexes in the tomentum covering the abdomen: in the female the segments, beginning with the first, have a delicate fringe of whitish hairs along the posterior margin, the seventh being entirely covered with them, and also patches of whitish tomentum on the sides above each of the lateral tufts of black hair; in the

male (the specimen is more abraded than the female) I perceive similar white patches, but the fringes along the margins seem to be less distinct. Venter clothed with whitish pile. Legs yellowish-brown, the tarsi darker; pulvilli distinct. Knob of the halteres yellowish-white, brown at the base. The boundary of the brown of the wings leaves hyaline—the tips of the axillary and anal cells, about two thirds of the fourth posterior cell (within which it forms an angular sinus), cuts off the proximal end of the third posterior cell, runs across the middle of the discal cell, strikes the small cross-vein, thence running along the fourth vein, which it leaves a short distance before the end of the discal cell in order to strike a perpendicular upon the second vein, follows the latter for a short distance, and then cuts across the marginal cell, reaching the extreme end of the first vein; the cross-veins within the brown have no pallid aureoles (at least the pale colour around them is quite inconspicuous, and perceptible under the magnifying-glass only); the usual subhyaline spot before the proximal end of the discal cell is present.

Length 12 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

I have a male and a female specimen.

This is certainly not *A. morioides*, Say, Compl. Wr. ii. p. 58 (Missouri), because Say distinctly describes the aureoles on the cross-veins, Nor can I recognize *Hemipenthes seminigra*, Loew, Centur. viii. no. 44 (Saskatchewan), in the present species; the description of the abdomen and of the legs ("pedes nigri" &c.) does not agree, nor the "cellula posterior prima anguste aperta;" the first posterior cell of *A. eumenes*, although coarctate after its expansion at the end of the discal cell, has a rather broad opening; Loew's species is smaller.

Nevertheless, this is a true *Hemipenthes* in Loew's sense; the pulvilli are distinct; the boundary of the brown on the wings is very like that of the European *A. morio* (comp. Meigen, ii. Tab. 17. f. 14), but the hyaline angle within the discal cell is much deeper, and there is a little more hyaline at the end of the anal and axillary cells.

In my 'Western Diptera' (p. 241) I have noticed the existence of several species in the western regions which may be regarded as belonging to *Hemipenthes*.

The wings of *A. eumenes* must be very like those of *A. bigradata*, Loew (which I do not know); but I cannot identify the description of the abdomen of the latter. Besides, Loew would not have overlooked the pulvilli.

23. *Anthrax scylla*, sp. n., ♂. (Tab. III. fig. 1.)

Head black, with black erect hairs, between which are shorter fulvous ones; face very little protruding; proboscis withdrawn. Antennæ brownish; basal joints short; third joint very short-conical, with a long styli-form prolongation, and a microscopic bristle at the tip. Thorax brownish-black, with pale yellowish hair forming a collar in front and an indistinct stripe on each side between the humerus and the scutellum. Abdomen brownish-black, with a dense covering of erect hairs, these latter appear dark when seen from above, except those on the distal third which (in some specimens more than in others) look whitish; in a reflected light, however, from a side view, the whole hairy covering appears dull whitish; the sides are beset with a fringe of hairs, consisting of an uninterrupted row of tufts, which are pale yellow at the base, then whitish on the anterior part of the second segment, and black on the posterior part of the same and the other segments; this fringe is longer here than in the allied species. Among the longer hairs on the thorax and abdomen there is a scattered appressed tomentum of reddish copper-coloured hairs (they are easily rubbed off) Knob of the halteres whitish at the tip. Legs more or less covered with fulvous scales; ground-colour yellowish-brown,

the tarsi darker; pulvilli indistinct. Wings hyaline, except the antero-proximal third and a spot at the distal end of the marginal cell, which are black; the boundary of the black starts near the axillary excision, crosses obliquely the anal cell near its middle (so as to strike the cross-vein at the distal end of the second basal cell), cuts off a small corner of the discal cell (which thus remains hyaline, except that little spot), crosses the first posterior and first submarginal cells a short distance beyond their proximal ends, follows for a short distance the second vein, crosses the marginal cell, and follows the first vein to its very end. The black spot is immediately at the tip of the first vein, and fills out a part of the expanded end of the marginal cell; a much smaller spot, in contact with the large one, is placed on the costal margin, between the ends of the second and of the anterior branch of the third vein.

Length 9–10 millim., and smaller specimens down to 5 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

I have seven specimens, apparently all males.

24. *Anthrax sinuosa*.

Anthrax sinuosa, Wiedem. Aussereur. zweifl. Ins. i. p. 301; O. Sack. Western Diptera, p. 239 (for the synonymy see my Catal. N.-Am. Dipt. 1878).

Hab. UNITED STATES.—MEXICO, Northern Sonora (*Morrison*).

I have a single worn specimen from Sonora before me which may be referred to this species; I have compared it with several similarly rubbed-off specimens from Texas. This species is most remarkably like *Isopenthes jaennickeana*; and if the cross-vein bisecting the submarginal cell in the latter were wanting, it would not be easy to distinguish them. Even the peculiar sericeous appearance of the surface of the wings, so much apparent in *I. jaennickeana*, exists, although in a lesser degree, in *A. sinuosa*. I regret not having intact specimens of the latter for a closer comparison; all I can notice at present is that the first posterior cell in *I. jaennickeana* is more coarctate towards the end and more expanded about the middle; that the clear spots on the cross-veins within the brown are less clear in the latter species; and that in the fourth posterior cell nearly the whole distal half is hyaline, while in *A. sinuosa* it is only the distal end. The small pulvilli are quite distinct in both species.

25. *Anthrax* —?, ♂.

Hab. MEXICO, Northern Sonora (*Morrison*).

I have a single male specimen which is very like *A. sinuosa*, but certainly distinct: it is 7–8 millim. long, has the black ground-colour very little hidden by pale yellowish pile, and the sides of the segments, beginning with the end of the second, with tufts of black hair. The brown on the wings is not unlike that of *A. sinuosa*, but less dark; the clear margins on the cross-veins and bifurcations are, on the contrary, more distinct; the hyaline along the posterior margin is broader, as it occupies at least one half of the fourth posterior cell and more than half of the first posterior and first submarginal cells; the bifurcation of the third vein is some distance from the boundary of the black, while in *A. sinuosa* it is close upon it; finally, the small brown spot on the

costa, at the end of the first submarginal cell, which exists in *A. sinuosa*, is wanting here. The pulvilli are distinct.

26. **Anthrax** —?, ♀.

Hab. MEXICO, Northern Sonora (*Morrison*).

Characters of *Anthrax* (sensu stricto), as defined above. The black ground-colour of the abdomen partly hidden under a yellow tomentum; the latter forms a conspicuous cross-band on the hind margin of the first segment, and the other segments seem to have been entirely covered by it, the bare and therefore black spaces being, apparently, abraded; nevertheless, the black cross-bands on the anterior portions of segments 2 and 3 are in part clothed by a black scaly tomentum; the sides of the abdomen beset with a fringe of black hairs, which begins in the middle of the second segment; the sides of the first segment have whitish hair; venter black, with yellow hair. Thorax with a yellow tomentum; on each side a stripe of whitish-yellow hairs, passing from the humeri above the root of the wings. Head with a yellowish-red tomentum and the usual black erect pile on the front; vertex with a fulvous tomentum. Halteres brown. The dark brown antero-proximal half of the wings is very much like that of *A. eumenes*, except in the anal and axillary cells: in the anal cell the brown does not reach beyond the proximal end of the fourth posterior cell; in the axillary cell it occupies a portion of the proximal half only, and does not reach the margin. Length 7 millim. (it is very probable that larger specimens occur). A single female.

N.B.—The pulvilli are small, but distinct. I cannot see the spinules on the front tibiæ; but the specimen is not well preserved.—This insect must be very near *A. bigradatus* (Loew, Centur. viii. no. 37, Cuba), but I cannot identify it with certainty.

Subgenus HYALANTHRAX.

Front tibiæ sometimes provided with spinules, sometimes smooth; front tarsi not unlike those of *Anthrax* sensu stricto, rather stout, provided on both sides with the characteristic, delicate, erect pubescence, the joints distinct; no pulvilli. Face very little projecting, only slightly convex; proboscis withdrawn; third antennal joint short-conical, with a styliform prolongation, the latter gently, but distinctly, tapering from the base to the tip, and in this respect different from the linear style of *Lepidanthrax*; the separation of the eyes on the vertex comparatively narrow, distinctly narrower in the male than in the female. The wings of the known species are hyaline, sometimes the costal cell only is darker; the venation is like that of *Anthrax* sensu stricto. A peculiarity of those species having the front tibiæ beset with spinules consists in the unusual development of the patagia-like organs at the base of the wings, these organs being usually clothed with a dense covering of scales and often with a brilliant silvery or golden reflection; similar scales, in such cases, adorn the enlargement of the base of the costa; the præ-alar hook

is concealed under these scales, and becomes visible after their removal only; the shade of colour of the scales is sometimes different in the two sexes. In the same group of species the cross-bands of a yellow tomentum sometimes existing at the base of segments 2-4 are more conspicuous in the female; in the male they are hidden under longer hairs of the same colour, these hairs being more dense in this sex.

Species of *Hyalanthrax* occur both in Europe and in North America, and those of one continent show remarkable analogies to those of the other. They are difficult to discriminate, and still more difficult to describe; even the European species are not sufficiently worked out. The group distinguished by its smooth front tibiæ (*A. faustina*, *A. sabina*, *A. lateralis*, Say, &c.) seems to be peculiar to America.

I need hardly repeat here that the presence of hyaline wings alone is not sufficient to characterize a *Hyalanthrax*. I have before me an undescribed species from Texas with hyaline wings and a dense covering of golden fulvous hair; this species, however, is abundantly distinguished from *Hyalanthrax* by the long, conical, third antennal joint, the conically projecting face, the front tarsi without the characteristic delicate pubescence of erect hairs, the different shape of the whole body, &c.

Synopsis of the Species of the Subgenus Hyalanthrax described below.

Sides of the abdomen with tufts of black hair on segments 3, 5, and 6.

Front tibiæ smooth, without any spinules; abdomen with narrow cross-bands of a scaly tomentum on all the segments.

Second abdominal segment with a white cross-band.

Knob of the halteres infuscated; abdomen of the male with silvery scales at the end 27. *faustina*, sp. n.

Knob of the halteres yellow; abdomen of the male without silvery scales at the end 28. *sabina*, sp. n.

Second abdominal segment with a yellow cross-band like that of the other segments 29. sp.?

Front tibiæ beset with spinules.

Abdomen without distinct cross-bands; the enlargement at the base of the costa in the male clothed with silvery scales; general colour of the pubescence greyish 30. *moneta*, sp. n.

Abdomen with conspicuous cross-bands of yellowish-white scaly hairs; the tufts of black hair on the sides of the abdomen large and conspicuous 31. *stenozona*, Loew (?).

Sides of the abdomen with tufts of black hair on segments 5 and 6 only.

The fringe of hair on the sides of the abdomen short and but little conspicuous 32. *livia*, sp. n.

The fringe of hair on the sides of the abdomen rather long and conspicuous; patagia of the male clothed with bright silvery, those of the female with more yellowish, scales 33. *agrippina*, sp. n.

27. ***Anthrax faustina***, sp. n., ♂ ♀.

Male. Ground-colour of the whole body black. Face, cheeks, front immediately above the antennæ and occipital orbits densely beset with snow-white scaly hairs; some scattered yellowish appressed hairs a little higher up on the front; the rest of the head with the usual black, erect pubescence; antennæ black; face very little prominent. The collar of hairs in front of the thorax and the long hair on the pleuræ and chest of a pale whitish-yellow; a short stripe of hairs above the root of the wings, and a tuft in front of them, whitish; a cross-band of golden tomentum before the scutellar suture, but only a trace of such a tomentum at the tip of the scutellum; the tomentose covering of the surface of the thorax and of the scutellum consisting of very delicate scales (very little conspicuous and perceptible under a lens only) of a dark metallic brownish or greenish hue. Knob of the halteres infuscated. Abdomen: second segment with a narrow cross-band of white hairs; the following segments each with a narrow cross-band of fulvous scales, that on the third segment occupying its anterior margin, those on the following segments being nearer the posterior margins; seventh segment entirely concealed under a thick covering of silvery scales. Sides of the abdomen fringed with white hair, except on segments 3, 5, 6, which have tufts of black hairs or rather scales. Venter with dense white pile, interrupted by narrow black stripes at the base of the segments (these are less visible when the segments are contracted); the hairs or scales on the third and the following segments sometimes pale yellowish or fulvous; anus with a tuft of black hair. Legs pale rufous, with the usual scaly covering; knees and tarsi dark brown; tips of the tibiæ often infuscated. Wings hyaline, including the costal cell; the root only, before the basal cross-veins, yellowish-brown; costal enlargement clothed with bright fulvous scales, mixed with black ones.

Female. Differs from the male in having the fringe of golden yellow appressed tomentum along the posterior margin of the scutellum more distinct; on the abdomen the second segment has a cross-band (narrower in the middle than on the sides) of pale, almost whitish-yellow, tomentum anteriorly; nearly the whole of the fourth and sixth segments covered with a tomentum of the same shade of yellow; a narrow cross-band on the anterior part of the third segment, and another on the fifth, of a more saturate yellow; no silvery scales on the seventh segment.

Length 10–11 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

The description is drawn from unabraded specimens; I had perhaps four or five such out of twenty-six. In most of the examples the yellow cross-bands were more or less abraded; the white cross-band on the second segment of the male and the silvery scales at the tip of the abdomen are, however, more persistent. The absence of a distinct border of golden tomentum from the posterior margin of the scutellum of the male will also help to distinguish this species; in fresh specimens there is a trace of such a tomentum at the tip of the scutellum only. The females are more difficult to separate from those *A. sabina*: the cross-bands on segments 2 and 4 in the latter are narrower and of a purer white; the fringes of hair on the sides of segments 4–7, and especially the tufts of white hair on segment 7, are shorter and less conspicuous. But both sexes of *A. faustina* will be distinguishable from *A. sabina* by the infuscated knob of the halteres.

The sides of the second segment of the abdomen are, as usual, rufous, as may be seen in abraded specimens; sometimes this colour extends to the first and third segments. The legs are variable in colour; black femora often occur; as a rule, the smaller the specimens, the darker the legs.

The size given is taken from normal specimens; smaller ones sometimes occur. Fifteen males and eleven females were sent by Mr. Morrison.

The differences between *A. faustina* and *A. lateralis*, Say, are detailed below, under species No. 29.

28. **Anthrax sabina**, sp. n., ♂ ♀.

Ground-colour of the whole body black. Face, cheeks, front for some distance above the antennæ, and occipital orbits densely beset with snow-white scaly hairs; antennæ black. The collar of hairs in front of the thorax very pale yellow; a short stripe of hairs above the root of the wings and the hair on the pleuræ and chest of a purer white; a cross-band of golden tomentum in front of the scutellar suture; posterior margin of the scutellum beset with a golden tomentum (the delicate tomentose covering on the surface of the thorax and on the scutellum is nearly abraded in my specimens, but seems to have consisted of blackish and greenish minute scales). Knob of the halteres yellow. Abdomen: second and fourth segments each with a narrow cross-band of white hair at their base; segments 3, 5, 6 each with a narrow cross-band of yellow hair at their base; segment 7 with a tuft of snow-white hair on each side. Venter clothed with white scaly hairs, with a black cross-band on each of the segments 3, 5, 6. The sides of the abdomen fringed with white hair, except the segments 3, 5, 6, which have tufts (or scales) of black hair. Legs black, more or less beset (the femora especially) with reddish scales; middle femora reddish, except at the tip. Wings hyaline, including the costal cell, the base yellowish-brown.

Length 7-11 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Very like *A. faustina*: the differences are indicated on the preceding page.

Abraded specimens show the rufescent colour of the sides of the second abdominal segment.

29. **Anthrax**, sp. ?

In addition to *A. sabina* and *A. faustina*, I have some doubtful specimens belonging to the group of *Hyalanthrax* with smooth front tibiæ:—

1. Two males and a female from Northern Sonora resemble *A. sabina*, but are larger, 11-14 millim. long; the cross-bands on segments 2 and 4 are broader, and not pure white, but yellowish-white. Without further proof I cannot take them for specimens of *A. sabina*.

2. Specimens in Professor Bellardi's collection (from Mexico, collected by Truqui), 11-13 millim. long, have all the abdominal cross-bands yellow. I have much smaller specimens of the same colour from Texas. If I am not mistaken, these specimens are identical with a species occurring in the Middle States of the Union, and which I used to call *A. alternata*, Say (Compl. Wr. ii. p. 61), with the doubtful synonym of *A. consanguinea*, Macq. (Dipt. Ex. ii. 1, p. 69); but I am by no means sure of the correctness of my previous identifications. These specimens are certainly distinct from the above-mentioned insect from Sonora. More material and local observation will perhaps solve these difficulties.

This may possibly be a species of common occurrence in the Atlantic States, which I called *A. lateralis*, Say, in my collection. I have a specimen from the White Mountains before me, which I refer to this last-named species; it is a male, and resembles the same sex of *A. faustina*; has silvery scales on the last abdominal segment, but the

hairs on the thorax and on the sides of the abdomen are of a bright yellow, and not whitish at all; the scaly cross-bands on the second and fourth abdominal segments are yellow; the scales covering the enlargement at the base of the costa are black, and not bright fulvous; all the erect hairs on the surface of the thorax and of the abdomen are less dense, and even seem to be shorter; the black tufts of hair on the sides of the fourth segment are distinctly shorter; in a word, the male of *A. faustina*, placed alongside that of *A. lateralis*, has a much more hairy appearance. The legs of *A. lateralis* are almost black; the costal cells are less hyaline, the veins forming them seem to be stouter and are more clouded with brownish. I have little hesitation in referring this specimen to *A. lateralis*, Say (Compl. Wr. ii. p. 59), although Say must have had a female, because he does not mention the silvery scales at the end of the abdomen.

30. ***Anthrax moneta***, sp. n., ♂.

Altogether covered with a thin fur of white hairs, between which the black ground-colour is distinctly visible; the usual collar of fur in front of the thorax with a slightly yellowish tinge; the sides of the abdomen with a fringe of white hairs, except on segments 3, 5, and 6, which bear tufts of black hair; the white hairs on the sides of segment 4 form a more conspicuous tuft, reaching a little inwards; a pair of tufts of snow-white hair on each side of the end of the abdomen; the surface of the abdomen shows no cross-bands, except in some specimens, where the white hairs at the base of segment 2 are a little more dense, and thus produce a faint appearance of a cross-band. Venter beset with a white tomentum and longer white hairs. Face densely beset with snow-white erect hairs, which, diminishing in length and density, encroach a little upon the front, above the antennæ; otherwise the front has the usual covering of black, erect hair. Antennæ black; third joint short-conical, with a long, slightly tapering style. Face projecting very little; occipital orbits beset with white scales. Knob of the halteres yellowish-white. Legs black; femora more or less beset with whitish or somewhat yellowish scales; front tibiæ beset with spinules. Wings hyaline; yellowish-brown at the root, before the basal cross-veins; costal cell with a tinge of brownish-yellow at the proximal end only; the enlargement at the base of the costa has a covering of white scales, which, in an oblique light, give a bright silvery reflection: similar scales cover the patagia or scapules above that enlargement.

Length 11–12 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). Five males.

31. ***Anthrax stenoazona*?**, ♀.

Anthrax stenoazona, Loew, Centur. viii. no. 40 (♀)¹.

Hab. UNITED STATES, Illinois¹.—MEXICO, Northern Sonora (*Morrison*).

I have a single specimen from Northern Sonora, which I doubtfully refer to this species. The tomentum in front of the scutellum, on its sides, and the tomentose cross-bands on segments 2, 3, 4 of the abdomen are not of a pure white, but have a slight yellowish tinge. On the venter the first four segments have a rather even whitish tomentum. In other respects the description agrees well; the fringe of hairs on the hind tibiæ mentioned by Loew is present. In this species the tufts of black hair on the sides of the abdomen are particularly long and conspicuous.

N.B.—There is another *A. stenozona*, Loew, Besch. eur. Dipt. i. p. 180, from Asia Minor, likewise a *Hyalanthrax*. Both were published in 1869, but the American species has priority.

32. ***Anthrax livia***, sp. n., ♂ ♀. (Tab. III. fig. 2, ♂.)

Ground-colour black, clothed with pale-yellow hairs and tomentum; the hairs form a covering on segments 1–4, which is more dense in the male than in the female; in both sexes, however, this covering is not dense enough to render less conspicuous the cross-bands formed by the tomentum (different in this from *A. agrippina*, where the hairs are much longer and more dense); these cross-bands occupy the anterior portion of segments 2, 3, 4, and are broader on the sides than in the middle (that on segment 3 is narrower than the others, that on segment 4 the broadest, in some unabraded specimens the latter cross-band occupies the whole segment); the same segments 2, 3, 4 have a narrow fringe of yellow tomentum along the hind margins, coalescing with the cross-bands on the next segment (these fringes are more distinct in the male than in the female and often abraded); segments 5 and 6 are deep black anteriorly, owing to an appressed tomentum of that colour, and their hind margins have a dense fringe of pale yellow hairs; segment 7 is beset with pale yellow and white hairs, the white hairs principally on the sides and beneath, and a little more conspicuous in the male than in the female. The venter is densely clothed with a whitish tomentum, except on segments 5, 6, 7, which have more or less distinct black cross-bands, corresponding to the cross-bands of the dorsum; the cross-band on segment 5 is usually the most distinct. The sides of the abdomen, in correspondence with the colouring of the dorsum and venter, are beset with pale yellow hairs, except the segments 5 and 6, which have small tufts of black hair. Face densely clothed with white, sometimes pale yellowish, hairs; the lower part of the front with similar hairs, higher up they become more yellow; the front beset with the usual black, erect pubescence; occipital orbits with a fringe of white, sometimes silvery, scales. The hairs on the thorax above are pale yellowish, on the underside whiter; the usual triangle of yellow tomentum in front of the scutellum, and a fringe of similar tomentum on its posterior margin; unabraded specimens show three stripes of the same sort of tomentum on the thoracic dorsum. Halteres pale yellow. The dark ground-colour of the legs nearly hidden under a dense covering of yellowish and reddish-yellow scales, whiter or whitish on the femora; the tarsi and the tips of the tibiæ black. Wings hyaline, including the costal cell; the root reddish-yellow; auxiliary vein, fifth vein, before the great cross-vein, and sometimes also a portion of the first vein, rufous; the enlargement of the costa has a fringe of black hair, and on the disc yellow or reddish-yellow metallescent scales; the scales of the patagia are whitish or pale yellowish (seldom reddish), more or less metallescent in an oblique light (there is less difference in this respect between the sexes, and the silvery reflection is less conspicuous here than in *A. agrippina*).

Length 10–14 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). Six males, five females.

N.B.—*Anthrax mucorea*, Loew, Centur. viii. no. 43, from Nebraska, must be very like *A. livia*, but I am not certain about their identity.

33. ***Anthrax agrippina***, sp. n., ♂ ♀. (Tab. III. fig. 3, ♀.)

Ground-colour brownish-black, densely clothed with rather long, erect, fulvous hairs, which are especially conspicuous along the sides of the abdomen; the segments 5 and 6 alone have, on each side, a tuft of black hair. Towards the end of the abdomen, especially in the male, the long erect hair increases the apparent breadth of the segments and gives them an unusually bushy appearance; the hairs being planted in dense rows or fringes on the anterior part of the segments, the darker ground-colour of the posterior part is more or less visible between the rows and produces a more or less distinct appearance of dark cross-bands. In the female these black cross-bands are much more distinct, owing to the long, erect, fulvous hairs being less dense, and the segments 2, 3, 4, &c. have, along their anterior margins, distinct cross-bands (attenuate, or even interrupted, in the middle) of yellow tomentum; the yellow cross-bands

are broader on segments 2 and 4 than on segment 3, and they probably exist on the following segments also, but are hidden by the rows of erect fulvous hairs which are denser here. The thorax is clothed with similar fulvous hairs, which are paler on its underside; the dorsum has, in addition, a scattered orichalceous tomentum. Face and cheeks covered with dense pale yellow hairs; the front with the usual black erect pubescence, under which an appressed yellow tomentum is visible. Antennæ black; third joint in a short cone, prolonged in a gradually tapering style; occipital orbits beset with a scaly tomentum, which is whitish below, and yellowish behind the vertex. Halteres with a yellow knob. Legs densely beset with reddish-yellow scales, which hide the dark ground-colour; tarsi black; front tibiæ beset with spinules. Wings hyaline; costal cell only slightly tinged; venation normal; the enlargement of the costa near the base has a fringe of black hairs in front, but its surface is clothed with white scales that, in an oblique light, give a silvery reflection, the effect of which is increased by similar scales covering the patagia; the latter are particularly large and conspicuous in this species; in the female the scales on the costal enlargement and on the patagia are yellowish, and therefore less striking.

Length 14–16 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). Three males and one female.

Species of the genus *Anthrax* described from Mexico and Central America by former authors, and not known to me:—

- Anthrax astarte*, Wiedem. Aussereur. zweifl. Ins. ii. p. 637.—Mexico.—I have mentioned above (*ante*, p. 122) that one of the species described by me sub Nos. 8–10 is very probably *A. astarte*.
- *abbreviata*, Wiedem. loc. cit.—Mexico.—A very peculiar species, certainly not among those I have before me.
- *sagata*, Loew, Centur. viii. no. 34.—Mexico, Matamoros.—Allied to *A. celer* and *A. fulvohirta*. Description incomplete, as Loew's only specimen had no head.
- *quinque-punctata*, Thomson, Kongl. Svenska Fregatten Eugen. Resa, Zool. p. 484.—Panama.—Perhaps a *Lepidanthrax* near *L. proboscidea*.
- *nudiuscula*, Thomson, loc. cit. p. 482.—Panama.
- *leucothoa*, Wiedem. loc. cit. p. 639.—Mexico.—This insect must resemble my *A. ephesus*. Compare my remarks about that resemblance (*ante*, p. 125).
- *flaviceps*, Loew, Centur. viii. no. 29.—Mexico, Tamaulipas.

The following species it is as well to notice here on account of the possibility of its occurring within our northern boundary:—

- [*Anthrax melasoma*, van der Wulp, Tijdschr. voor Ent. xxv. p. 80, t. 9. f. 2.—Arizona.—In this species the brown on the wings reaches the bifurcation of the third vein; it thus differs from all those above described by me, except *A. galathea*. *A. melasoma* belongs to the group of *A. alcyon*, Say.]

ONCODOCERA.

Ogcodocera, Macquart, Dipt. Exot. ii. 1, p. 83, t. 15. f. 1 (1840).

Oncodocera, as amended by later writers.

In introducing the genera *Anisotamia* (*op. cit.* p. 81, t. 14. f. 2) and *Oncodocera* Macquart correctly defined their differences from *Anthrax*, but he did not seem to be aware that they are much more closely allied to *Lomatia*, and that, in this respect, his definition was wanting. Loew (Südafr. Dipt. p. 205) strongly suspects that the *Anisotamia centralis*, Macq., from the Cape, is the same as *Lomatia pictipennis*, Wiedem. The *Anisotamia eximia* from Mexico (syn. *Anthrax valida*, Wiedem.) was added much later, in Macquart's Suppl. iv. p. 115. Whether the latter is a true *Anisotamia* in Macquart's original meaning I cannot tell, but it seems to me that there is very little reason for not placing it in the same genus with *Oncodocera dimidiata*, Macq. (synon. of *Mulio leucoprocta*, Wiedem.). In my Catalogue of N. Am. Diptera, 1878, p. 90, I have placed both species in the genus *Oncodocera*.

Oncodocera valida has the antennæ approximate at the base, the first joint short, the second round, the third subulate (awl-shaped) and with a microscopic, indistinct appendage at the tip; proboscis withdrawn within the mouth; frontal triangle rather large; eyes separated on the vertex in the female, contiguous in the male for a rather short interval; ocellar triangle (in the male) small and narrow, wedged in between the eyes. Abdomen beset with very long, bushy hairs, especially on the sides; with seven distinct segments; the seventh broader in the female than in the male; a small eighth segment, withdrawn within the seventh, is distinctly visible in the male; the forceps concealed within the eighth segment; the female shows not the usual coronet of spinules but that circle of concentric hairs which is visible in the same sex of *Aphæbantus*, *Triodites*, and the allied genera. The pulvilli distinct. Front tibiæ beset with spinules; hind tibiæ with a fringe of hairs on the upperside, not unlike that of some *Tabani*. Wings: bifurcation of the second and third veins close to the origin of the second, and very far from the small cross-vein; the latter is oblique and considerably beyond the middle of the discal cell; anal cell closed; first posterior cell closed, sometimes, however, narrowly open; the end of the auxiliary vein very near the end of the first longitudinal vein; contact of the discal and fourth posterior cells broad.

Oncodocera leucoprocta shares the same characters, and the differences must be considered as having a merely specific value; the third joint of the antennæ is a little broader at the base, and therefore like a flattened cone or triangle (the figure in Macquart is very incorrect); the hind tibiæ have no fringe of hairs, but in both sexes only scattered spinules; the first posterior cell is open.

The differences between *Lomatia* and *Oncodocera* are considerable: in *Lomatia* the eyes of the male are not contiguous on the vertex, but separated by a narrow interval;

the proboscis protrudes a little beyond the oral margin, and has much narrower lips; the anal cell is open; the antennæ of the known species have a somewhat different structure, the third joint being stouter at the base and more suddenly attenuate (but the last two characters may be merely specific). The differences in the general characters and in the nature of the hairy covering are obvious.

The genital organs are very much alike in structure in both genera: the male forceps withdrawn symmetrically within the abdomen; the ovipositor with a thick covering of silky fibres like that of *Bombylius*. In both genera there are no macrochætæ on the scutellum and post-alar callosities differing in size from the other hairs; two or three macrochætæ are perceptible on the præ-alar callosities only. In this respect *Lomatia* and *Oncodocera* differ from the majority of the "Anthracina."

1. *Oncodocera valida*.

Anthrax valida, Wiedem. Aussereur. zweifl. Ins. ii. p. ~~647~~⁶³⁶¹. *7 lines*

Anisotamia eximia, Macq. Dipt. Ex. Suppl. iv. p. 114, t. 11. f. 2².

Oncodocera valida, O. Sacken, Catal. N. Am. Dipt. 1878, p. 90. *9*

Hab. MEXICO^{1 2} (*Sumichrast & Craveri, in coll. Bellardi*); GUATEMALA, San Gerónimo (*Champion*).

I have a pair from the latter locality before me; both specimens are entirely abraded.

2. *Oncodocera leucoprocta*.

Mulio leucoprocta, Wiedem. Aussereur. zweifl. Ins. i. p. 330 (♂) (sine patria). *2 1/4 lines*

Anthrax terminalis, Wiedem. loc. cit. ii. p. 639¹.

Ogcodocera dimidiata, Macq. Dipt. Ex. ii. 1, p. 84, t. 15. f. 1 (♀).

Oncodocera leucoprocta, O. Sacken, Catal. N. Am. Dipt. 1878, p. 90.

Hab. SOUTHERN UNITED STATES.—MEXICO¹.

EPACMUS*.

Leptochilus, Loew, Centur. x. no. 40 (1872) (nomen præocc.).

The name *Leptochilus* being preoccupied in Hymenoptera (Saussure, 1852), I am obliged to adopt a new generic name in place of that of Loew.

1. *Epacmus modestus*.

Leptochilus modestus, Loew, Centur. x. no. 40¹.

Hab. UNITED STATES, Texas¹, California.—MEXICO, Northern Sonora (*Morrison*).

Loew is quite right in describing the hairs above the oral margin in the female of this species as "non raro ferrugineis, vel fuscis, interdum nigris." My few specimens show these differences.

* ἑπακμος, pointed.

Besides these examples I have seen several others (two males, four females) from Tehuacan, Mexico (*Sumichrast, in coll. Bellardi*) which are a little larger; have a distinct stump on the upper branch of the third vein (one of them, however, with a rudiment only of such a stump, and one of the females no stump at all); the row of stiff bristles along the oral edge rather long, dense, intensely black, and for this reason much more conspicuous than in the other specimens; the wings more or less infuscated at the base and along a part of the costa; and the row of black bristles overshadowing the male forceps (and mentioned in Loew's description) being particularly conspicuous. Nevertheless these two males, as well as one of the females, do not show a trace of the depression, or emargination, in the middle of the scutellum which Loew describes, and which exists in the other specimens. (All these Mexican specimens are very mouldy, and unfit for a closer comparison.) I incline to believe that *E. modestus* is a very variable species; but the question of the identity of the Tehuacan specimens I leave in abeyance. That they belong to this genus is certain; and therefore it is equally certain that the absence of a stump and the presence of the emargination on the scutellum should be struck out from among the generic characters. But whether that emargination is a specific character, or merely an individual aberration, I cannot tell. The principal characters of *Epacmus* may at present be summed up as follows:—1. The bifurcation of the second and third veins taking place not far from the origin of the former, and a long distance before the small cross-vein. 2. The glabrous eyes being contiguous in the male, with a comparatively large triangular front between them and the antennæ. 3. Antennæ: basal joints short; third joint unsymmetrically short onion-shaped, prolonged in a style which ends in a very minute bristle. 4. Oral opening large, elongated, elliptical, patulous posteriorly; proboscis elongated, projecting beyond the oral margin, linear, ending in narrow lips (thus producing an almost imperceptible incrassation). 5. Face short, projecting in the profile in front of the eyes. 6. Legs beset with delicate spines. 7. Pulvilli none. 8. Posterior cells open; anal cell usually open (almost closed in some specimens); upper branch of the third vein with or without stump. 9. The abdomen of the male rather narrow, almost club-shaped at the end, the club being formed by the large male forceps, the two halves of which seem to be encased in the cup-shaped last ventral segment; that of the female showing at the end the circle of converging hairs common to many genera of the present group.

Forms related to *Epacmus*, and also to *Aphæbantus*, occur in Central Asia (Berlin Museum, from Loew's collection).

APHŒBANTUS.

Aphæbantus, Loew, Centur. x. no. 39 (1872).

Besides *Epacmus* (*Leptochilus*, Loew) the western regions of the United States, as well as Northern Mexico, contain a number of closely allied species belonging to the group in which the bifurcation of the second and third veins takes place some distance

before the small cross-vein, the antennæ are remote at the base, and the contact of the eyes in the male leaves a comparatively large triangular front above the antennæ. These species have—1, nearly the same structure of the antennæ: short first and minute second joints; the third joint unsymmetrical, short onion-shaped, with a styliform prolongation, not separated (so far as I can see) by a suture, and ending in a minute, sometimes scarcely apparent joint, with a bristle; or else, the incrassate base and the style of the third joint become less differentiated (in other words, the onion-shape becomes more elongate and the style merges into it, and the minute joint with the bristle remains [*A. rattus*]); 2, the same venation (with or without stump on the third vein; anal and posterior cells open); 3, nearly the same structure of the male genitals (quite different from those of *Anthrax*). These species differ from *Epacmus* in having small, but distinct, pulvilli; a shorter proboscis, with larger, fleshy lips at the tip; the oral opening smaller, and usually filled up by the proboscis and its lips, when the former is withdrawn; the oral margin less projecting in front of the eyes, and therefore the face more retreating. They differ from *Lomatia* and *Oncodocera* in having the antennæ remote at the base.

For one of the species of this group Loew formed the genus *Aphæbantus* (Centur. x. no. 39, 1872), but he did not define it so successfully as *Leptochilus*. He merely indicates between it and certain *Argyramæbæ* differences that are obvious, and points out the presence of pulvilli and of a stump to the third vein; the latter character, in this group especially, has no importance whatever. Loew had but one species, *Aphæbantus cervinus*, and that in the female sex only. The long bristle at the end of the hind metatarsus, mentioned by Loew in the specific description of *A. cervinus* (Centur. x. no. 39), exists more or less in all the species of this group, as well as in *Epacmus*; the degree of its development is generally proportionate to the size of the other bristles on the legs; it becomes inconspicuous in *A. rattus* and *A. cyclops*, in which the tibial spinules are but little stronger than hairs.

I have described below nine species belonging to this group, and it is very probable that many more will be discovered in the western regions of North America. Some of these species may be considered generically distinct from the typical *A. cervinus*, Loew; but, loosely defined as the genus *Aphæbantus* is, I prefer to leave all these species under that heading, until further discoveries suggest a better arrangement. *Aphæbantus*, in the present, provisional sense, would answer Loew's definition, with the omission of the presence of a stump, which is an untrustworthy character.

When I proposed the genus *Triodites* ('Western Diptera,' p. 225) for a species of the same group, I did not know the genus *Aphæbantus* except from the description, and the stress laid by Loew on the presence of a stump prevented me from placing my *Triodites mus* in that genus. The loose definition of *Aphæbantus* which I provisionally adopt now would admit *Triodites mus* within that genus; the adoption or rejection of the genus *Triodites* must therefore be deferred until the final settlement of the genera of

this group. Although I have devoted a great deal of time to the working-out of the small material at my command, I am far from satisfied with the result, and only hope that it may facilitate and not impede the work of others. I am greatly indebted to Dr. Williston, of New Haven, U. S., for the communication of specimens. Several of the species described below were only found outside of the geographical limits of the 'Biologia Centrali-Americana'; it would have been inexpedient to omit these in a first attempt at a monographic treatment of this group; and, moreover, they all belong to the same zoological region, and will very likely be discovered south of the Mexican border. The species not yet detected in our region are placed in brackets.

Synopsis of the Species.

Scutellum hairy, but without any bristles that are distinctly longer and stronger than the rest.

Third antennal joint conical, prolonged in a style about as long as the cone; first abdominal segment, posteriorly, with a conspicuous fringe of white tomentum; legs black, the knees reddish, pubescent; the spinules on the tibiæ small and weak

1. *A. cyclops*, sp. n., ♂ ♀.

Third antennal joint elongate-conical, with a minute joint ending in a bristle at the tip

[2. *A. rattus*, sp. n., ♂ ♀.] *> excessia*

Third antennal joint subglobular or onion-shaped (unsymmetrical), prolonged in a style at least one and a half times as long as its basal portion; first abdominal segment, posteriorly, with a fringe of yellowish hairs less conspicuous than the fringes on the following segments; femora black, the knees and tibiæ reddish-brown, the ground-colour almost concealed under a covering of silvery scales; the spinules on the tibiæ longer than in *A. cyclops*

[3. *A.*, sp. ?]

Scutellum (generally also the præ- and post-alar callosities) with more or less distinct bristles or stronger hairs.

The hind femora, on the outer, lower side, showing a series of a few spinules, which are distinctly stronger than ordinary hairs.

Abdomen black, the hind margins of the segments with a more or less distinct white tomentum

4. *A. (Triodites) mus*, O. S., ♂ ♀.

Abdomen clothed with a more or less dense yellowish-brown tomentum.

Front beset with black, erect hairs [5. *A. cervinus*, Loew, ♀.]

Front beset with whitish, erect hairs [6. *A. conurus*, sp. n., ♂.]

Abdomen white at the base, with alternating ochreous and white cross-bands, formed by the tomentum on the following segments

7. *A. bisulcus*, sp. n., ♀.

The hind femora, on the outer side, beset with long, soft hairs, without any series of stronger spinules.

Face with white, erect hair; male forceps projecting, but of moderate size 8. *A. carbonarius*, sp. n., ♂ ♀.

Face with black, erect hair; male forceps nearly as long as half the abdomen 9. *A. peodes*, sp. n., ♂ ♀.

1. ***Aphæbantus cyclops***, sp. n., ♂ ♀. (Tab. III. figg. 4, 4 *a-c*, ♂.)

Male. General covering of the body greyish-black; thoracic dorsum, scutellum, and abdomen clothed, besides the longer hairs, with a short, appressed, rather rare fulvous tomentum, not dense enough to conceal the ground-colour; in the middle of the mesonotum this tomentum forms three, often indistinct, stripes, the lateral of which contain many white hairs, especially on their anterior portion, and thus appear (at least in well-preserved specimens) whitish; on each side, between the humerus and the post-alar callus, above the root of the wing, is another stripe of short, white, erect hairs; pleura with a large tuft of white hairs in front of the root of the wing, and another one below more or less coalescent with it; first segment of the abdomen posteriorly with a dense fringe of short white hairs, forming a distinct cross-band which is slightly interrupted in the middle; almost imperceptible whitish fringes on the other segments; the whole abdomen clothed with a fur of long, soft hair, the whitish colour of which becomes visible in a certain light only, especially on the sides and at the tip; the last ventral segment (enclosing the forceps) conspicuously expanded downwards, within it (when viewed in the direction of the axis of the body) three pieces, composing the forceps, may be seen, with a Y-shaped incisure between them. Front, face, and occiput beset with whitish hairs; upper part of the occipital orbits with a silvery reflection. Antennæ black; third joint subconical at the base, unsymmetrically prolonged in a style about as long as its basal portion, and ending in a microscopic joint with a bristle. Halteres whitish-yellow. Legs black, the knees slightly reddish; hind femora clothed on the outer side with a short appressed whitish, moderately dense, tomentum, and with a fringe of long soft hairs on the underside; stiff hairs or spinules on the hind tibiæ; no long bristle at the end of the hind metatarsus. Wings hyaline, yellowish-brown at the root; a spot of the same colour near the origin of the second vein.

Female. General colouring of the body greyish-black; thoracic dorsum, scutellum, and abdomen clothed with a short, appressed, rather rare, fulvous tomentum, not dense enough to conceal the ground-colour; the stripes which this tomentum forms on the thorax of the male are almost (sometimes altogether) invisible here; a stripe of white hairs each side above the root of the wings, between the humerus and the post-alar callus; pleuræ beset with white hairs; hind margins of the abdominal segments with more or less distinct fringes of white hairs (more distinct than in the male); the fringe on the first segment broader and slightly interrupted, and the erect hairs on the abdomen shorter and much less conspicuous than in the male. Interval between the eyes rather broad on the vertex; face and front clothed with a short, appressed fulvous tomentum, the short, erect hair on the same parts having a dark appearance, but showing in some specimens and in a certain light a silvery or yellowish reflection; frontal and occipital orbits whitish; the orbits near the vertex dark. Antennæ and legs as in the male. Wings hyaline, very little yellowish at the root; a stump on the fork of the third vein often, but not always, present.

Length 6-8 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). Three males, four females.

A female specimen, somewhat larger (9-10 millim.), has the hind margins of the abdominal segments without any white hairs, and even the scale-like hairs on the first segment yellowish. I am not sure whether it is the same species. *A. cyclops* seems to be variable as to the distinctness of the stripes on the thorax; specimens in which they are very distinct are comparatively rare.

2. [*Aphœbantus rattus*, sp. n., ♂ ♀.

Not unlike *A. cyclops* in general appearance and colouring, but easily distinguished by the shape of the black antennæ: the third joint in the form of an elongated cone, somewhat flattened from the sides, and without styliform prolongation; a minute joint, ending in an equally minute bristle, at the tip. The black greyish ground-colour of the body is rather uniformly clothed with a short, appressed, pale yellowish tomentum, which does not form any cross-bands on the hind margins of the abdominal segments, but is rather uniformly spread over the whole abdomen; on the thorax this pubescence forms indistinct stripes, especially visible on the sides, between the humerus and the post-alar callus (I see this in the female; the male is greasy, and for this reason its colour is indistinct). Hairs on the face and front yellowish. Legs black; a few delicate spinules on the hind tibiæ are visible in the male, but hardly perceptible in the female; the longer bristle at the end of the hind metatarsus inconspicuous. Last ventral segment in the male large, and projecting downwards with its considerable convexity (as in *A. cyclops*, ♂). No stump on the third vein. The proboscis in this species is more pointed, the lips being narrower, and for this reason the oral opening is more patulous (I cannot discern the palpi); in my female specimen the proboscis even projects a little beyond the oral margin, perhaps accidentally; the face is a little less retreating than in *A. cyclops*; the pulvilli are rather small. In all these characters this species approaches *Epacmus*.

Length 6–7 millim.

Hab. NORTH AMERICA, Dallas, Texas (*J. Boll*). A male and a female.]

3. [*Aphœbantus* — ?

Of the same size and general colouring as *A. cyclops*, but showing well-marked differences:—1. The knees and tibiæ are reddish-brown, but the ground-colour is almost hidden under a covering of silvery scales; on the femora and tibiæ there are delicate spinules or bristles, distinctly differentiated from the hairs, and longer than in *A. cyclops*; a small number (three?) of similar spinules form a row on the underside of the hind femora, on the tibiæ they are more numerous. 2. There is no conspicuous fringe of white hairs on the hind margin of the first abdominal segment (as in *A. cyclops*); on the other segments the whole distal third is clothed with a short, dense, appressed pale golden-yellow pubescence, forming regular cross-bands, the intervals being black; the long, erect pubescence on the sides of the abdomen is very pale yellowish; the scutellum is clothed with appressed tomentum and erect hairs, but has no distinct bristles. 3. The third antennal joint has the basal, incrassate portion shorter than in *A. cyclops*; it is almost onion-shaped, with a style equal to about one and a half times its own length; a distinct bristle at the tip. 4. Third vein without stump.

Length 6–8 millim.

Hab. NORTH AMERICA, Western Kansas (*E. W. Guild*).

A single specimen received from Dr. Williston.]

4. *Aphœbantus mus*, ♂ ♀.

Triodites mus, O. Sacken, *Western Diptera*, p. 245; Riley, Packard & Thomas, *Second Report of the U. S. Entomol. Commission*, 1880, pp. 262–269, t. 16 (♂ ♀ figured) (reproduced in *Amer. Naturalist*, June 1881).

Hab. NORTH AMERICA, Western United States.—MEXICO, Northern Sonora (*Morrison*).

In the absence of my original types, I refer to this species eight females and one male from Northern Sonora. The knees in all these specimens are distinctly yellowish. I also perceive on the abdomen, in both sexes, a covering of short, scale-like, coal-black hairs, not unlike soot, besides the white scales and downy hair. The shape of the abdomen of the male I would call “subconical,” rather than “cylindrical”; the occiput

of the female "tumid," rather than "slightly tumid." The size of the specimens varies from 7 to 11 millim. The knob of the halteres is more infuscated in this species than in its allies.

5. [**Aphœbantus cervinus**, ♀.

Aphœbantus cervinus, Loew, Centur. x. no. 39.

Hab. NORTH AMERICA, Texas (*J. Boll*).

This species has much stronger macrochætæ on the scutellum and on the præ- and post-alar callosities than any of its congeners. The long spinule noticed by Loew at the end of the hind metatarsus exists in many of the allied species (see above, the generalities on *Aphœbantus*). The male is as yet unknown.]

6. [**Aphœbantus conurus**, sp. n., ♂.

See p. 285

Face and front clothed with a yellowish-white erect pile, under which the greyish ground-colour, with an occasional silvery reflection, is perceptible. Antennæ black; the style of the third joint about as long as the incrassate basal portion; terminal bristle comparatively large. Body greyish-black, clothed with an appressed yellowish-fulvous tomentum; the rounded posterior edge of the scutel, except a small spot in the middle, glabrous, black, shining, beset with a number of rather conspicuous black macrochætæ; similar macrochætæ, black or reddish, on the præ- and post-alar callosities; a number of black bristles in front of the scutellum; pleuræ grey, clothed with white, scale-like, appressed hairs; a tuft of whitish erect pile between the root of the wing and the humerus. Abdomen subconical, slightly coarctate in the middle, showing, besides the comparatively dense, appressed, yellowish-fulvous tomentum, rows of rather long, black, erect bristles along the posterior margins of the segments, beginning with the second; tip of the abdomen but little incrassate; the last ventral segment, enclosing the forceps, placed obliquely, end upwards (only the upper portion of the forceps, longitudinally bisected, is visible), black, reddish at the tip. Halteres more or less brownish. Legs black; densely clothed with scales, silvery on the femora, more yellowish on the tibiæ; knees reddish; posterior tibiæ beset with spinules, the hind femora, on the outside, also showing a series of four or five. Wings hyaline from the very base; third vein with a stump.

Length 7-8 millim.

Hab. NORTH AMERICA, Kern Co., California (*Williston*). Two males.

This species will be easily distinguished from its congeners by the shape of its forceps, and the rows of black bristles along the hind margins of the abdominal segments. In the shape of the abdomen and of the forceps it somewhat approaches the genus *Epacmus*.]

7. **Aphœbantus bisulcus**, sp. n., ♀.

Greyish-black; thorax with a short appressed golden tomentum on the dorsum; pleuræ grey, with white hairs; scutellum deeply bisected, as if consisting of two rounded, black, shining protuberances, the groove between the latter, as well as the base, beset with a yellowish tomentum; macrochætæ on the scutellum of moderate length and strength, black, those on the sides of the thorax reddish or brown. Abdomen with a white tomentum at the base, and with a tuft of longer white hair on each side of it; the following segments clothed on their anterior part with an ochre-coloured tomentum, on their distal half with a similar, but much less dense, white one; on the last segments the ochreous tomentum prevailing. Femora black, with silvery scales; tibiæ yellowish-red, the tarsi brownish; posterior tibiæ beset on the upperside with five or six long, delicate spinules; a few spinules also near the end of the hind femora, on the underside. Halteres yellow. Wings hyaline; third vein with a rudiment of a stump.

Face with a silvery pubescence; front pollinose yellowish-grey, with short, erect, black hair; antennæ black; the third joint triangular, onion-shaped, the style but slightly longer than the incrassate base.

Length 5 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). A single female.

This species bears a singular resemblance to *Epacmus modestus*, from which, however, it is generically distinct; the latter has a somewhat similar bisected scutellum, and its abdomen is clothed in nearly the same way with alternately ochreous and white scale-like hairs. The bisection of the scutellum does not seem to be a constant character of *E. modestus*; it remains to be seen whether this also applies to *A. bisulcus*.

8. *Aphœbantus carbonarius*, sp. n., ♂ ♀.

Face greyish-black, with a pubescence that, in an oblique light, looks silvery; front hoary above the antennæ, with a black pubescence, mixed with a few pale yellowish hairs; the third joint of the antennæ very short-conical or onion-shaped, unsymmetrical, prolonged in a style which is more than twice as long as the joint itself, with the usual minute joint and bristle at the tip. Thorax black, thinly beset with yellowish semiappressed hairs on the dorsum, and with longer and denser white hairs on the pleuræ. Abdomen deep black, with fringes of scale-like yellowish-white hairs on the hind margins of the segments, the fringe on the first segment the broadest, the black intervals between the fringes covered with scattered deep black scales resembling soot; the sides showing scattered whitish-yellow scales, the venter more dense silvery ones especially at the base; a fan-like tuft of longer, pale yellowish-white hairs on each side at the base; in the male a fringe of long, delicate whitish hairs along the sides. Halteres yellow. A number of rather weak macrochætæ on the scutellum and on the præ- and post-alar callosities (in my specimens they are brownish-red or reddish-yellow). Femora black, beset with silvery scales; knees, tibiæ, and tarsi reddish-yellow; the latter brownish towards the tip (one of my specimens has the tibiæ and tarsi dark brown, nearly black); tibiæ beset with silvery scales and with delicate spinules. Male forceps projecting, although only slightly club-shaped; its two halves enclosed within the concavity of the last ventral segment, which, from a side view, is not projected downwards. Wings hyaline, without stumps on the third vein.

Length 6-8 millim.

Hab. NORTH AMERICA, Washington Territory and Western Kansas (*Williston*).—MEXICO, Northern Sonora (*Morrison*). One male, three females.

This species seems to be allied to *A. (Triodites) mus*, on account of its general appearance, and of the deep black, soot-like scales on its abdomen. It is, however, usually smaller, the tibiæ and tarsi are more reddish, the knob of the halteres yellow and not brownish, and the thorax of a purer black (not greyish) and less downy; the margins of the abdominal segments of a less pure white. The male sex is easy to distinguish by the structure of its forceps: small and concealed within the abdomen in *A. mus*, larger and projecting in *A. carbonarius*; in the former the posterior segments of the abdomen have but indistinct white margins; on the contrary, in the latter they are equally distinct in both sexes.

9. *Aphœbantus peodes*, sp. n., ♂ ♀.

Face black, with short, erect, black hairs (I perceive some traces of white pollen on the upper part only); front in the male with a strong silvery reflection and with the hair upon it principally whitish (apparently the

specimen is somewhat injured), in the female black with black pile. Antennæ black, the second joint very small; third joint short onion-shaped, with a style twice the length of the incrassate portion, the bristle very distinct. The black ground-colour of the thorax modified, without being entirely covered up, by short, appressed, whitish hairs, which are denser and whiter on the pleuræ; scutel black, shining, with similar hairs at the base only; the macrochætæ on the sides of the thorax and on the scutel, although long, rather weak. Abdomen black, the hind margins of the segments with distinct borders of whitish, scale-like hairs; a tuft of longer white hairs on each side at the base. Male forceps remarkably large, more than half the length of the whole abdomen, black, with a greyish pollen above, and soft, long, scattered greyish hairs; formed by the usual concave ventral plate, whose under surface is parallel to the axis of the body; seen from above, a deep fissure separates the two halves of the forceps, and a small triangular piece is inserted between them. Halteres with a brownish stem and an ivory-white knob. Legs black, beset with white, scaly hairs; the spinules on the tibiæ very weak; the single spinules on the outer side of the hind femora existing in other species replaced here by long, soft hairs. Wings hyaline from the very base; no stump on the third vein.

Length, ♂, 5-6 millim.; ♀, 6-7 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

A male and a female. I have but little doubt that the female belongs to the same species as the male, as it agrees with it in many characters.

A. peodes differs from its congeners in the large development of the male forceps, and in the weakness of the thoracic macrochætæ and of the spinules on the legs; it forms a passage to the group of *A. cyclops*.

BOMBYLIUS.

Bombylius, Linnæus, Fauna Suecica, 1758.

1. *Bombylius* — ?, ♂ ♀.

Hab. MEXICO, Northern Sonora (*Morrison*).

This insect agrees quite well with *B. atriceps*, Loew, Centur. iv. no. 49 (Florida, Virginia); but the scutellum and abdomen cannot be called "subnitida;" the front femora are darker than "dilute lutei." I cannot decide without comparing types. Numerous specimens.

2. *Bombylius* — ?, ♂.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Of the group of *B. varius*, Fabr., but smaller. Two males.

The collection of Prof. Bellardi also contains two or three species of *Bombylius*, represented by one or two specimens each, in a bad state of preservation, and therefore difficult to determine. Altogether this genus is but very poorly represented in the collections before me. I find only three previously described species of the genus from Mexico or Central America; they are:—

- Bombylius mexicanus*, Wiedem. Aussereur. zweifl. Ins. i. p. 338; Loew, Neue Beitr. iii. p. 24.—United States, Mexico.
 — *helvus*, Wiedem. loc. cit. p. 336.—Mexico.
 — *ravus*, Loew, Centur. iv. no. 50.—Mexico, Matamoras.

COMASTES.

Comastes, O. Sacken, Western Diptera, p. 256 (1877).

Heterostylum, Macquart, Dipt. Exot. Suppl. iii. p. 35 (1848).

In the 'Western Diptera' I have described the female only of this genus. The head of the male is much less broad than that of the female and much narrower than the thorax; my description of the thorax must therefore be modified in that sense. The eyes are almost in contact above the frontal triangle; a magnifying-glass shows, however, a linear interval between them.

Since establishing *Comastes* I have discovered a passage in Loew's writings which I had overlooked before, and in which he foreshadowed its introduction. In the Neue Beitr. iii. p. 29, he notices the peculiarities of *Bombylius basilaris*, Wiedem., and *B. ferrugineus*, Fabr., and says "that both would deserve to form the nucleus of a separate genus." As a character of this future genus he notices the emargination of the occipital orbit of the eyes, which is larger than in *Bombylius*.

In my catalogue of the N. Am. Dipt. 1878 (Additions &c. p. 267), I have shown that *Heterostylum*, Macq., is the same as *Comastes*. The principal character assigned to it by Macquart, and from which he derived the name of the genus, is the supposed pubescence of the third antennal joint. This has no existence in reality, for Macquart mistook dust for a pubescence, and his name must therefore be cancelled. I saw the type in Mr. Bigot's collection.

1. *Comastes robustus*.

Comastes robustus, O. Sacken, Western Dipt. p. 256.

Hab. NORTH AMERICA, Waco, Texas (*Belfrage*), Dallas (*Boll*).—MEXICO (*coll. Bellardi*), Presidio (*Forrer*).

I have before me a specimen from Presidio, and a pair, also from Mexico, in Prof. Bellardi's collection; all three are entirely abraded. Nevertheless I have no reason to doubt that they are correctly determined as *C. robustus*.

PANTARBES.

Pantarbes, O. Sacken, Western Dipt. p. 254 (1877).

Two new species of this genus enable me to correct and to complete the generic description. I reproduce it from my former publication with the necessary changes.

In describing *P. capito* I had but a single female, which I cannot examine now, and for this reason my statements about it will be less precise than those regarding *P. pusio*, ♀.

Head large, considerably broader than the thorax. The breadth of the vertex in the male equal to at least two thirds of the greatest horizontal diameter of the eye in *P. capito* and *P. willistoni*, to less than half of that diameter in *P. pusio*. The vertex in the female is broader than in the male, in *P. pusio* more than twice the breadth of the greatest horizontal diameter of the eye. The front, immediately above the antennæ, is three or four times as broad as the vertex in the male, the position of the eyes being oblique; in the female of *P. pusio* the breadth of the front is but little more than that of the vertex. The front and face descend almost perpendicularly towards the oral margin, the antennæ therefore are inserted at a much lower level than the vertex. The lower part of the front, the face, the base of the antennæ, and the oral opening are entirely concealed from view by a dense, tuft-like, crop of hair, similar to that of *Anastæchus*, and especially conspicuous in the male.

Ocelli placed on a prominence of the vertex; the lateral ones large, and at a distance from each other which, in the male, is at least one half larger than the interval between each of them and the nearest orbit of the eye; in the female of *P. capito* the latter interval is a little larger than the distance between the ocelli, in the same sex of *P. pusio* it is nearly twice as large.

Antennæ inserted at some distance from each other; in *P. capito* the space between them is distinctly larger than that of the ocelli, in *P. pusio* distinctly smaller; first joint subcylindrical, concealed in the facial tuft of hair; second joint short, not longer than broad; third longer than the first two joints taken together, slender, sublinear, except a short basal expansion followed by an attenuation; a minute fourth joint at the tip, bearing a microscopical bristle (this fourth joint is very small in *P. pusio*; much larger in *P. capito*, where a moderate lens shows that it is two-jointed).

Eyes glabrous, almost elliptical, without excision on the posterior orbit; in the male the difference in size between the large facets of the upper half and the smaller ones is more distinct in *P. pusio* and *P. willistoni* than in *P. capito*.

Oral opening oval, comparatively small, its upper edge reaching but little above the lower corners of the eyes; *face* and *cheeks* broad.

Proboscis porrected forwards, not tapering towards the tip; projecting but little beyond the antennæ in *P. capito*, somewhat more so in *P. pusio* and *P. willistoni*.

Thorax of moderate size, not gibbose, nearly on a level with the head; *scutellum* but little smaller than in *Bombylius*.

Abdomen a little longer than the thorax and scutellum together; as broad as the thorax at the base; gradually tapering in the male, more semioval in the female; the genitals, in both sexes, hidden under the last segment.

Legs comparatively shorter than in *Bombylius*; ungues curved, the pulvilli distinct and long.

Wings: first posterior cell closed, its terminal petiole as long as in an ordinary *Bombylius*; second vein gently arched before the cross-vein connecting it with the anterior branch of the third (but not so deeply as in *Lordotus*), its curvature beyond the cross-vein stronger than in *Lordotus*, so that the expanded distal end of the marginal cell is bulging out beyond the end of the first submarginal cell; three submarginal cells; the first of the two exterior submarginal cells almost crescent-shaped, in consequence of the curvature of the veins forming it; a small cross-vein about the middle of the discal cell, and hence the first basal cell is longer than the second; the bifurcation of the second and third veins taking place a little before the middle of the distance between the origin of the præfurca and the small cross-vein, these two veins becoming at once distinctly divaricate (and not approximate and parallel for a considerable distance, as in *Bombylius* and *Systæchus*); the rest of the venation as in *Bombylius* and *Systæchus*; anal cell open, &c.

Pantarbes, in Greek, means "full of fear."

In the thickness of its beard, entirely concealing the outlines of the mouth, this genus resembles *Anastæchus*, O. S.; its closest allies, however, are the European genera *Mulio* and *Callostoma*. It is easily distinguished from both these latter by the structure of the antennæ, the first joint of which is longer, and the third not incrassate on its proximal

half. The venation differs from that of *Mulio obscurus* in the first posterior cell being closed; from that of *Callostoma fascipennis*, Macq. (*cf.* Trans. Ent. Soc. Lond. 1881, t. 14. f. 1), by the presence of three submarginal cells; and from both in the greater curvature of the ends of the second and third veins (resembling in this respect *Ploas* and *Lordotus*).

Of the two species described below, *P. pusio* is the only one yet known to certainly inhabit our country; the other, *P. willistoni*, I have no doubt will eventually be found within our northern boundary, as well as in Arizona, and have accordingly for this reason included it here.

1. **Pantarbes pusio**, sp. n., ♂ ♀. (Tab. III. figg. 15, 15 *a-d*, ♂.)

Body greyish-black, covered with white hairs below and greyish-white hairs above; wings hyaline. Length 4.5–7 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Front, lower part of the head, and occiput densely clothed with snow-white pile; upper part of the front and the ocellar eminence beset with black hair; in the female the sides of the very broad vertex beset with brown hairs; black hairs near the orbits and on the ocellar eminence; the middle of the face showing a stripe of pale brownish hairs, only a trace of which is sometimes perceptible in male specimens; antennæ and proboscis black. The upperside of the thorax and abdomen has a covering of short, semirecumbent white hairs, not dense enough to conceal the ground-colour; between these hairs there are on the thorax some longer, erect ones, partly whitish, partly brownish; on the abdomen, along the hind margin of each segment is a row of long, erect, blackish or brownish hairs (distinctly visible from the side). Halteres yellow. Legs: the black ground-colour, sometimes yellowish at the base of the femora and on the tibiæ, almost concealed under a covering of white scales. Wings hyaline, slightly yellowish at the root; veins black. Twenty (♂ ♀) specimens.

N.B.—*P. pusio* is abundantly distinguished from the North-American *P. capito* by its much smaller size, the hyaline wings, the rows of long dark hairs on the abdomen, &c. The front in the male is proportionally narrower, in the female, on the contrary, broader than in the corresponding sexes of *P. capito*.

2. [**Pantarbes willistoni**, sp. n., ♂.]

Body black, with a metallic bluish reflection; covered with black hairs on the abdomen and pale brownish ones, mixed with black, on the head and on the front of the thorax.

Length 7–8 millim.

Hab. NORTH AMERICA, Arizona (*Williston*).

Head with the tuft of hair covering the front part pale brownish; darker, almost black, hairs prevailing along the edges, especially on the front; on the vertex a tuft of brownish hairs, mixed with black ones. Antennæ black. The hairs on the thorax

BIOL. CENTR.-AMER., Dipt., *January* 1887.

x

brownish, those on the posterior half darker. Legs black, with a not very dense covering of yellowish scales. Knob of the halteres yellow. Wings hyaline, brownish at the base.

A male specimen of this interesting species has been kindly given to me by Dr. Williston, of New Haven, Conn.]

SPARNOPOLIUS.

Sparnopolius, Loew, Neue Beitr. &c. iii. p. 43 (1855).

Specimens in Prof. Bellardi's collection (Mexico, *Truqui*) may perhaps belong to *S. brevicornis*, Loew, Centur. x. no. 43 (Texas, *Belfrage*).

LORDOTUS.

Lordotus, Loew, Centur. iv. no. 53 (1863).

Loew only described the female; the male has contiguous eyes, and the edge of the costa denticulate on the distal half. The genus is easily distinguishable by the enormous expansion of the end of the marginal cell. In the male I count eight abdominal segments, besides the forceps; the eighth segment is short, and more or less withdrawn within the preceding one; the forceps withdrawn within the abdomen in the usual unsymmetrical fashion, with the opening of the ring turned towards the right.

In one of the female specimens I can count only five segments; in another, a large sixth and a small seventh segment are extruded; the ovipositor does not show the coronet of spinules, but, as far as I can see, there is a small bifid horny plate, with the two ends rounded.

1. *Lordotus gibbus*.

Lordotus gibbus, Loew, Centur. iv. no. 53; O. Sacken, Western Dipt. p. 258¹.

(?) *Adelidea flava*, Jaennicke, Neue exot. Dipt. p. 39; O. Sacken, Catal. N. Am. Dipt. 1878, p. 93, note 162.

Hab. NORTH AMERICA, Western United States¹.—MEXICO, Northern Sonora (*Morrison*), Tehuacan (*Sumichrast*, in coll. *Bellardi*).

I have shown in the 'Western Diptera' that this species is variable as to the colour of the antennæ and legs, and that for this reason many specimens do not quite agree with Loew's description. I have before me several specimens from Mexico, and a single small one from Northern Sonora. In the latter the wings are hyaline, without that yellowish-brown shade in the antero-proximal region which distinguishes normal examples. Smaller specimens with a whitish, instead of yellow, fur are perhaps faded representatives of the same species.

PARACOSMUS.

Paracosmus, O. Sacken, Western Diptera, p. 262 (1877).

Allocotus, Loew, Centur. x. no. 48 (nomen. præoc.).

1. ***Paracosmus morrisoni***, sp. n., ♀.

Black; hind margins of the abdominal segments white; legs rufous; wings hyaline.
Length 6–7 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Head black; a silvery mark, visible in a certain light only, on each side of the mouth; a small silvery triangle a short distance above the antennæ, on each side, near the orbit (a hoary dust seems to exist all along the orbit, but it is indistinct in my specimen); occiput with a thin greyish-silvery pollen; antennæ black. Thoracic dorsum with a white stripe on each side, the stripe reaching the scutellum and formed by white pollen with some white pile upon it; two narrower stripes, of an impure white, in the middle, the distance between them being a little greater than the distance from the lateral stripes; in the intervals between these four stripes the black ground-colour is somewhat modified by a microscopic, pollen-like, appressed, yellowish pubescence; pleura shining black, with a silvery stripe across its lower portion; scutellum black, shining, yellowish-pollinose at the base. Knob of the halteres yellowish-white. Abdomen black, but little shining; segments 1–5 with a well-defined, narrow, white posterior margin, becoming gradually narrower on each following segment, especially on segments 4 and 5. Coxæ black, the femora and tibiæ rufous; tarsi, except the base, black; front and middle tibiæ with a slight, microscopic, silvery down. Wings hyaline.

A single female specimen.

N.B.—This is the second species of this remarkable genus; I dedicate it to its lamented discoverer.

PHTHIRIA.

Phthiria, Meigen, in Illiger's Magazin, 1803; Klassif. 1804 (nec Wiedem., Rondani).

1. ***Phthiria consors***, sp. n., ♀.

(?) *Phthiria cingulata*, Loew, Linn. Entomol. i. p. 383.

Black, with yellow marks; four anterior femora more or less yellow at the base, the hind pair black; wings tinged with pale brownish.

Length 4–5 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

Head yellow, with a black line in the middle of the front, expanded into a transverse spot above the antennæ, and ending in the black ocellar spot; occiput, except the broad yellow orbits, black; proboscis, palpi, and antennæ black; the third joint of the

latter rather elongated, with microscopic hairs on the upper edge. Thoracic dorsum black, brownish-pollinose, the pollen forming a pair of indistinct stripes; a yellow stripe on each side, between the humerus and scutellum, interrupted above the root of the wings; antescutellar callosities, an **M**-shaped spot between them, a space in front of the scutellum, and the scutellum itself, yellow; pleuræ pale greenish-yellow, with a black stripe running from the collar backwards and ending under the root of the wing, and another stripe immediately above the coxæ (between the front and hind pairs); metanotum black. Abdomen: first segment yellow, blackish at the base; the second segment black in the middle, its lateral and posterior borders reddish-yellow; the following segments black, with yellow hind borders which fully reach the lateral margins (the yellow occupies half the breadth of the third segment; it is narrower on the following segments, especially on the last two). Venter black, yellow at the base. Halteres yellow, the knob infuscated on one side only. Front coxæ yellow, this colour on the other two pairs more or less mixed with black; legs black; on the underside of the front femora, near the black trochanters, a yellow spot occupies more or less space in different specimens (sometimes it invades the upperside even); middle femora yellow, except the extreme base and the distal third. Wings subhyaline, with a uniform pale brownish tinge; second vein straight at the end; second submarginal and third posterior cells without any vestige of a stump of a vein. Five female specimens.

N.B.—In the ‘Linnæa Entomologica,’ i. p. 383, Dr. Loew described a *Phthiria* (belonging to the Berlin Museum) from Oaxaca, Mexico, thus:—

“*Phthiria cingulata*: nigra, hypostomate, oculorum orbita, pleurarum maculis, scutello, abdominis incisuris, coxis femoribusque flavis; alis brunnescentibus. Long. corp. 2 lin.”

This applies quite well to *P. consors*, except the “femoribus flavis.” There is a specimen in the Berlin Museum which is very probably Loew’s type, although it was not labelled when I saw it; it differs from *P. consors* in having the hind femora yellow, the distal fourth only being brown, while my five specimens do not show any vestige of yellow on the hind femora; it may be merely a variety of my species.

The only other species of this genus hitherto described from our country is:—

Phthiria thlipsomyzoides, Jaennicke, Neue exot. Dipt. p. 43, t. i. f. 11.—
Mexico. Jaennicke, without any necessity, introduced the new genus *Pæcilogathus* for this species.

GERON.

Geron, Meigen, Systemat. Besch. ii. p. 223 (1820).

This genus is represented by several specimens (in an unsatisfactory state of preservation) from Mexico (Tuxpango and Orizaba, *Sumichrast*) in Professor Bellardi’s collection, and I have also a single specimen from Northern Sonora (*Morrison*).

A *Geron rufipes*, Macq. Dipt. Ex. Suppl. i. p. 119, has been described from Yucatan, Mexico.

SYSTROPUS.

Systropus, Wiedemann, Nova Dipter. Gen. Icon. Ill. (1820).

Authors are silent about the sexual difference of *Systropus*. The only one who approaches the subject is Loew (*cf.* Dipt. Südafr. p. 200), who confesses that he is in doubt about the sexual differences in this genus. The examination of the specimens before me proves that both sexes have contiguous eyes. *Systropus* shares this character with the "Cyrtidæ," certain "Blepharoceridæ," and with *Orphnephila*. In the female the eighth abdominal segment is flattened from the sides, and ends on the underside in two little points, between which is a (probably double) projecting lamel. In the male there is a distinct ninth segment, with a circular opening at the end, within which the male appendages are visible.

The following synoptical table of the species of American *Systropi* at present known is constructed principally from descriptions, and should therefore be used with caution [*Systropus* (?) *chilensis*, Philippi, is omitted, the data necessary for its insertion in the table not being sufficient]:—

- Abdomen black at both ends, red in the middle *macer*, Loew, *infuscatus*, *angulatus*, and *imbecillus*, Karsch; all from the United States.
- Abdomen not black at both ends, red in the middle.
 - Front legs yellow.
 - Hind legs altogether black *nitidus*, Wiedem. (syn. *brasilensis*, Macq.); Brazil.
 - Hind legs not altogether black.
 - First joint of the hind tarsi yellow.
 - Hind femora black at the tip; tibiæ yellow at the base *rufiventris*, sp. n.; Mexico.
 - Hind femora and tibiæ yellow at the tip.
 - Antennæ yellow *sallei*, Costa; Mexico.
 - Antennæ black *rogersi*, sp. n.; Costa Rica.
 - First joint of the hind tarsi black; hind femora reddish-yellow *cerdo*, sp. n.; Panama.
 - Front legs not yellow.
 - Wings clouded with brown before the apex *fumipennis*, Westw.; Brazil. *femoratus*, Karsch; Brazil.
 - Wings not clouded before the apex. [bia.
 - Hind legs altogether black (?) *columbianus*, Karsch; Colom-
 - Hind tibia black, except a white dot at the base *fænoides*, Westw.; Mexico.
 - Hind tibiæ with the distal third yellowish-white *lugubris*, sp. n.; Mexico.

Additional on p. 292

1. **Systropus rogersi**, sp. n., ♂ ♀.

Four front legs yellow; hind legs black, except the tip of the femora, the extreme root and the tip of the tibiæ, and the first joint of tarsi, which are yellow; antennæ black; abdomen black, slightly hoary on the incisures.

Length 27-28 millim.

Hab. COSTA RICA, Irazu 6000 to 7000 feet (*Rogers*).

Face pale yellow; frontal triangle yellow; palpi reddish-yellow; antennæ black, the last joint about one and a half times the length of the preceding one. Thorax black, except the following parts, which are pale yellow:—(1) a large spot above the front coxæ; (2) the sides of the mesonotum in front of the root of the wings and including the humeral callosity; this spot has the shape of a capital Greek gamma on the left side, and of a gamma reversed on the right; (3) a small spot on the post-alar callosity; and (4) another spot on each side below the scutellum; some reddish-yellow also below the root of the wing. In the middle of the mesothorax a geminate, greyish stripe, showing hoary reflections. Halteres yellowish-brown; tip of the knob yellow. Coxæ black; four front legs yellow; hind legs black, except the end of the femora, the extreme root and tip of the tibiæ, and the first joint of the tarsi, which are bright yellow. Abdomen black: the hind margins of segments 2, 3, 4 with small lateral triangles of greyish pollen, the first segment also greyish on the sides. Wings tinged with brownish; venation like that of *S. macer*. Five specimens.

2. **Systropus cerdo**, sp. n., ♂.

Antennæ yellow, the third joint black; legs reddish-yellow, the hind tibiæ and tarsi black; abdomen reddish, with a brown line on the upperside of the basal segments.

Length about 17 millim.

Hab. PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Face, frontal triangle, palpi, and antennæ pale reddish-yellow; third joint of the latter black. Thoracic dorsum shining black, with a microscopic punctuation; on the left side of the mesonotum a pale yellow spot in the shape of a Greek capital gamma, with a similar spot, only reversed, on the right side; from this spot a yellow stripe goes down towards the front coxa; on the pleura there is a large black spot immediately under the dorso-pleural suture, and another one above the middle coxa, both are whitish-sericeous, separated by a yellow stripe; the interval between the hind coxæ and the root of the abdomen pale yellow, with a pair of elongated black spots immediately above the coxæ, and another pair of larger, circular spots towards the root of the abdomen. Halteres brownish-yellow; knob with a brown spot in the middle. Scutellum and first abdominal segment black, whitish sericeous; the upperside of the three following segments brownish; the rest of the abdomen as well as the underside of the basal segments reddish, with a fulvous microscopic pubescence. Legs

pale reddish-yellow, including the coxæ; hind femora more reddish; hind tibiæ and tarsi brown. Wings tinged with greyish; stigma brown. A single male.

3. *Systropus lugubris*, sp. n., ♀.

Black, including the legs; only the distal third of the hind tibiæ yellowish-white. Length about 25 millim.

Hab. MEXICO (*Sumichrast, in coll. Bellardi*).

Sides of the face yellowish; facial orbits silvery; antennæ black, the third joint a little more than twice the length of the second. Thorax black; the humeri with small pale yellow spots; pleuræ hoary, beset with white hairs. Abdomen black; venter paler on the first four segments; with fringes of silvery hair on the incisures of segments 2-4. Legs black; front femora with a trace of reddish near the base on the posterior side; four anterior tibiæ silvery on the posterior side; distal third of the hind tibiæ yellowish-white, the extreme tip, however, black. Halteres black. Wings tinged with brownish-grey, darker near the costa. A single female.

4. *Systropus rufiventris*, sp. n., ♂.

Four anterior legs yellow; hind legs black, with the bases of the femora and tibiæ, and the first joint of the tarsi, except its tip, yellow; humeri and sides of mesonotum yellow; abdomen black at the base and along the back, reddish on the underside and sometimes towards the tip also. Length 22-25 millim.

Hab. MEXICO (*Sumichrast, in coll. Bellardi*).

Sides of the face and the lower part of the frontal triangle yellow; facial orbits silvery; antennæ black, the third joint but little longer than the preceding one. Thorax black; sides of the mesonotum from the humerus to the root of the wings yellow: this yellow sends out one branch which connects the humerus with the yellow front coxæ, and another shorter branch (separated by a black space from the corresponding branch on the opposite side) forms the anterior margin of the mesonotum. Halteres yellow. Abdomen: the first four segments black above, pale reddish-yellow below; the following segments more or less reddish-brown above, and reddish below, sometimes altogether reddish. Four front legs, including the coxæ, yellow; hind legs black; hind femora at the root more or less yellow, especially on the underside; proximal third of the hind tibiæ and the first joint of the hind tarsi (except the tip) yellow. Wings tinged with pale brownish.

5. *Systropus sallæi*.

Systropus sallæi, Costa, Annuario del Museo Zool. della R. Univ. di Napoli, 1864, p. 151; O. Sacken, Cat. of N.-Am. Diptera, 1878, Additions and Corrections, p. 265 (where the diagnosis is reproduced).

Hab. MEXICO (*Sumichrast*).

I have seen specimens in the Museum in Cambridge, Mass., and in Prof. Bellardi's collection.

6. *Systropus fœnoides*.

Systropus fœnoides, Westw. in Guérin's Mag. Zool. 1842, Ins. t. 90, text p. 3¹.

Systropus fœnoides, Westw. Trans. Ent. Soc. Lond. 1876, p. 578².

Systropus funereus, Costa, Annuario del Mus. Zool. della R. Univ. di Napoli, 1864, p. 151.

Hab. MEXICO^{1 2} (*Sumichrast*).

Specimens are contained in the Oxford Museum, in Cambridge, Mass., and in Prof. Bellardi's collection.

LEPIDOPHORA.

Lepidophora, Westwood, London and Edinb. Phil. Mag. 1835.

The known species, to one of which I provisionally refer the Central-American representative before me, of this New-World genus may (from the descriptions) be grouped as follows:—

Wings uniformly brown.

Abdomen with spots of yellow scales; second submarginal cell

without stump of a vein *lepidocera*, Wiedem. (N. Amer.).
(Synon. *ageriiformis*, Westw.)

Abdomen with spots of white scales; second submarginal cell

with a stump of a vein *appendiculata*, Macq. (Texas).

Wings hyaline or subhyaline at the apex *vetusta*, Walk. (Amazon R.).

secutor, Walk. (Amazon R.).

Wings brown along the anterior margin only *culiciformis*, Walk. (Parà).

1. *Lepidophora vetusta*?

Lepidophora vetusta, Walker, Trans. Ent. Soc. Lond. 1857, p. 145¹.

Hab. MEXICO (*Sallé*), Ventanas (*Forrer*); GUATEMALA, El Reposo 800 feet (*Champion*).
—AMAZONS¹.

I doubtfully refer to this species the very much abraded specimens from Ventanas and El Reposo. They differ from Walker's description in having the curved veins in the apical portion of the wings more or less clouded with brown, and for this reason I took them at first for a different species. The specimens in Prof. Bellardi's collection, however, have the wings as Walker describes them: the apex hyaline, including the expanded end of the marginal cell; the posterior cells (2, 3, 4) and the anal cells also hyaline. This coloration is not, however, constant: in one of the specimens in Bellardi's collection the expanded end of the marginal cell is filled out with brown; the same is the case with the specimens from Ventanas, &c., and there is no reason for not regarding them as the same species. Walker's "femora partly ferruginous" might apply to the sometimes reddish-brown femora, especially in old specimens. The type in the British Museum is a single, very much abraded example.

TOXOPHORA.

Toxophora, Meigen, in Illiger's Magaz. ii. p. 270 (1803); Klassif. 1804.

1. *Toxophora amphitea*.

Toxophora amphitea, Walker, List &c. ii. p. 298¹; Osten Sacken, Western Dipt. p. 267.

Hab. NORTH AMERICA, Middle and Southern United States, Florida¹.—MEXICO (*coll. Bellardi*).

ECLIMUS.

Eclimus, Loew, Stett. ent. Zeit. 1844, p. 154, t. 1. ff. 12 & 13, and t. 2. ff. 9–11; Deutsche ent. Zeit. 1876, p. 209.

1. *Eclimus* (?) *auripilus*, sp. n., ♂ ♀. (Tab. III. fig. 5.)

Black, opaque, with short, scattered golden pile, and a denser pubescence of longer hairs of darker hue; wings greyish, the veins margined with brown, the brown on the cross-veins assuming the appearance of spots. Length 10–12 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

Black, opaque; the whole upperside of the body clothed with scattered, short, golden-yellow pile, and with longer, erect hairs of darker hue (blackish or greyish, according to the light); the underside of the body (of the head, and of the thorax, including the pleuræ and the venter) greyish-white, with whitish hairs; the end of the abdomen of the female with a tuft of rufous hairs. Third antennal joint a little shorter than the first; first and second joints beset with black hair. Halteres brownish-yellow, with a brown knob. Coxæ and femora black, the tibiæ brownish-yellow; tarsi brown, paler at the base. Wings greyish, more brownish at the base and along the costa; with brown clouds on the origin of the second vein, on the anterior cross-vein, and at the base of the four posterior cells; the veins more or less margined with brown, especially the fork of the third vein. Three males and three females.

N.B.—I place this species provisionally in the genus *Eclimus*, Loew. My hesitation is owing to the presence of an exceedingly minute bristle at the end of the antennæ in these Mexican specimens, while Loew describes the antennæ of *Eclimus* as “an der Spitze ohne bemerkbaren Griffel.” The other differences which I am able to notice between my specimens and Loew's data are slight: the third antennal joint is broader; the anterior branch of the fork of the third vein is more S-shaped, that is, less ventricose at first, but more curved towards the end. I would not establish a new genus on such an uncertain foundation, the more so, as the relations of *Eclimus*, *Thevenemyia*, Bigot, and *Epibates*, O. S., are yet to be determined; possibly upon the discovery of new forms belonging to the same group it will be found more convenient to unite all these genera. From *Epibates*, as characterized by me in the ‘Western Diptera,’ *Eclimus auripilus* differs in the thorax of the male not being muricate, and the wings not

being granulate along the costa. *Eclimus hirtus*, Loew, Deutsche ent. Zeit. 1876, p. 209 (Acarmania), with its opaque black colour and its golden pubescence, seems to be nearer to *E. auripilus* than the other two species described by Loew.

Fam. THEREVIDÆ.

The small number of specimens before me belonging to this family represent about half a dozen species, collected at Presidio, Mexico (*Forrer*), and in Northern Sonora (*Morrison*). I cannot determine any of these from the existing descriptions, although most of them reproduce very closely the well-known types of North-American "Therevæ," and especially "Psilocephalæ." Many descriptions of Therevidæ are based on single specimens, while the species are not quite constant in their coloration, especially in that of their wings. I have, for instance, a *Psilocephala*, from Sonora, represented by seven female specimens, which comes very near to *P. platancala*, Loew, and also to the South-American *P. stigmatalis*, Schin., but I cannot identify it with either, although it may be one of them. I will therefore describe one species only, which, although represented by a single specimen, is sufficiently characteristic.

THEREVA.

Thereva, Latreille, Précis des Car. gén. des ins. p. 167 (1796).

1. *Thereva bolbocera*, sp. n., ♀.

Antennæ with an onion-shaped third joint; front with a pair of velvety-black spots; body pale brownish-ochraceous; wings densely variegated with brown spots.

Length 11 millim.

Hab. MEXICO, Presidio (*Forrer*).

Antennæ: first joint short, cylindrical; second joint small, rounded; third joint onion-shaped, but flattened from the sides, its base coarctate as usual in *Thereva* (but more distinctly), its apical part showing an elongation nearly as long as the incrassate portion of the joint and divided about the middle by a distinct segmentation; in colour pale brownish-yellow, more brown on the incrassation, nearly black at the tip. Palpi club-shaped, brownish-yellow. Face and front fawn-coloured (cervinus), sericeous; the front flat, with a velvety-black, round spot on each side near the eye; occiput greyish-pollinose, more yellowish above, beset with black bristles. Thorax brownish-ochraceous, greyish-pollinose on the pleuræ; macrochætæ black. Abdomen brownish-ochraceous, beset with short, black, erect pile, especially towards the end; female ovipositor with a coronet of black spines. Legs brownish-yellow, the tarsi darker brownish towards the end (the front pair is broken off). Wings densely variegated with brown spots and dots; subcostal cell brownish-yellow; stigma brown; a series of brown dots along the second vein; more or less distinct brown clouds along the other veins (they are longer

on the cross-veins and on the bifurcations); very irregular brownish-grey clouds inside the cells, more or less filling out their surface; venation normal, the upper branch of the third vein somewhat **S**-shaped, the fourth posterior cell broadly open, although coarctate. A single female.

N.B.—The chætotaxy, so far as I can judge from the scars (many bristles being rubbed off), is the normal one of *Thereva*, as described in my essay on "Chætotaxy." The same may be said of the bristles on the legs.

The following five species of Therevidæ have been described from Mexico (there are none from other parts of Central America):—

- Thereva crassicornis*, Bellardi, Saggio &c. ii. p. 88, t. 2. f. 16.—Mexico.
 — *argentata*, Bellardi, l. c. ii. p. 89.—Mexico, Cordova.
Psilocephala univittata, Bellardi, l. c. ii. p. 90.—Mexico, Puebla.
 — *sumichrasti*, Bellardi, l. c. ii. p. 91.—Mexico, Tuxpango near Orizaba.
 — (*Dialineura*) *nigra*, Bellardi, l. c. ii. p. 92.—Mexico (a different species from the following).
 — (*Thereva*) *nigra*, Say, Complete Writings, ii. p. 57; van der Wulp, Tijdschr. voor Ent. xxv. p. 118.—Pennsylvania, Mexico.

In this connection the "Scenopinid" *Pseudatrichia longurio*, Loew, Centur. vii. no. 76, from Mexico, may also be mentioned.

Fam. CYRTIDÆ.

The following Cyrtidæ from Mexico have been hitherto described (there are none from other parts of Central America):—

- Ocnæa micans*, Erichs. Entomogr. i. p. 155.—Mexico.
Apelleia vittata, Bellardi, Saggio &c. Append. p. 19, f. 12.—Mexico, Playa Vicente. (N.B.—*Apelleia* is an *Ocnæa* with glabrous eyes; comp. O. Sack. Berl. ent. Zeit. 1883, p. 25.)
Philopota truquii, Bellardi, l. c. i. p. 77, t. 2. ff. 20, 20 bis.—Mexico, Cuazimalpa.

To these I now add the following:—

OCNÆA.

Ocnæa, Erichson, Entomographien, i. (1840).

1. *Ocnæa grossa*, sp. n., ♂. (Tab. III. fig. 7.)

Eyes glabrous. Antennæ velvety-black; the joints of the scapus of nearly equal length; the third joint at least eight times the length of the preceding two together, a little stouter at the base, the tip obtuse. Thorax black, clothed with a dense fur of brown hair, with fulvous reflections (the posterior part of the mesothorax

and the scutellum of my specimen are denuded, black, shining, with a microscopic punctuation); pleuræ and pectus also black, and with a similar covering of hair. Abdomen: prevailing colour honey-yellow on the sides, black on the back; first segment black above; segments 4-6 deep black on the greater part of the middle; an irregularly indented border on the sides, yellow; the dense hairy covering black, with fulvous reflections on the black ground, yellow on the yellow ground; venter pale honey-yellow; single segments with broad brown cross-bands in the middle anteriorly, their posterior margins yellow. Tegulæ dark brown. Legs brown; tarsi yellowish-brown, the distal half of the last joint dark brown. Wings brown, less saturate towards the apex; venation like *Apelleia vittata*, Bellardi, but the first posterior cell closed some distance from the margin, and therefore petiolate (see Bellardi, Saggio &c. Append. t. 3. fig. 12).

Length 14-15 millim.

Hab. COSTA RICA, Rio Sucio (*Rogers*).

This species differs from the majority of the other *Ocnææ* in having glabrous eyes. It has this character in common with *Ocnæa vittata*, Bell., and perhaps also with *Ocnæa tumens*, Walk. (at least the figure of the latter shows glabrous eyes; the letter-press says nothing about them). But from *O. tumens* it differs very considerably in the venation, while it agrees in this respect with *O. vittata*. From the latter again it differs in the relative length of the third antennal joint, this joint being much longer in *O. grossa*. This joint is peculiar in structure: it shows, externally, a longitudinal groove, not quite reaching the apex, and thus has the appearance of being folded lengthwise. I do not find any mention of such a structure in other species.

2. *Ocnæa trichocera*, sp. n., ♂.

Antennæ brown, the second joint yellowish at the tip; the third joint about five times as long as the first two together, rather narrow, gradually attenuated towards the tip, its upper edge beset with distinct but scattered hairs, a few of which project beyond the tip. Eyes hairy. Thorax, including the scutellum and the callosities, brown, moderately shining, clothed with brownish-fulvous pile. Abdomen brown; hind margins of the segments 2-5 brownish-yellow (the limits of this colour ill-defined), and with a fringe of golden-yellow hair; the rest of the pubescence black; on the venter the yellowish hind margins of the segments are narrower, but better defined. Tegulæ whitish-yellow, with brown borders. Legs brown; tarsi paler, except the distal part of the last joint, which is brown. Wings with a brownish tinge, subhyaline on the proximal third, yellowish along the costa; the venation is identical with that of *O. grossa*, except that the first posterior cell is closed on the margin and therefore not petiolate.

Length 7-8 millim.

Hab. PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*). A single male.

ONCODES.

Ogcodes, Latreille, Précis des Car. gén. des ins. p. 154 (1796).

Oncodes, as amended by later writers.

I. *Oncodes humeralis*, sp. n., ♂.

Humeral and præscutellar callosities and also the pleuræ brownish-yellow; legs yellowish-brown, the tips of the tarsi darker; wings subhyaline.

Length 4-5 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Face, vertical triangle, occiput, and antennæ black; thorax of the usual brownish-black, metallescent colour, with a dense, short, yellowish pubescence. Humeral and præscutellar callosities and upper part of the pleuræ brownish-yellow; above the coxæ the pleuræ are black, shining. Legs yellowish-brown, including the front coxæ; extreme base of the latter black; tarsi brownish; ungues and pulvilli black. Tegulæ honey-coloured, without any perceptible darker margin. Halteres with a brown knob. Abdomen brown, the hind margins of the segments white. Venter whitish-yellow; incisures darker. Wings subhyaline; very slightly tinged with brownish before the apex, near the costa; auxiliary and first veins brownish; the costa, beyond the junction of the auxiliary vein, is dark brown and a little stouter. A single male.

Among the described North-American species, *O. incultus*, O. S., alone has the humeri of a paler colour than the thorax; but it is easily distinguished by its large size, its brownish wings, &c.

PIALEOIDEA.

Pialeoidea, Westwood, Trans. Ent. Soc. London, 1876, p. 514.

1. *Pialeoidea metallica*, sp. n., ♀.

Thorax metallic green; abdomen brown, shining, the segments with paler hind margins; legs reddish-yellow; wings brownish.

Length 5–6 millim.

Hab. GUATEMALA, Antigua (*Stoll*).

The third joint of the antennæ is broken, and for this reason I cannot refer the species to the genus *Pialeoidea*, Westwood (*loc. cit.* t. 6. f. 3), with certainty. The head is remarkably small, the eyes separated by a narrow front, and the wings very nearly like those figured by Westwood; the scutellum is rather broad; but there are three instead of two ocelli; and the occiput is very much developed (like *l. c.* fig. 3 *a*), and if seen from the side it occupies one half of the breadth of the head (different therefore from *l. c.* fig. 3 *b*). The venation differs from *l. c.* fig. 3 *c* in the following principal points: the second basal cell is connected with the margin of the wing by a vein running between the fifth posterior cell and the anal cell (in the figure quoted this vein is omitted, and these cells coalescent; is not this omission accidental?); the fourth posterior cell is not in contact with the second basal cell; and the second submarginal cell is of a different shape, *e. g.* longer and broader at the base.

The vertical triangle is large, somewhat protuberant; the ocelli equidistant. The eyes pubescent; beneath the vertical triangle approximate but without coming in contact; below the antennæ almost touching. The antennæ are inserted in the middle of the head, within a space formed by an emargination of the eyes; their basal joints in close contact. Proboscis short.

Head black; basal joints of the antennæ yellowish-brown; vertical triangle greenish

metallescent. Thorax metallic green, beset with scattered, erect, moderately long, yellowish hairs; scutellum more bluish metallic. Abdomen brown; hind margins of the segments with a whitish border, both on the dorsal and on the ventral sides; pubescence short, dark, and little conspicuous on the upperside; paler hairs towards the tip and on the venter. Stem of the halteres brownish; knob whitish-yellow. Tegulæ pale, with a pale brownish border. Coxæ blackish, paler at the tip; legs brownish-yellow; ungues black. Wings pale brownish, somewhat darker along the costa, and lighter within the basal cells; costal and first veins dark brown; the first vein becoming perceptibly stouter towards the tip. A single female.

N.B.—The hind part of the mesonotum being injured by the pin, I cannot describe the præscutellar callosities, &c.

LASIA.

Lasia, Wiedemann, *Analecta ent.* &c. p. 11 (1824)*.

1. *Lasia scribæ*, sp. n., ♂.

Thorax metallic green, with violet reflections; abdomen metallic violet, with bluish and greenish reflections towards the end; legs black; antennæ broken, but probably black; wings with a brownish tinge. Length 17–18 millim.; proboscis 18 millim.

Hab. GUATEMALA (*coll. O. Sacken*).

In one of the specimens the violet (amethystine) reflections on the thorax take distinctly the shape of stripes—in the middle a pair of longitudinal stripes, abbreviated behind, and, on each side, another stripe, abbreviated in front; in the other specimen these stripes are not distinctly marked. The surface of the thorax and abdomen are finely, but densely punctate. A pale yellow, more or less recumbent pubescence is visible principally on the anterior half of the thorax and on the last two segments of the abdomen; on the pleuræ are more dense and villose pale yellow hairs; some stiff black hairs among the yellow ones on the thorax, especially round the root of the wings and at the base of the scutellum. The pubescence of the eyes is a generic character. The tarsi, especially on the underside, are beset with short rufous hairs, so much so that the hind pair appears almost rufous, although the ground-colour is black. Tegulæ yellowish-brown, with a black margin. Wings of a uniform pale-brownish tinge, with black veins; the second vein ending in the first close before its tip; the anterior branch of the third vein reaching the costa at the tip of the first vein. Two specimens (the one is a male, the other has the end of the abdomen injured). I dedicate this species to Dr. Scriba, who kindly gave me the specimens.

N.B.—The venation of this species differs from that of the *Lasie* whose wings have been figured by Wiedemann (*Aussereur. zweifl. Ins.* i. t. 4. f. 3, and ii. t. 9. f. 2), or by Guérin (*Iconogr.* t. 94. f. 9): the second vein ending in the first, and not in the costa,

* *Lasia* is also in use in Coleoptera, but Wiedemann's name dates sixteen years earlier than that of Hope.

and the anterior branch of the third vein reaching the costa at the very end of the first vein.

That the venation in the genus *Lasia* is not always the same is proved by *L. kletti*, O. Sacken (*cf.* Lieut. Wheeler's Report on the Expl. and Surveys &c. v. Zool. p. 804), in which the second vein reaches the costa at the end of the first (compare the figure, *l. c.*). The species is from Arizona, and not unlike *L. scribæ* in its general appearance.

Lasia auricoma, Westw. (Trans. Ent. Soc. Lond. v. p. 93), from Brazil, to judge from the description, may resemble *L. scribæ*; but it is only half an inch long; the tarsi are said to be "lutei," the tegulæ "chalybeæ."

Fam. ASILIDÆ.

Section I. DASYPOGONINA.

LEPTOGASTER.

Leptogaster, Meigen, in Illiger's Magaz. 1803; Klassif. 1804.

1. *Leptogaster* — ?

Nineteen species of *Leptogaster* from North America have been described. I have three Mexican species before me, two from Ciudad in Durango, collected by Mr. Forrer, and one from Northern Sonora, collected by Mr. Morrison; I do not venture to describe these, though some of the existing descriptions very nearly apply to them; the identification in any case would not by any means be certain. One of the species from Ciudad, for instance, nearly answers the description of *L. pictipes*, Loew, from Illinois.

Two species have been previously described from Mexico:—

Leptogaster fervens, Wiedem. Aussereur. zweifl. Ins. ii. p. 646.

— *truquii*, Bellardi, Saggio &c. ii. p. 87, t. 2. f. 18.—Mexico, Yautepec.

CERATURGUS.

Ceraturgus, Wiedemann, Analecta ent. &c. p. 12 (1824).

There is not a single representative of this genus in the collections before me; the Central-American species previously described are:—

Ceraturgus dimidiatus, Macq. Dipt. Exot. Suppl. ii. p. 35 (*Dasygogon*); Walker, List &c. vi. p. 428 (*Dasygogon*); Bellardi, Saggio &c. ii. p. 61.—Mexico.

— *rufipennis*, Macq. loc. cit. p. 32 (*Dasygogon*); Bellardi, Saggio &c. ii. p. 59.—Mexico.

— *vitripennis*, Bellardi, Saggio &c. ii. p. 60.—Mexico, Cuantla.

— *geniculatus*, Bigot, Ann. Soc. Ent. Fr. 1878, p. 443.—Mexico.

MICROSTYLUM.

Microstylum, Macquart, Dipt. Exot. i. 2, p. 26 (1838).

The only described Central-American species is :—

Microstylum fulvigaster, Bigot, Ann. Soc. Ent. Fr. 1878, p. 410.—Mexico.

OSPRIOCERUS.

Ospriocerus, Loew, Centur. vii. no. 51 (1866).

1. *Ospriocerus* — ?

Hab. MEXICO, Northern Sonora (*Morrison*).

Two specimens from the above-named locality differ from all the described species in having the abdomen, including the venter, red, with only the first segment and the anterior corners of the second black, and the eighth segment darker. The colouring in this genus being variable, it is possible that these specimens are varieties of described species. The other characters defining the species have not been sufficiently insisted on in the descriptions, and under such circumstances I cannot determine whether the species before me is new or not.

2. *Ospriocerus æacus*.

Dasypogon æacus, Wiedem. Aussereur. zweifl. Ins. i. p. 390.

Ospriocerus æacus, O. Sacken, Western Dipt. p. 290¹.

Asilus (*Dasypogon*) *abdominalis*, Say, Long's Second Exped. p. 375²; Compl. Wr. i. p. 255.

(?) *Dasypogon spathulatus*, Bellardi, Saggio &c. ii. p. 82, t. 1. f. 9³ (synonymy apud Loew, Centur. vii. no. 51).

Hab. WESTERN UNITED STATES^{1 2}.—MEXICO³.

ABLAUTATUS.

Ablautus, Loew, Centur. vii. no. 63 (1866).

Ablautatus, Loew, Berl. ent. Zeit. 1874, p. 377.

1. *Ablautatus trifarius*?

Ablautatus trifarius, Loew, Centur. vii. no. 63.

I have a single specimen from Northern Sonora, which I doubtfully refer to this species.

STENOPOGON.

Stenopogon, Loew, Linn. Entom. ii. p. 453 (1847).

This genus, as well as *Scleropogon*, is abundantly represented in New Mexico and

California, and for this reason must be rather common in Mexico. There are no specimens in the collection before me.

The only species described by earlier authors are:—

Stenopogon fuscolimbatus, Bigot, Ann. Soc. Ent. Fr. 1878, p. 421.—Mexico.

Dasypogon (Stenopogon) truquii, Bellardi, Saggio &c. ii. p. 76, t. 1. f. 10.—Mexico. (This is a *Scleropogon*.)

ARCHILESTRIS.

Archilestes, Schiner, Verh. z.-b. Ges. Wien, 1866, p. 672.

Archilestris, Loew, Berl. ent. Zeit. 1874, p. 377.

1. *Archilestris magnificus*.

Dasypogon magnificus, Walker, List &c. vi. p. 427¹.

Dasypogon (Microstylum) magnificum, Bellardi, Saggio &c. ii. p. 79, t. 1. f. 11²; Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 168³.

Hab. MEXICO¹, near the city (*Craveri*, *Sallé*), Yautepec (*Truqui*²), Huastec (*de Sausure*), Ventanas (*Forrer*).—SOUTH AMERICA³.

I have three specimens from Ventanas. These have the third joint of the antennæ distinctly beset with hairs on the upperside, although Schiner asserts the contrary.

DIZONIAS.

Dizonias, Loew, Centur. vii. no. 53 (1866).

1. *Dizonias* — ?

Hab. MEXICO, Presidio (*Forrer*).

A single male before me resembles *D. bicinctus*, Loew, Cent. vii. no. 54, but differs in having greyish cross-bands at the base of segments 3–6, similar to the whitish ones on segments 2 and 3 of *D. bicinctus*; the lowest hairs of the mystax are white; a few bristles on the post-alar callus and in front of the scutellum are likewise white; the segment preceding the male forceps has a fringe of snow-white hairs; the front coxæ are beset with whitish hairs.

In my Catal. N.-Am. Dipt. 1878, Note 103, pp. 230, 231, I have stated the reasons why I regard *D. quadrimaculatus*, Bellardi (Saggio &c. ii. p. 80, t. 1. f. 8), as the same species as *D. bicinctus*, Dr. Loew's objections notwithstanding. I have also mentioned specimens where the white abdominal cross-bands are invisible. For these reasons I cannot, without further evidence, treat the specimen before me as a new species. *D. bicinctus* has a wide distribution. Van der Wulp had a specimen from the Argentine Republic (*cf.* Tijdschr. voor Ent. xxv. p. 96); this also has whitish hairs on the front coxæ.

BIOL. CENTR.-AMER., Dipt., February 1887.

2. *Dizonias* —?

Hab. MEXICO, Northern Sonora (*Morrison*).

A single male, black, with the abdomen, except the dorsal side of the two basal segments, red. I do not perceive any white cross-bands on the abdomen. This specimen cannot therefore be identified with the descriptions of either *D. phaenicurus*, Loew, Cent. vii. no. 53 (Mexico, Tamaulipas), or *D. (Dasypogon) lucasi*, Bellardi, Saggio &c. ii. p. 81, t. 1. f. 7 (Mexico); nevertheless, it may be merely a variety of either.

STICHOPOGON.

Stichopogon, Loew, Linn. Ent. ii. p. 500 (1847).

1. *Stichopogon catulus*, sp. n., ♂.

Abdomen black, the front angles of segments 2-7 filled up with large triangles of grey pollen. Length 5.5-6.5 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Face silvery, the beard and mystax white; front and occiput black, thinly greyish-pollinose; antennæ black. Thorax and legs with a thin greyish pollen on black ground; the sides of the thoracic dorsum, along the dorso-pleural suture, having, in a certain light, a white reflection; pleuræ hoary pollinose. Abdomen black; segment 1 greyish on the sides; segments 2-7 each with a large grey-pollinose triangle in the anterior corners, one of the angles of the triangle reaching the hind margin, the other quite or nearly touching the corresponding angle of the opposite side; eighth segment grey. Halteres pale yellowish; tip of the knob sometimes darker. Wings hyaline. I have two specimens from the above locality.

2. *Stichopogon trifasciatus*.

Dasypogon trifasciatus, Say, Proc. Acad. Phil. iii. p. 51¹; Compl. Wr. ii. p. 64; Wiedem. Aussereur. zweifl. Ins. i. p. 405.

Thereva plagiata, Harris, Catal. Ins. Mass.; Walker, List &c. i. p. 223².

Hab. UNITED STATES^{1 2}.—MEXICO, Northern Sonora (*Morrison*).

A single specimen from Sonora.

3. *Stichopogon* —?

Hab. MEXICO, Northern Sonora (*Morrison*).

A single specimen of an almost uniform dingy greyish colour cannot be referred to any of the described species.

The only other described species from our region is:—

Stichopogon (Dasyopogon) candidus, Macq. Dipt. Ex. Suppl. i. p. 67; Bellardi, Saggio &c. ii. p. 78.—Mexico.

Syn. *Dasyopogon gelascens*, Walker, Tr. Ent. Soc. Lond. n. ser. v. p. 277 [Bellardi].

Dasyopogon fasciventris, Macq. Dipt. Ex. Suppl. iv. p. 69, t. 9. f. 13 [apud Bellardi].

HOLCOCEPHALA.

Holcocephala, Jaenicke, Neue exot. Dipt. p. 51 (1867).

Discocephala, Macquart (nomen præoc.).

1. *Holcocephala longipennis*.

Discocephala longipennis, Bellardi, Saggio &c. ii. p. 286, t. 1. f. 14¹.

Discocephala divisa, Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 279².

Hab. MEXICO², Jalapa (*Truqui*¹); COSTA RICA, Cache (*Rogers*).

I have a single specimen from Costa Rica which agrees with Prof. Bellardi's type; the latter has the dark spot at the tip of the wings much larger than the figure represents it to be. Walker's species is the same.

The other species from Mexico hitherto described (there are none from other parts of Central America) are:—

Holcocephala (Discocephala) affinis, Bellardi, Saggio &c. ii. p. 86, t. 1. f. 13.

— (—) *deltoidea*, Bellardi, l. c. p. 85, t. 1. f. 12.

— (—) *minuta*, Bellardi, l. c. p. 83.—Tuxpango.

— (—) *interlineata*, Walk. Trans. Ent. Soc. Lond. n. ser. v. p. 279.

— (*Dasyopogon*) *nitida*, Wiedem. Aussereur. zweifl. Ins. ii. p. 603; Bellardi, l. c. p. 84 (Jalapa, *Truqui*).

PLANETOLESTES.

Planetolestes, Arribáizaga, Asilid. Argent. p. 3 (in Anal. Soc. Cient. Argent. viii. pp. 145–153) (1879).

1. *Planetolestes secabilis*.

Dasyopogon secabilis, Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 276¹.

Dasyopogon (Saropogon?) secabilis, Bellardi, Saggio &c. ii. p. 63, tab. i. f. 4².

Hab. MEXICO¹, Tampico, Cuantla (*de Saussure*²), Oaxaca (*Sallé*²), Cordova (*Höge*); GUATEMALA, Teleman (*Champion*); PANAMA, Bugaba 800 to 1500 feet (*Champion*).

I have compared the types in the British Museum and in the collection of Prof. Bellardi in Turin. Walker's description is very imperfect: on p. 275, line 1, for 'front' it should read 'face'; line 12, for [wings] 'cinereous,' 'yellowish-brown.'

In Prof. Bellardi's description the knob of the halteres is described as "black;" of

the six specimens in this author's collection, five have yellow halteres, which is the usual colour, and one only has them black. Among the specimens before me a single one from Cordova has a deep black knob to the halteres; in the three others the knob is yellow. I do not know how to explain this unusual anomaly. (Van der Wulp has also noticed this discrepancy in Bellardi's description, *cf.* Tijdschr. voor Ent. xxv. p. 90.)

Arribáizaga (*l. c.* pp. 6 & 73) and van der Wulp (*l. c.*) have fully discussed the further synonymy of this species. Certainty on those points can only be obtained through the comparison of original specimens. However, I agree with Arribáizaga that, judging from the description, *Senobasis auricinctus*, Schiner, cannot be the same species. About the rest of the synonymy, as adduced by Arribáizaga ('Catalogo de los Dipteros &c. p. 139), I cannot express any opinion.

N.B.—I do not follow Arribáizaga and van der Wulp in calling *Blepharepium* the genus to which this species belongs; I think that it should be called *Planetolestes*, Arribáizaga, as this author was the first to point out the principal characters which distinguish it from the allied genus *Diogmites*, (Arribáizaga) Loew, namely, the absence of bristles on the scutellum, and the different length of the pulvilli on the front and hind legs. The characters of *Blepharepium*, Rond., are applicable to several species of *Diogmites* with an abdomen coarctate at the base (e. g. *D. lindigii*, Schin.), and I have no doubt that Rondani himself would have taken the latter species for a *Blepharepium*. Therefore *Blepharepium* and *Planetolestes* are not one and the same genus, the former being based on illusory characters.

Planetolestes differs from *Diogmites* thus:—

(1) It has no bristles on the scutellum, the latter being much less projecting; in *Diogmites* there is a pair of long bristles. (2) The pulvilli on the four posterior legs hardly reach the middle of the ungues, and are therefore much shorter than those on the front legs. (3) The macrochætæ on the sides of the mesonotum are smaller; on the post-alar callus one is not half as long as the other. (4) There are no macrochætæ in front of the scutellum; in *Diogmites* præscutellar rows of bristles are of common occurrence.

Arribáizaga says there is no style at the tip of the antennæ; I perceive a minute style in my specimens—more distinct in the male, almost obsolete in the female. He correctly describes: a pair of longitudinal rows of minute bristles on the mesothorax; but in my female specimens I perceive a third, intermediate, row which I do not see in the male; the lateral rows are double. The denticulate projection at the base of the metatarsus noticed by Arribáizaga also exists in *Diogmites*, as well as in other Dasy-pogonina provided with a hook on the front tibiæ.

DIOGMITES.

Diogmites, Loew, Centur. vii. no. 36 (1866).

(?) *Deromyia*, Philippi, Verh. zool.-bot. Ges. Wien, xv. p. 705 (1865).

In my attempts to determine the species of this genus, I have taken into account, almost exclusively, the described species from America north of Panama, and enumerated in my 'Catalogue of North-American Diptera' (1878). A good many species from South America, belonging here, have been described by different authors; these are scattered in the genera *Dasypogon*, *Saropogon*, *Seilopogon*, *Deromyia*, &c. I deem it, in most cases, impossible to determine such species from descriptions, especially when the specimens to be determined are from a distant locality. For the North-American species I have had the advantage of examining Dr. Loew's and Prof. Bellardi's types; by this means, if not attaining certainty, I at least increase the probability of the correctness of my determinations.

Further study, based on a larger number of specimens from different localities, will perhaps reveal new and more precise characters for the definition of the species of *Diogmites*. Those used up to the present time are not sufficient. The difference, for example, between *D. ternatus*, Loew, and *D. misellus*, Loew, seems, on paper, clear enough; but, with the types before me, I remained uncertain to which of them to refer certain specimens. I have great faith in Loew's eye for specific differences; but these differences must not only be felt, but defined, and in the above-quoted instance the definition does not seem sufficient. The colour of the front end of the thoracic stripe, the presence or absence of clouds in certain cells, and the colour of legs and palpi, are not altogether "constant characters." In grouping specimens of *Diogmites* one is in doubt whether to adopt a very large number of species or else to overlook apparently important differences. I shall have occasion, in the sequel, to give utterance to many doubts of this kind, and Prof. Bellardi has also expressed them in several passages (compare this author's remarks about *D. cuaptilensis*, *D. rubescens*, *D. pseudojalapensis*, &c.).

The greatest difficulties are met with in the group with three distinct velvety-black thoracic stripes on golden ground, comprising the species *ternatus*, Loew, *misellus*, Loew, *rubescens*, Bell., *affinis*, Bell., *dubius*, Bell., *jalapensis*, Bell., and *pseudojalapensis*, Bell. I believe that all these species are insufficiently defined.

I retain here, as I did in my 'Catalogue of North-American Diptera' (1878), the name given to this genus by Loew in preference to *Deromyia*, the date of which is but one year earlier; the latter applies to South-American species of a somewhat different structure. In all the North-American species known to me the fourth posterior cell is closed a considerable distance from the margin; whereas it is open in *Deromyia fulvipes*, Phil., and closed on the margin of the wing in *D. gracilis*, Phil. Should even the generic identity be proved, *Deromyia* may remain as a subgenus; but a change of name in presence of such a difference in the typical species cannot, I think, be warranted.

Synopsis of the Species of Diogmites mentioned below.

- | | |
|---|-------------------------------|
| 1. Wings altogether brown | 1. <i>sallei</i> , Bell. |
| Wings not altogether brown | 2. |
| 2. Prevailing colour black; abdomen uniformly black, shining | 3. <i>memnon</i> , sp. n. |
| Prevailing colour not black | 3. |
| 3. Thoracic stripes coalescent, forming a large deep-black spot on the thorax | 5. <i>tau</i> , sp. n. |
| Thoracic stripes separated by golden lines | 4. |
| 4. Palpi black or dark brown | 5. |
| Palpi reddish. | 6. |
| 5. Small species, 12–14 millim.; abdominal segments darker in the middle, and therefore with lighter hind margins | 7. <i>jalapensis</i> , Bell. |
| Large species, about 23 millim.; abdomen rather unicolorous, the hind margins of the segments but little lighter | 8. Sp. |
| 6. Abdomen deep black, with bright golden hind margins to the segments; thorax with three deep-black stripes on golden ground, the middle stripe bifurcate in front | 2. <i>lindigi</i> , Schin. |
| Abdomen brownish-red, the hind margins of the segments concolorous; thorax with three velvety-black stripes, the intermediate stripe reddish in front | 6. <i>rubescens</i> , Bell. |
| Abdomen brownish, the hind margins of the segments with a dull orichalceous reflection; thoracic stripes brown rather than black, the lateral ones obsolete | 4. <i>cuantlensis</i> , Bell. |

1. **Diogmites sallæi.** (Tab. III. fig. 8, ♂.)

Dasypogon (Saropogon) sallæi, Bellardi, Saggio &c. ii. p. 70¹.

Hab. MEXICO, Northern Sonora (*Morrison*), Ventanas 2000 feet, Presidio (*Forrer*), Tuxpango¹.

The expression “*alis subfuscis ad basim hyalinis*” in Prof. Bellardi’s description is somewhat misleading: it refers to the anal angle of the wing, which is sometimes of a paler tinge; the root of the wing is brown. I have seen the types in Turin.

2. **Diogmites lindigi.**

Dasypogon lindigii, Schiner, Reise d. Novara, Zool. ii. Abth. i. Dipt. p. 165¹.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).—SOUTH AMERICA¹.

The description agrees well, except the words “*Hüften weiss schimmernd.*” The *coxæ* are pale orichalceous.

3. **Diogmites memnon**, sp. n., ♂ ♀. (Tab. III. fig. 9.)

Dark brown; distal half of the abdomen black, shining; yellowish-brown stripes along the dorso-pleural suture only; legs chestnut-brown.

Length 20–24 millim.

Hab. COSTA RICA; PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Face reddish-brown pollinose; bristles of the mystax variable—whitish, yellow, brown, or a mixture of these colours; front brown; the occiput black, occipital orbits pale orichalceo-pollinose; palpi black. Antennæ reddish-brown, beset with black hairs; last joint elongate-lanceolate, about one third longer than the two preceding joints together. Thoracic dorsum on each side with a brownish-yellow pollinose stripe reaching from the humerus to the scutellum; within and without these stripes there is, on each side, an irregular, somewhat broader, deep velvety-black stripe; the remaining dorso-central space is of a dull opaque smoky-black, and shows, in the shape of darker black and greyish indistinct stripes, traces of the usual dorso-central stripes. Scutellum and the sides of the metanotum brownish-yellow pollinose; pleuræ velvety-black, with brownish-pollinose reflections. Halteres yellowish-brown. Abdomen slightly coarctate; segments 1–3 brownish-pollinose, with spots of yellowish pollen in the hind corners; the posterior half of segment 3 and the remaining segments shining black. Coxæ whitish-pollinose, with whitish hairs. Legs chestnut-brown; hind femora, except the base, darker; sometimes the other femora and the tibiæ are more or less infusate. Wings with a yolk-yellow tinge in the antero-proximal region; a brownish-grey shadow fills the following cells:—the marginal, the first submarginal (except a narrow space along the third vein), the second submarginal, the distal half of the first posterior, and the second and third posterior, and forms triangles in the discal and fourth and fifth posterior cells; the anal and axillary cells are subhyaline, with a slight yellowish tinge, and without shadow, or mere traces of it. Venation normal; veins reddish.—A male and four females.

N.B.—The wings of this species resemble those of the Mexican *D. nigripes*, Bellardi, of which I have seen the type; but I did not recognize the same species in it; nor do I recognize it in the description.

4. *Diogmites cuantlensis*.

Dasyopogon (*Saropogon*) *cuantlensis*, Bellardi, Saggio &c. ii. p. 67¹.

Hab. MEXICO, Cuantla (*de Saussure*¹); GUATEMALA, San Gerónimo (*Champion*).

I have two males and one female from Guatemala, which I have compared with the types in Turin; the description also agrees very well. The dorso-central stripe (Bellardi's "macula intermedia") is very variable in the intensity of the colouring and the distinctness of the median dividing line. The third joint of the antennæ has the usual short bristles on its upperside. As Prof. Bellardi says, this species is very difficult to characterize. The types alone would not have satisfied me; it was the agreement of the description, which I read later, that convinced me. The usual thoracic stripes of *D. cuantlensis* are brown rather than black, the lateral ones often obsolete; the brownish abdomen has, along the hind margins of the segments, a dull orichalceous reflection; the wings have a dingy yellowish tinge, upon which the grey shadows are but little

The locality is
Cuantla, hence
the name should
be Cuantlensis

Trans. Am. Ent. Soc.,
ser 6, xx, 279.

visible, although they are rather extensive, nearly filling the discal cell and the discal ends of the anal and axillary cells; the abdomen is not at all coarctate, but gently tapering towards the tip.

5. **Diogmites tau**, sp. n., ♀. (Tab. III. fig. 11.)

Thoracic stripes deep black, coalescent, the anterior end of the intermediate one expanded into a distinct knob; the shadows on the distal half of the wings rather dark.

Length 23–24 millim.

Hab. PANAMA, Volcan de Chiriqui 3000 to 4000 feet (*Champion*).

Head orichalceo-pollinose; mystax whitish; palpi brown, with black hairs; antennæ rufous. Thoracic dorsum with a golden-pollinose border all round (in front of the scutellum this golden border shows an expansion, which is emarginate in the middle and fills out the space between the posterior ends of the lateral thoracic stripes); the disc deep velvety-black, the three usual stripes coalescing completely (the anterior end of the middle stripe, in front of the collar, expanding into a stout deep black knob, slightly brownish anteriorly; on each side of the middle stripe is an orichalceo-pollinose excision between this knob and the anterior end of the lateral stripes); a slight yellow margin along the transverse thoracic suture. Abdomen very slightly coarctate; of a rich reddish-brown, somewhat lighter along the posterior margins of the segments; the surface beset with moderately dense, short, appressed reddish hairs. Halteres brownish. Front coxæ orichalceo-pollinose, with sparse long yellow hair. Legs brownish-rufous, the tarsi black; metatarsi and, on the four anterior legs, the second joint more or less dark rufous; the usual short rufous pile on the inner sides of the front and hind tibiæ and on the metatarsi quite conspicuous. Wings subhyaline, with an almost imperceptible yellowish tinge; the usual shadows brownish-grey, quite conspicuous, and filling the distal end of the marginal, the distal half of the first submarginal, the whole of the second submarginal, the distal half of the first posterior, and the whole of the second and third posterior cells; the discal cell contains a large, and the fourth posterior cell a smaller, grey triangle, and the fifth cell a small shadow; the anal and axillary cells are subhyaline, without shadow.—A single female.

D. goniostigma, Bellardi (Saggio &c. ii. p. 65, t. 1. f. 6), from Mexico, has a thorax somewhat resembling that of *D. tau*; it is, however, much smaller, and also differs in other respects.

6. **Diogmites rubescens**.

Dasyopogon (Saropogon) rubescens, Bellardi, Saggio &c. ii. p. 71¹.

Hab. MEXICO (*de Saussure*¹), Tuxpango (*Sumichrast*¹), Orizaba.

To Prof. Bellardi's description I would add that the ocellar bristles are very short, and that the hind femora have, on the antero-superior side, a brown stripe, which is more or less distinct in different specimens, sometimes evanescent; the tips of the femora and the distal third of the tibiæ are also more or less dark. The abdomen is very slightly

coarctate at the suture between the second and third segments; the segments do not have any distinct hind margin of a lighter colour (though, when the specimen is looked at with the end of the abdomen towards the light, a golden reflection is visible along the margins), and appear to be only slightly darker brown on the disc. The grey shadow on the wings does not occupy the proximal ends of the second submarginal and the second and third posterior cells; the triangle in the fourth posterior cell sometimes coalesces with the shadow in the third posterior cell, sometimes it is separated from it by a hyaline interval along the intervening vein; there is a grey triangle in the discal cell, and grey shadows in the anal and axillary cells: all these shadows vary in extent in different specimens. The reddish anterior end of the dorso-central stripe seems to be characteristic.

N.B.—I have before me two Mexican specimens which Prof. Bellardi allowed me to take from among his duplicates; these have the short appressed hair on the abdomen black. Three examples from Costa Rica, Cache (*Rogers*), have this pubescence “golden-yellow”; the shadows of the wings darker, although their distribution is the same; and the brown stripe &c. on the hind femora &c. very dark. Do the latter belong to the same species?

Two specimens from Mexico, Presidio (*Forrer*), are like the preceding, only the discs of the abdominal segments are much darker, thus almost leaving a lighter border along the hind margins. Do these specimens belong to a different species?

D. misellus, Loew, Centur. vii. no. 39 (United States), must be very like *D. rubescens*; it has the middle thoracic stripe in front, and the palpi, reddish; and the anal cell is described as having no shadow within it (in *D. rubescens* the shadow is very small).

That *D. misellus* is the same as *D. winthemi*, Wiedem., as Dr. Williston thinks (Tr. Am. Ent. Soc. xi. p. 24), may be true, but requires further proof. The comparison with a type specimen, unless undertaken by some one who has made the genus a special study, is not convincing. In fact, it is doubtful whether Wiedemann himself had sufficiently specialized his species to be aware of its characteristics; his description is too short, and would apply to many *Diogmites*.

7. *Diogmites jalapensis*.

Dasypogon (Saropogon) jalapensis, Bellardi, Saggio &c. ii. p. 65, t. 1. f. 5¹.

Hab. MEXICO, Jalapa (*Truqui*¹).

I have before me a duplicate specimen kindly given to me by Prof. Bellardi. It principally differs from *D. rubescens* by its smaller size, 12 to 13 millim., by its dorso-central thoracic stripe not being reddish in front, and by its black palpi; the hind femora have no trace of a darker stripe—they are reddish-yellow, black at the tip; the abdominal segments are brownish in the middle, their margins being more yellowish; and

the grey triangles in the discal and fourth posterior cells are coalescent with the grey along the apex of the wing.

A specimen from Guatemala, Teleman, Vera Paz (*Champion*), has the same characters, and may, perhaps, belong here; but it is a little larger, 15 to 16 millim.; the abdomen has parallel sides, while in *D. jalapensis* it is slightly coarctate; and although the grey shadows are much more intense, the anal and axillary cells are free from them, which is not the case in *D. jalapensis*. The Mexican *D. pseudojalapensis*, Bellardi, Saggio &c., Append. p. 25, is an allied species.

8. *Diogmites* — ?

Hab. PANAMA, Bugaba (*Champion*).

I have a male and a female from the above locality, about 23 millim. long. I compared them with the types of *D. ternatus*, Loew, in that author's collection in Berlin. They are a little larger; the palpi are black and not reddish; the tarsi, except the first joint, black; the ocellar-tubercle black.

The following previously described species also belong to this genus:—

Diogmites angustipennis, Loew, Centur. vii. no. 41.—Kansas; Mexico, Matamoros.

Dasypogon (Saropogon) affinis, Bellardi, Saggio &c. ii. p. 73.—Mexico.

— (—) *bigoti*, Bellardi, l. c. p. 70.—Mexico.

— (—) *brunneus* (Wiedem.), Bellardi, l. c. p. 67.—Mexico.

— (—) *craverii*, Bellardi, l. c. p. 68.—Mexico. This species will be hardly recognizable; the two typical specimens were in a very bad condition at the time when they were described.

— (—) *dubius*, Bellardi, l. c. p. 74.—Mexico, Cuantla.

— (—) *goniostigma*, Bellardi, l. c. p. 65, t. 1. f. 6.—Mexico, Playa Vicente.

— (—) *nigripes*, Bellardi, l. c. p. 75.—Mexico, Playa Vicente.

— *pseudojalapensis*, Bellardi, l. c. Append. p. 25.—Mexico, Tuxpango.

Dasypogon duillius, Walker, List &c. ii. p. 340, from Honduras, is also a *Diogmites*, and not represented amongst the species of that genus before me; it has infuscated wings, like *D. sallæi*, and is represented by a single specimen in the British Museum.

SARPOGON.

Saropogon, Loew, Linn. Ent. ii. p. 439 (1847).

1. *Saropogon senex*, sp. n., ♂.

Black, including the legs; head and thorax grey-pollinose; wings brown.
Length about 9 millim.

Hab. MEXICO, Presidio (*Forrer*).

Face silvery-grey, almost white; bristles of the mystax black; front and occiput thickly grey-pollinose, with black bristles. Thoracic dorsum and pleuræ thickly grey-pollinose; in the middle of the dorsum the place of the usual stripes is indicated by a less dense pollen, showing more of the blackish ground-colour; macrochætæ black. Knob of the halteres pallid whitish, the stem brownish at the base. Abdomen, including the genitals, shining black, with a bluish reflection. Legs black, shining. Wings brown, lighter at the tip; fourth posterior cell closed near the margin.—A single specimen.

N.B.—In front of the mesothoracic suture (that is, in the angle formed by it and the dorso-pleural suture) I perceive three præsutural macrochætæ and even a small fourth one. In the European specimens of *Saropogon* which I can now compare I perceive but two præsutural macrochætæ.

The following species from our region have been referred to the genus *Saropogon* by previous writers, but seem to be of doubtful position:—

Saropogon bicolor, Jaennicke, Neue exot. Dipt. p. 49.—Panama.

Dasypogon nigripennis, Macq. Dipt. Exot. Suppl. ii. p. 34, t. 1. f. 6; Bellardi, Saggio &c. ii. p. 75 (*Saropogon*).—Mexico.

—— (*Saropogon*) *tricolor*, Bellardi, l. c. p. 72.—Mexico.

—— (——) *virescens*, Bellardi, l. c. p. 69.—Mexico.

LASTAURUS.

Lastaurus, Loew, Bemerk. über die Fam. Asiliden, p. 11 (Berlin, 1851).

1. *Lastaurus anthracinus*. (Tab. III. fig. 10, ♂.)

Lastaurus anthracinus, Loew, Bemerk. über die Fam. Asiliden, p. 12¹.

Hab. MEXICO¹; GUATEMALA, Purula (*Champion*).

I have two male and two female specimens from Guatemala which very probably belong to one species, although they differ in the colouring of the abdomen.

Male. The whole body, including the legs and antennæ, uniformly velvety-black, opaque; the last two segments of the abdomen beset with pale yellow, sometimes slightly reddish, hairs; the genitals with black hairs; wings tinged with brown, and with metallescent blue reflections.

Female. The whole body, including the legs and antennæ, uniformly velvety-black, opaque, except the last four abdominal segments, which are black, shining, and with a thinner covering of hairs; wings as in the male, only a little darker.—Length 22–28 millim.

Besides the difference in the colouring (which may be variable) this species differs from *L. mutabilis*, Loew, in the following points:—1. The hairs on the abdomen are much shorter, but more dense. 2. The last four abdominal segments are distinctly longer and broader than the corresponding segments of *L. mutabilis*; this difference is especially visible in the female. 3. The legs are stouter; the hind tibiæ are, on the upper surface, distinctly arcuate, especially at the base; they are straighter in the other species. 4. The wings are darker brown, and the bluish reflection is more distinct.

N.B.—The synonymy with *D. lugubris*, Macq. (Dipt. Exot. Suppl. iv. p. 64), alleged by Schiner, is very doubtful.

2. *Lastaurus mutabilis*.

Lastaurus mutabilis, Loew, Bemerk. über die Fam. Asiliden, p. 12¹.

Hab. COSTA RICA, Rio Sucio (*Rogers*); PANAMA, Volcan de Chiriqui (*Champion*).—SOUTH AMERICA, Colombia and Venezuela¹ (*Berlin Museum*).

A male, from Rio Sucio, has the abdomen, beginning with the second segment, clothed with long pale yellow hairs; the genitals beset with rufous hairs. A female from Volcan de Chiriqui has the hair on the abdomen more intensely yellow. I have seen Loew's types in Berlin. The species is very variable in the colouring of the hairs on the abdomen. I would not call it "beträchtlich kleiner" than *L. anthracinus*.

N.B.—The synonymy of this species with *Morimna mallophoroides*, Walk. Ins. Saunders. p. 104, t. 4. f. 2, suspected by Schiner (Verh. z.-b. Ges. Wien, 1867, p. 373), is possible; but there are several contradictions between the diagnosis and the description, and both had better be dropped. The type is not in the British Museum.

The synonymy with *D. fallax*, Macq. Dipt. Exot. Suppl. iv. p. 63 (Colombia, temperate region), is also possible; Macquart's description is perfectly unmeaning.

NICOCLES.

Nicocles, Jaenicke, Abh. Senkenb. Ges. vi. p. 354 (1867); Neue exot. Dipt. p. 47 (1867).

Pygostolus, Loew, Berl. ent. Zeit. x. p. 16 (1866); Centur. vii. no. 28; id. x. no. 24 (nomen præocc.).

The only species described is:—

Nicocles analis, Jaenicke, Neue exot. Dipt. p. 47, t. 1. f. 13.—Mexico.

COPHURA, gen. nov.*

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 joint subcylindrical, the second obconical and nearly of the same length; the third joint 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* two). Abdomen rather flat, smooth, without punctures; ending in the male in a protruding forceps, in the female in an ovipositor, bearing a coronet of spinules. Legs as in *Nicocles*, of moderate length and strength, with rather weak femora and straight tibiæ. Wings 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 "Dasypogonina" 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 *Holcocephala* in its general appearance and colouring, and might, at first sight, be mistaken for a species of that genus; but the head is much narrower, and the eyes less projecting.

I deem it necessary to add that my comparison with *Nicocles*, in its detail, is based on a single female of that genus.

Of *Blacodes*, Loew (*Blax*, olim), which belongs in the same vicinity, I have no specimens for comparison; the description of the antennæ and of the venation proves it to be a different genus.

1. *Cophura sodalis*, sp. n., ♂ ♀. (Tab. III. fig. 13, ♀.)

Head and thorax yellowish-grey pollinose; the latter with three deep black stripes, the median one double; abdomen reddish-yellow, shining; wings brownish.

Length, ♂, 5-6 millim.; ♀, 6-8 millim.

Hab. MEXICO, Presidio (*Forrer*).

Head yellowish-grey pollinose; mystax yellowish-white; antennæ black. Thorax clothed with the same kind of pollen, which, however, is yellower on the dorsum and greyer on the pleuræ; the stripes well-marked, deep black—the dorso-central one distinctly bisected by a longitudinal line, the latter anteriorly crossing over the collar (where it is not bisected, however) and posteriorly dove-tailed and stopping short a considerable distance before the scutellum; the lateral stripes represented by an oval, deep black spot, bisected by the suture; macrochætæ pale yellowish; scutellum yellowish-grey pollinose. Abdomen reddish-yellow, shining, glabrous, or rather beset with sparse,

* κωφός, blunt, truncate; οὐρά, tail.

short, yellowish hairs (visible under the microscope only); forceps of the male brown, beset with yellowish hairs; in some female specimens the last two segments are also infuscate. Halteres reddish-yellow, the knob remarkably large. Legs: prevailing colour reddish-yellow, with yellowish hairs and spines; the four anterior femora brown on their proximal half, the brown often occupying two thirds of the femur; the hind femora sometimes brownish on the upperside; the tibiæ brown at the tip, as well as the single joints of the tarsi (the tarsi in some specimens, and especially the hind pair, might as well be described as brown, with the bases of the joints yellow). Wings uniformly infuscated, including the anal cell and alula; the inside of some of the cells paler (this varies in different specimens). I have before me one male and nine females from the above-mentioned locality.

Section II. LAPHRINA.

DORYCLUS.

Doryclus, Jaennicke, Abh. Senkenb. Ges. vi. p. 365 (1867); Neue exot. Dipt. p. 58, t. 2. f. 3 (1867).
Megapoda, Macquart, Hist. nat. des Ins. Dipt. i. p. 288 (1834) (nomen præocc.).
Ampyx, Walker, List &c. vii. p. 564 (1855) (nomen præocc.).

1. *Doryclus varipennis*.

Ampyx varipennis, Walker, List &c. vii. p. 564¹.
 (?) *Megapoda cyaneiventris*, Macq. Dipt. Exot. Suppl. i. p. 71, t. 7. f. 12 (1846).

Hab. GUATEMALA, El Reposo (*Champion*).—AMAZONS, Santarem¹.

A single female from Guatemala is identical with the Amazonian specimens of *Ampyx varipennis* in the British Museum. The extent of the black on the legs, as well as the intensity of the brown on the wings, varies in different specimens. Walker's description being short, I supplement it from the specimen before me.

Face brownish-red; palpi reddish; front and vertex dark reddish-brown, shining; antennæ (broken; red in the Brit. Mus. specimen); occiput reddish-brown; occipital orbits silvery. Thorax: dorsum black, with a slight bluish opalescent reflection, and with three stripes of greyish pollen—the intermediate one elongate-cuneiform and longitudinally bisected by a black line, the lateral ones nearly reaching the scutellum; pleuræ reddish-brown, mixed with dark brown, shining, which colour encroaches upon the mesonotum on its sides and in front. Abdomen metallic blue, with short, sparse, whitish hairs; ovipositor black. Legs brownish-red, but with the tarsi, the anterior tibiæ entirely, and the four hinder tibiæ at the tips, black. Wings with two pale brownish cross-bands, which leave but little subhyaline on the distal half, though, in addition to the ill-defined interval between these bands, there are subhyaline spaces between the second submarginal and the third and fifth posterior cells.

N.B.—Schiner, Reise d. Novara, Zool. ii. Abth. i. 1, p. 156, recognized the identity

of *Ampyx*, Walker (1855), with *Megapoda*, Macq. (1834); and Arribáizaga, Anal. Soc. Cient. Argent. xiii. (1882) pp. 185 et seq., has shown that *Megapoda* is the same as *Doryclus*, Jaenn. The three genera united contain seven described species, some of which are probably synonymous. The species being apparently variable in the intensity of their colouring, it would be unsafe to establish these synonyms merely upon descriptions. *Doryclus*, like some "Dasypogonina," has a strong hook at the end front tibiæ.

The synonymy of *M. cyaneiventris*, Macq., is very probable, but not certain.

PSEUDORUS.

Pseudorus, Walker, Ins. Saunders. Dipt. p. 103, t. 4. f. 5 (1853).

1. *Pseudorus bicolor*.

Pseudorus bicolor, Bellardi, Saggio &c. ii. p. 11, t. 1. f. 20¹.

Hab. MEXICO, Playa Vicente (*Sallé*¹); GUATEMALA, San Gerónimo (*Champion*).

I have compared a single specimen from Guatemala with Prof. Bellardi's type, and believe that it belongs to the same species. The Guatemalan example has the thorax dark brown above, chestnut-brown on the pleuræ, and differs in this respect from Bellardi's description; the wings are uniformly brown (except the subhyaline spot within the cells) and do not have the hyaline margin between the alula and the tip of the sixth longitudinal vein, as indicated on the figure, but not mentioned in the description. This is an accidental discoloration of one of the wings of the typical specimen, as I ascertained in Turin. This species has only "two" submarginal cells, and not "three," like *P. piceus*.

N.B.—Schiner says (Verh. z.-b. Ges. Wien, 1866, p. 653) that *Pseudorus*, although figured with a closed marginal cell (he calls it subcostal cell), has in reality the marginal cell open, and therefore belongs to the "Dasypogonina" and not to the "Laphrina." He had two specimens showing this structure. This is singular, because Walker, Westwood, Bellardi, and myself have had specimens of *Pseudorus* with a closed marginal cell. I can only suppose that in Dr. Schiner's specimens the edge of the wing was somewhat folded, so as to conceal the narrow end of the marginal cell; in such a case the second vein may appear as ending in the margin.

ATOMOSIA.

Atomosia, Macquart, Dipt. Exot. i. 2, p. 73 (1838).

The descriptions of *Atomosiæ* when read mostly leave the impression that they represent one and the same species; nevertheless, as soon as we attempt to determine a specimen it often happens that hardly any of the descriptions will be found to fit it exactly. I have two species before me, neither of which I can recognize among some forty existing descriptions of North- and South-American *Atomosiæ*.

1. **Atomosia** — ?

Hab. COSTA RICA, Cache (*Rogers*).

This insect has the usual metallic greenish-black body; the latter densely punctate, the punctures being beset with minute golden hairs; the abdominal segments edged with white, less distinctly so on the basal segments. Legs black, beset with the usual hairs and bristles; the extreme base of the femora with a brownish-yellow ring, which is narrow on the four anterior legs, much broader on the posterior pair; knees and the base of the tibiæ also brownish-yellow; hind tibiæ, except the distal third, yellowish-brown. Wings greyish, their basal third more hyaline.

2. **Atomosia mucida**, sp. n., ♂ ♀.

The black ground-colour hidden, especially on the thorax, by a dense, appressed pale golden pubescence; præscutellar callosities reddish-yellow; legs pale yellowish, the fifth joint of the tarsi brown; wings hyaline. Length 8–9 millim.

Hab. MEXICO, Presidio (*Forrer*).

Head pale yellowish-white pollinose; mystax pale yellowish-white; beard purer white. Antennæ: first joint rather long, reddish, the third linear, about one and a quarter times the length of the first two together, brown, sometimes reddish at the base. Thorax: dorsum densely clothed with an appressed pale golden-yellowish pubescence, concealing the dark ground-colour; pleuræ grey-pollinose; præscutellar callosities reddish-yellow; the bristles pale; scutellar macrochætæ rather weak. Halteres yellow, the knob sometimes lemon-yellow, sometimes reddish. Abdomen of the usual shape and with the usual punctate sculpture, clothed with a dense pale golden-yellowish appressed pubescence, the pubescence not quite so dense as on the thorax; the silvery hind edges of the segments visible in a certain light only—those on segments 4 and 5 more distinct than the others. Legs yellow or reddish-yellow; last tarsal joint, except its base, brown or black; ungues black, red at the base. Wings subhyaline; costa, and the auxiliary and first veins, reddish-yellow, the other veins brown.—Five specimens.

N.B.—The structure of the antennæ agrees with the genus *Cerotainia*, but that of the first two posterior cells is not like that described by Schiner. Is *Cerotainia* a good genus? I have no specimen for comparison.

The following species from Mexico (there are none from other parts of Central America) described by earlier writers also belong to this genus:—

Atomosia beckeri, Jaennicke, Neue exot. Dipt. p. 51.

— (?) *bigoti*, Bellardi, Saggio &c. ii. p. 20.

— *macquarti*, Bellardi, l. c. p. 20.

— *sericans*, Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 282.

— *soror*, Bigot, Ann. Soc. Ent. Fr. 1878, p. 236.

Atomosia tibialis, Macq. Dipt. Ex. Suppl. i. p. 76.—Mexico, Yucatan.

— *xanthopus*, Wiedem. Aussereur. zweifl. Ins. i. p. 529 (from Brazil; is also recorded from Mexico by Van der Wulp, Tijdschr. voor Ent. xxv. p. 105).

Cormansis eupoda, Bigot, Ann. Soc. Ent. Fr. 1878, p. 234.

Cerotainia nigra, Bigot, l. c. p. 238.

— *dubia*, Bigot, l. c. p. 238.

Aphestia nigra, Bigot, l. c. p. 235.

LAPHRIA.

Laphria, Meigen, in Illiger's Magaz. ii. p. 270 (1803).

1. *Laphria numitor*, sp. n., ♀.

Thoracic dorsum black, with orichalceous-pollinose stripes; abdomen yellowish-red, with a black cross-band on each of the segments 1-6.

Length 21-22 millim.

Hab. NICARAGUA, Chontales (*Janson*).

Head, including the occiput, pale yellowish-pollinose; face beset with yellow hairs that reach up to the antennæ; facial prominence moderate; beard and mystax yellow; palpi brownish at the tip; two pairs of long, erect, black vertical bristles; ocellar bristles small or none (?). Antennæ yellowish-red; third joint slightly brownish, lanceolate, about one and a half times the length of the preceding two together. Thorax: dorsum black, moderately shining, a V-shaped figure on the anterior half, on each side, formed by orichalceous pollen (the lower branch starts at the root of the wings, and runs along the usual transverse suture, where it stops short, some distance before meeting the corresponding stripe on the other side; from this point the other branch starts, running towards the humeral callus, and expanding a little, as it comes in contact with it); humeral and post-alar callosities yellow, yellowish-pollinose, the latter connected by a yellow-pollinose border in front of the scutellar suture; scutellum yellowish-pollinose, its end black. Halteres reddish. Abdomen yellowish-red, with a black cross-band at the base of each of the segments 1-6, the cross-band not quite occupying half the segment and not reaching the lateral margins. Pleuræ and coxæ reddish-yellow, orichalceous-pollinose; legs yellowish-red, with yellow hairs and bristles. Wings with a brownish-yellow tinge; veins reddish-brown; first posterior cell broadly open.—A single female.

2. *Laphria ichneumon*, sp. n., ♀. (Tab. III. fig. 6, ♀.)

Slender, ichneumon-like, deep black, abdomen with a purplish reflection; antennæ and legs black; wings brown; the ordinary bristles on the head, thorax, and legs thin and soft, hardly differentiated from the longer hairs.

Length 18-20 millim.

Hab. GUATEMALA, Purula 4000 feet (*Champion*).

BIOL. CENTR.-AMER., Dipt., *March* 1887.

Face with a very slight brownish pollen, which is but little visible under the dense hair; facial protuberance prominent, rising abruptly, densely beset with long, comparatively slender, black hairs; on each side a small inconspicuous tuft of short yellowish-white hair (the only hairs on the whole body that are not black); antennæ black, the third joint elongate-linear, one and a half times the length of the preceding two joints together; proboscis straight, ending squarely, as in *Dasyllis*; hairs of the beard and upper portion of the occiput dense and soft and with no conspicuous macrochætæ among them; a pair of long, soft hairs on the ocellar tubercle. Thorax opaque-black; an inconspicuous brownish pollen on the pleuræ; the usual macrochætæ not much stronger than ordinary hairs; the edge of the scutellum beset with a dozen or more long, soft hairs. Halteres dark brown. Abdomen moderately shining; black, with a purplish reflection, the first segment with a bluish one; comparatively slender, narrowest at the base, gradually expanding, broadest on segments 4 and 5; its back convex, its profile a curve. Legs black, the hind pair metallic bluish or purplish; hind femora swollen on the distal half only, slender at the base; hind tibiæ nearly straight; all the hairs soft (no conspicuous stronger bristles); pulvilli brown. Wings brown, the middle of the cells being less saturate; alula remarkably small; first posterior cell a little coarctate towards the end.

N.B.—I place this species in the genus *Laphria* in the wider sense. Its slender, ichneumon-like shape and the absence of all macrochætæ (or rather their assimilation to ordinary hairs) are peculiar. But I prefer not to introduce new divisions so long as the existing ones are insufficiently defined.

The other *Laphriæ* from our region, described by earlier authors, are:—

Laphria fascipennis, Macq. Hist. nat. Ins. Dipt. i. p. 284.—Cayenne (*Macq.*);
Central America (*Loew*). Syn. *L. præpotens*, Macq. Dipt. Exot. Suppl.
i. p. 79.

— *componens*, Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 281.—Mexico.

— *triligata*, Walker, l. c. p. 281.—Mexico.

— *homopoda*, Bellardi, Saggio &c. App. p. 20, f. 16.—Mexico, Tuxpango.

— *olbus*, Walker, List &c. ii. p. 375; Macq. Dipt. Exot. Suppl. p. 53, t. 2. f. 3.

—Guatemala, Honduras. (N.B.—This species is not a *Lampria*.)

Pogonosoma arachnoides, Bigot, Ann. Soc. Ent. Fr. 1878, p. 227.—Mexico.

LAMPRIA.

Lampria, Macquart, Dipt. Exot. i. 2, p. 60 (1838).

1. *Lampria clavipes*.

Laphria clavipes (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 513¹.

Lampria clavipes, Macq. Dipt. Exot. i. 2, p. 61; Schiner, Reise d. Novara, Zool. ii. Abth. i. 1, p. 174².

Hab. PANAMA, Bugaba (*Champion*).—BRAZIL^{1 2}.

Schiner is the first who correctly described the female; that described by Macquart, Dipt. Exot. Suppl. iii. p. 22, belongs to some other species. The statement of Rondani, Esame &c. p. 31, that *L. melanoptera*, Wiedem., ♀, was taken, *in copulá*, with *L. clavipes*, ♂, either rests on some misunderstanding, or, if true, is no more than an isolated, aberrant fact. Finally, the *L. clavipes*, Bellardi, as I will presently show, is a distinct species. Hitherto *L. clavipes*, Wiedem., has been found in South-America only; four specimens (3 ♂, 1 ♀) from the Colombian State of Panama are, however, now before me.

2. *Lampria aurifex*, sp. n., ♂ ♀.

Lampria clavipes, Bellardi (nec Fabr., Wiedem., and Macq.), Saggio &c. ii. p. 13, t. 1. f. 15¹.

Male. Face clothed with golden hair; facial protuberance with long black bristles; underside of the head with pale yellowish hair; vertex and occiput with black bristles. Antennæ black. Thoracic disc and scutellum densely clothed with appressed reddish-golden hairs, the anterior and lateral margins (above the dorso-pleural suture) remaining black; pleuræ black, with greyish-silvery pollen. Abdomen comparatively narrow, slightly coarctate in the middle; the three basal segments with appressed golden hair above; the other segments black, opaque; the fourth segment with vestiges of golden hairs on the sides; genitals black, shining, sometimes with a bluish reflection; underside black. Legs black, bluish or greenish-metallic, especially the femora; front pair densely clothed with long, soft pale yellow hairs, the two hind pairs with similar, but less dense, hairs; hind femora with a single projecting point on the underside, near the base. Halteres pale-yellow. Wings tinged with brown; a portion of the anal angle and the alula subhyaline; venation like that of *L. clavipes*, Wiedem.

Length 15 millim. (Bellardi gives 20 millim.).

Hab. MEXICO, Orizaba (*Sallé*¹); COSTA RICA, Cache (*Rogers*).

Two male specimens in the British Museum (collected by Sallé near Orizaba) agree with the above description. Prof. Bellardi's collection contains a single male, which is a little larger than mine. Of the female I have three specimens, of which the largest is 14, the smallest about 10, millim. long; these have no projecting point on the underside of the femora; the legs less stout and less hairy; the wings lighter brown; and the golden pubescence on the first abdominal segments less conspicuous, often rubbed off.

Prof. Bellardi was well aware of the difference between this species and *L. clavipes*, Macq.; it was upon Bigot's advice, based on the comparison of typical specimens (?), that he admitted the identity (see Bell. Saggio l. c.).

L. aurifex differs from *L. dives*, Wiedem., in being larger, in having the apical half of the abdomen black, &c.

3. *Lampria spinipes*, ♀.

Dasygogon spinipes (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 525¹.

Hab. PANAMA, Bugaba (*Champion*).—BRAZIL¹.

I refer to this species a single female, 12 millim. long, from the Colombian State of Panama; it differs from all the South-American specimens of *L. spinipes* that I have seen in having the black with a very slight purplish (not metallic blue or green)

reflection. The Panama insect has "three" teeth on the hind femora, while in other specimens the number is more often "two" than three. I would not on such slight characters introduce a new species.

There are two other described species from our region, both from Mexico:—

Lampria circumdata, Bellardi, Saggio &c. ii. p. 15, t. 1. f. 17.

— *mexicana*, Macq. Dipt. Exot. Suppl. ii. p. 37; Bellardi, l. c. p. 13.—
Cordova. (I have seen the specimen of this in Prof. Bellardi's collection; it has no spines on the femora.)

ANDRENOSOMA.

Andrenosoma, Rondani, Dipt. Ital. Prodr. i. p. 160 (1856).

1. *Andrenosoma formidolosa*.

Laphria formidolosa, Walk. Trans. Ent. Soc. Lond. n. ser. v. p. 280¹; Bellardi, Saggio &c. ii. p. 17, t. 1. f. 18².

Hab. MEXICO¹ (*Sallé*²), Cordova (*de Saussure*², *Höge*); GUATEMALA, Paso Antonio 400 feet (*Champion*); NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Two males from Chontales have the underside of the abdomen red; I take them nevertheless to belong to this species.

2. *Andrenosoma cincta*.

Laphria cincta, Bellardi, Saggio &c. ii. p. 18, t. 1. f. 19¹.

Hab. MEXICO (*Sallé*¹); BRITISH HONDURAS, Belize (*Blancaneaux*).

I have seen the types in Turin. In *L. cincta* not only is the margin of the sixth segment red, but the whole of the seventh segment also; the male genitals black, sometimes reddish at the base; the three basal segments of the abdomen often chestnut-brown.

3. *Andrenosoma cinerea*.

Lampria cinerea, Bellardi, Saggio &c. ii. p. 16, t. 1. f. 16¹.

Hab. MEXICO¹ (*Sallé*); PANAMA, Bugaba (*Champion*).

I have a single male from Bugaba. Judging from the description of *A. pyrrhacra*, Wiedem., the red in that species begins with the margin of the fifth segment, while in *A. cinerea* the fifth segment and the extreme base of the sixth also are black. I have seen the type in Turin. Although the first posterior cell is open, I think this species better placed in *Andrenosoma* than in *Lampria*.

4. **Andrenosoma** — ?

Hab. GUATEMALA, El Reposo 800 feet (*Champion*).

Of the group with the abdomen black, reddish at the end, and with white marginal spots on both sides. The tibiæ are dark red, with black tips; the wings subhyaline, with a brownish cross-band across the central nervures, and another, ill-defined cross-band towards the tip. I cannot determine it, and do not think it advisable to describe from a single specimen.

Section III. **ASILINA.****MALLOPHORA.**

Mallophora, Macquart, Hist. nat. Ins. Dipt. i. p. 300 (1834).

Upwards of sixty American species of this genus have been described. They are often very much alike in the colour of their hairy covering, but at the same time that colour is not altogether constant in the same species and offers differences in the two sexes. Other characters have been very little used by describers. Doubts about the identity of species mentioned under the same name by different authors, or so determined in different collections, suggest themselves very often here, and thus it becomes an almost hopeless task to determine specimens. Though I have seen the collections in Berlin and Vienna, and the Mexican collection of Professor Bellardi, I have not been able to determine satisfactorily the few specimens before me. I describe one new species and give a short account of the remainder, with a justification of my doubts as to the specific value &c. of the latter.

1. **Mallophora infernalis.**

Mallophora infernalis, Bellardi, Saggio &c. ii. p. 21 (Wiedem.?)¹.

Hab. MEXICO¹; PANAMA, Bugaba (*Champion*).

I have a single female from Bugaba; it is black, with a bluish reflection on the abdomen, and entirely beset with black hairs, except the scutellum, which has yellow hairs; there are also small tufts of pale yellowish hairs on the cheeks, and a few such hairs on the vertex and on the upper portion of the facial protuberance. I have compared this specimen with Prof. Bellardi's types, two females; the latter agree with it, but have a few yellow hairs on the anterior edge of the thorax, and more on the mystax and cheeks. The *Asilus* (*M.*) *infernalis*, Wiedem. (Aussereur. zweifl. Ins. i. p. 475), quoted by Bellardi, has the anterior half of the abdomen beset with yellow hairs; Wiedemann, however, mentions a variety, the scutellum and abdomen of which have nothing but black hair; it still remains to be proved whether it is really the same species as Bellardi's. A second female specimen, from the Volcan de Chiriqui (*Champion*), is entirely black, except a tuft of yellow hairs on the cheeks and a few

hairs of the same colour on the vertex. This specimen would agree with Wiedemann's variety; but it would also agree with the short description of *M. freycineti*, ♀, Macq. Dipt. Exot. i. 2, p. 85 (Brazil), and indeed I have seen similar specimens thus named in Dr. Loew's collection (Berlin Museum) and also in the Vienna Museum. But whether the male described by Macquart (Suppl. i. p. 77) from Colombia really belongs to the female *M. freycineti* is again a question.

2. *Mallophora pluto*.

Asilus pluto, Wiedem. Aussereur. zweifl. Ins. i. p. 477¹.

Hab. GUATEMALA, El Tumbador 2500 feet (*Champion*).—BRAZIL¹.

A female from Guatemala seems to belong here, and agrees with a specimen thus named in the Berlin Museum. The expression that the hairs on the hind margin of the second abdominal segment are lemon-yellow does not apply to my specimen; the hairs are reddish-yellow, like those on the remainder of the abdomen. The hair on the ventral surface is not described by Wiedemann; in my specimen it is black; although I saw Wiedemann's type in Vienna I neglected to take note of this character.

In the Guatemalan insect the veins are rather stout; and there is a narrow streak of a grey shadow in the proximal half of the submarginal cell.

N.B.—Van der Wulp (Tijdschr. voor Ent. xxv. p. 106) is probably right in doubting his identification with this species of a specimen from the Argentine Republic having a closed first posterior cell; this cell is open in the specimens I have seen of *M. pluto*; however, this character is not always constant.

3. *Mallophora* — ?

Hab. GUATEMALA, San Gerónimo (*Champion*). One female.

Very like the specimens which I take for *M. pluto*, Wiedem., but certainly distinct. The veins on the wings are much more slender, though really visible without magnifying-power; the grey shadow in the submarginal cell is much larger, reaching beyond the middle of the cell; and there is a narrow vestige of a shadow in the marginal cell. The abdomen is of a purer shade of yellow, the reddish appearing in the middle of the back only; the yellow hairs on the dorsal side occupy the same segments as in *M. pluto*, that is, they begin on the hinder part of the second segment, but on the ventral side the hair on the whole distal half is yellow and not black. A large yellow tuft on the cheeks; mystax black, but mixed, its upper portion especially, with some yellow hairs; a few yellow hairs on the palpi, among the black ones, and some similar hairs on the vertex and occiput. The hair on the legs black. Length 18–19 millim.; wings 20 millim.

4. *Mallophora* — ?

Hab. GUATEMALA, San Gerónimo (*Champion*). A single male.

Very like Nos. 2 & 3, and perhaps the other sex of one of them, the more so as the locality for No. 3 is the same. It differs from both—(1) in the coloration of the hairs on the hind legs: the femora being beset with long soft, erect yellow hairs, and having some black hairs at the tip only; the tibiæ have on both sides a fringe of bright yellow, dense, erect hairs, the hairs at the tip, however, black; a similar yellow fringe reappearing on the upperside of the tarsi; and (2) in the coloration of the hairs on the venter, the hairs here being altogether bright yellow.

It differs from my No. 3 in having the veins of the wings stouter, as stout as in No. 2 (*M. pluto*). The grey shadow in the submarginal cell is very faint.

5. *Mallophora fautrix*, sp. n., ♂ ♀. (Tab. III. fig. 14, ♀.)

Facial tubercle and cheeks clothed with rather long and dense yellow hair; the vertex, occiput, and even the palpi, with similar hair; the upper part of the face alone showing the black, shining ground-colour; basal joints of the antennæ reddish, the third joint dark brown and with a brownish-yellow style of its own length. Thorax black, the ground-colour not being perceptibly modified by the hairs; some rare, short, yellow hairs form an inconspicuous fringe in front; some scattered hairs of the same colour on the anterior portion of the dorsum, visible under the lens only; the macrochætæ on the sides and in front of the scutellum black; scutellum densely beset with erect yellow hairs; a fringe of yellow hairs between the root of the wings and the hind coxæ; a few hairs of the same colour on the pleura, in front of the mesopleural suture. Abdomen, above and below, densely clothed with a fur of erect yellow hairs; on the sides of the venter, especially at the base, the black ground-colour more distinctly visible (when the abdomen is drawn out the ground-colour also becomes visible on the dorsal side, in the intervals of the basal segments). Legs more or less dark chestnut-brown, beset with black hair; a fringe of yellow hairs on the front coxæ, and tufts of similar hairs on the other coxæ. Halteres brown. Wings tinged with yellowish-brown, not dark; a grey shadow in the proximal half of the submarginal cell; a linear shadow within the marginal cell.

Male. Forceps small, black; some yellow hairs (which I do not perceive in the female) on the underside of the hind tibiæ and at the tip of the hind tarsi.

Length ♂ ♀ 15–18 millim.

Hab. MEXICO, Presidio (*Forrer*).

Two males, three females.

N.B.—In size and general colouring this species bears some resemblance to *M. orcina*, but the yellow hairs of the body are of a duller yellow than in the latter species. Moreover, in *M. orcina* the venter and the tip of the abdomen are beset with black hairs, which is not the case in *M. fautrix*; the brown of the wings in the latter is lighter in tint, &c.

The following other species of this genus have been described from Mexico and Central America:—

Mallophora craverii, Bellardi, Saggio &c. ii. p. 22.—Mexico, Oaxaca.

— *robusta*, Macq. Dipt. Exot. Suppl. i. p. 78.

— *fulviventris*, Macq. l. c. iv. p. 77 (the specimen described by Macq. is a “male,” and not a “female” as stated in consequence of a misprint).

— *fulvi-analis*, Macq. l. c. iv. p. 78 (“perhaps the female of the preceding,” Macq.).

— *pica*, Macq. l. c. iv. p. 78.

PROMACHUS.

Promachus, Loew, Linn. Entom. iii. p. 390 (1848).

Except *P. albifacies*, Willist., of which we have a considerable number of specimens, the other species of this genus are but poorly represented in the collections before me; there are at most two specimens, in many cases only one, of each, and these are often but indifferently preserved. Our species may be grouped as follows:—

- A. The red or yellow tibiae forming a marked contrast with the black femora.
 Lateral and hind margins of the abdominal segments 2–5 greyish pollinose, the black on these segments forming a broad subquadrate patch; the grey shadow in the submarginal cell long; beard yellow . . . 1. *cinctus*, Bell.
 Lateral and hind margins of the abdominal segments 2–5 yellowish-grey pollinose, the black patch on these segments having oblique sides, and being semicircular, rather than subquadrate; the grey shadow in the submarginal cell rather short; beard greyish 2. sp.?
 Lateral (not hind) margins of the abdominal segments greyish pollinose 3. *forfex*, sp. n.
- AA. The colour of the tibiae not forming a marked contrast with that of the femora.
 Legs black; first submarginal cell without grey shadow in the middle.
 The first two abdominal segments beset with soft white hair . . . 4. *anceps*, sp. n.
 The first two abdominal segments beset with soft yellow hair . . . 5. sp.?
 Legs not black; first submarginal cell with a grey shadow in the middle.
 The grey shadow very narrow; the hairs on the cheeks and front coxæ snow-white 6. *albifacies*, Will.
 The grey shadow broad; the hairs on the cheeks and front coxæ yellow 7. *nobilis*, sp. n.

The known species of *Promachus* from America north of Panama (those not found in our region are bracketed) may be grouped as follows:—

- A. Male forceps with a tuft of silvery pile.
 [*fitchii*, O. S.], [*princeps*, Willist.], *albifacies*, Willist., [*bastardi*, Macq.], *truquii*, Bell.
- AA. Male forceps without tuft of silvery pile.
 [*vertebratus*, Say], [*rufipes*, Wiedem.], [*fuscipennis*, Macq.], *cinctus*, Bell., *quadratus*, Bell. (? = *forfex*, O. S.), *pulchellus*, Bell., *trapezoidalis*, Bell., *nobilis*, O. S., and sp. No. 5 of the present work.

Of the following species the female alone has been described:—*magnus*, Bell., *anceps*, O. S. (? = *fuscipennis*, Bell.), *quadratus*, Wiedem., and No. 2 of the present work.

The description of *P. quadratus* in Wiedemann reads very much like that of *P. bastardi*, Macq., ♀; nevertheless, Williston is right when he says that Schiner was acquainted with the type of *P. quadratus*, and would hardly have redescribed it under the name of

P. philadelphicus (syn. *P. bastardi*, Macq.). Wiedemann's *P. quadratus*, ♀, must be a large species; the size given is 14 lines, while the same author's measurement of *P. vertebratus*, Say, ♀, is only 12 lines. Schiner (Verh. z.-b. Ges. Wien, 1866, p. 688), in speaking of Wiedemann's type of *P. quadratus*, says: "a magnificent species" (eine prachtvolle Art). These remarks are not applicable to *P. bastardi*, ♀; it is neither "magnificent," nor 14 Rhenish lines (about 31 millim.) long.

1. *Promachus cinctus*.

Promachus cinctus, Bellardi, Saggio &c. ii. p. 25, t. 2. f. 2¹.

Hab. MEXICO (*Sallé*¹); GUATEMALA (*Champion*); NICARAGUA, Chontales (*Janson*).

Bellardi describes both sexes. I have two females which I have compared with Bellardi's types and take to be the same species, although I perceive some differences, principally in the colour of the hairs, which seems to be variable. On the facial prominence there are several strong fulvous bristles; on the oral margin on each side a few black bristles, and on the upper part of the front a sparse tuft of weak black hairs (in Bellardi's specimen they are strongly mixed with yellow). The first abdominal segment and the base of the second segment are beset, in one of my specimens, with soft, erect fulvous hairs; in the other, and in Bellardi's examples also, these hairs are whiter; there are besides, on each side of the first segment, some black macrochætæ. Halteres brownish-red. The wings have a distinct brownish tinge; the shadow in the first submarginal cell large.

2. *Promachus* — ?

Female. Bristles on the facial prominence black, mixed with yellowish-white ones, the latter prevailing on the lower half; cheeks with dense whitish hair. Thoracic dorsum blackish-grey, with the usual grey design; the median line between the two dorso-central stripes nearly obsolete; scutellum with yellowish hairs and black bristles. Abdominal segments 2-5 with yellowish-grey pollinose rectangular triangles on the sides (the inner acute angle of the triangle meeting the corresponding angle on the opposite side, the hypotenuse distinctly concave and leaving a semicircular black space in the middle of each segment); the venter also yellowish-grey; the same segments clothed with sparse, erect, yellowish hairs on the back, and with denser hairs of the same colour on the venter; the 6th and the following segments black, narrow, compressed. Femora black, with black spines and woolly yellowish-white hairs; tibiæ reddish-yellow, with black tips; tarsi black. Halteres pale reddish-yellow. Wings with a slight greyish tinge; more hyaline along the proximal two thirds of the costa; the shadow in the first submarginal cell comparatively short, narrow, club-shaped.

Length to the end of the fifth abdominal segment, 16 millim.; to the end of the ovipositor, about 22 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). Two females.

The Mexican *P. trapezoidalis*, Bellardi (Saggio &c. ii. p. 28, t. 2. f. 4) is not unlike this species; but it is impossible to identify it from the description.

BIOL. CENTR.-AMER., Dipt., *March* 1887.

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3. *Promachus forfex*, sp. n.

Male. Face with a yellowish-grey pollen; facial tubercle with black, rather scarce bristles, which latter, near the oral margin, become pale whitish; tufts on the cheeks white, not very dense. Antennæ and palpi black. Thoracic dorsum yellowish-grey; dorso-central stripes dull brownish-black, the dividing line between them distinct. Scutellum with yellowish-white hairs and black bristles. Halteres brownish-red. Abdomen deep black above; along each side a broad stripe of yellowish-grey pollen, beginning at the end of the second, and ending at the end of the sixth segment; clothed up to the fifth segment with scattered yellowish-white semi-recumbent hair (which interferes very little with the deep black ground-colour, except on the hind margins of the segments, where it is more apparent, and that in a certain light only); the hairs on the sides and on the venter sparse, erect, whitish-yellow; venter brownish-black. Forceps black, moderately shining; the lateral valves broader at the tip than at the base, truncate; the black central piece with a tuft of pale hair at the tip. Front coxæ with a dense erect fringe of long, white hair. Femora black, sparsely beset with short yellowish hairs on the proximal half; tibiæ reddish-yellow, the extreme base and about one fifth or one sixth of the length at the tip black, beset with short yellow pile and black bristles; tarsi black. Wings with a slight brownish-yellow tinge, more hyaline towards the anal angle; the grey shadow in the first submarginal cell large, occupying the whole disc of the cell; a distinct brown shadow at the end of the costal, marginal, and first submarginal cells.

Length 21–23 millim.

Hab. COSTA RICA, Irazu 6000 to 7000 feet (*Rogers*). Two specimens.

This species very much resembles the Mexican *P. quadratus*, Bellardi (*Saggio &c.* ii. p. 27, t. 2. f. 3), especially in the structure of the forceps. I have compared my specimen with the type in Turin, and find that in the latter the surface of the abdomen is much more densely clothed with greyish pile (and therefore does not appear nearly so black), and that the facial tubercle bears a tuft of yellow hairs, among which there are only a few black ones, &c. As the name *quadratus* must be changed, it being preoccupied in the genus, I do not hesitate to describe our species under a new name, leaving the question of the identity in abeyance.

4. *Promachus anceps*, sp. n., ♀.

(?) *Promachus fuscipennis*, Bellardi (nec Macq.), *Saggio &c.* ii. p. 24, t. 2. f. 1¹ (♀; the ♂ belongs to a different species).

Female. Face greyish pollinose; facial tubercle beset with black bristles; some white bristles near the oral margin; cheeks with tufts of white hair, a row of which, mixed with some black bristles, beset the front coxæ. Thoracic dorsum black; its sides and the transverse suture greyish pollinose; the line dividing the dorso-central stripes almost obsolete. Abdomen deep black; lateral and posterior margins of segments 2–4 margined with grey, the broadest part of these margins being in the posterior corners; on segment 5 the grey margin is not visible; the following segments are shining bluish-black, narrow, and form the ovipositor-like prolongation; venter greyish; segments 1 and 2 and the venter beset with soft, white hairs. Legs black, sometimes with a slight bluish reflection on the femora; the bristles black, but some sparse, soft, whitish hairs among them, especially on the femora. Wings with a distinct brownish tinge, more saturate along the veins; the latter rather stout; no grey shadow in the submarginal cell.

Length to the end of the fifth segment, 21–22 millim.; with the ovipositor, 26–29 millim.

Hab. ? MEXICO (*Sallé*¹); PANAMA, Bugaba 800 to 1500 feet (*Champion*).

I have three females from the above locality, which agree quite well with the

description of *P. fuscipennis*, Bellardi, ♀. The type of the male, which I have seen in Turin, is a different species (hairs on face differently coloured, shadow in submarginal cell present, &c.). The type of the female I have not seen, as it is not in Turin, but in the collection of Bigot, to whom Prof. Bellardi communicated the male for the sake of its comparison with the type of *P. fuscipennis*, Macq. (Dipt. Exot. Suppl. i. p. 81). Bigot concluded that both sexes belonged to *P. fuscipennis*, Macq.: an error must have occurred here; it is evident from Prof. Bellardi's description that the male and female of his *P. fuscipennis* belonged to different species, and it results from a comparison of Macquart's description of the male with Bellardi's that they also refer to two different species (as Bellardi himself correctly suspected). Besides the differences noted by Bellardi (colour of palpi, &c.), Macquart mentions merely "white hairs on the posterior margins of the segments," and not the greyish pollinose cross-bands that exist in Bellardi's type.

The male specimens from South America, which Schiner (Reise d. Novara, Zool. ii. Abth. 1, p. 177) refers to *P. fuscipennis*, Macq., seem again to belong to a different species.

5. *Promachus* — ?

Male. Legs black, beset with yellowish hairs. Wings with a moderate brownish tinge, more saturate at the apex; veins more slender than in *P. anceps*, not clouded with brown; no grey shadow in the submarginal cell. Scutellum and basal segments of the abdomen beset with golden-yellow, soft, erect hair. Male forceps small; valves slender; black.

Hab. BRITISH HONDURAS, R. Sarstoon (*Blancaneaux*).

A single specimen, on both wings of which there are two cross-veins between the third vein and the fork of the second; this may be merely adventitious.

6. *Promachus albifacies*.

Promachus albifacies, Williston, Trans. Am. Ent. Soc. xii. p. 63 (♂ ♀)¹.

Face clothed with thick, whitish (slightly yellowish) hair; some black bristles along the oral margin; the hair on the cheeks and front coxæ thick and snow-white; black bristles on the upper part of the occiput and on the palpi; antennæ black, the third joint rather alternate before the bristle. Thorax: general colour of the dorsum brownish-grey; the dorso-central region occupied by alternate grey, brownish-yellow, and darker brown stripes, and bounded on each side by a line which, where it crosses the suture, has a distinct whitish reflection; the lateral regions of the dorsum occupied by an oval, faintly shining, greyish spot, bisected by the suture; pleuræ brownish; the front, the pleuræ, and the scutellum beset with scattered white hairs, in addition to the usual short black bristles and macrochætæ; a characteristic tuft of white hairs in front of the scutellum, among the black præscutellar macrochætæ. Abdomen black, moderately shining above; the sides, as well as the venter, brownish pollinose; a tuft of white hair on the sides of the first segment; triangles of white pile in the posterior angles of segments 2-5. Male forceps hidden under a dense covering of silvery hair. The segments forming the ovipositor black, moderately shining. Legs blackish, densely clothed with appressed white pile; portions of the femora and tibiæ reddish (variable in different specimens); bristles black; in the male, the front tarsi have, among the black bristles, a covering of short white hairs, which is not so distinct in the female. Wings with a slight yellowish

tinge; hyaline on the antero-proximal half only; the grey shadow in the first submarginal cell rather narrow.

Length, ♂, 22–26 millim.; ♀, with the ovipositor, 23–30 millim.

Hab. UNITED STATES, Arizona (*Comstock*¹).—MEXICO, Northern Sonora (*Morrison*).

Seventeen males, and as many females, from Northern Sonora.

I have seen Dr. Williston's types.

The colouring of the thoracic dorsum is variable, the grey prevailing over the brown, or *vice versâ*; the legs in some specimens are more suffused with red than in others. I have thought it useful to give a fresh description of the species.

7. *Promachus nobilis*, sp. n., ♂ ♀.

Face yellow pollinose, with a rather dense, yellowish, shining tuft of hair on the facial tubercle (less dense and more bristly in the female; in one of the female specimens some of the bristles are black); similar tufts of hair on the cheeks; palpi beset with black bristles; occiput brownish-yellow pollinose, with yellowish and brownish hairs and bristles; antennæ black. Thorax: dorsum dark brownish-black, opaque; dorso-central stripes brownish pollinose in an oblique light, the middle line nearly obsolete; the sides of the dorsum, humeri, and pleuræ yellowish-brown pollinose; macrochætæ black; brownish-yellow, long, soft hairs on the pleuræ and on the scutellum. Abdomen black, opaque above; lateral and posterior margins of segments 2–7 (2–5 in the female) brownish-yellow pollinose (the posterior margins occupy about one-quarter of the breadth of the segments in the male, and still less in the female, the lateral margins are broader); the three basal segments clothed with fulvous hair (the yellowish hairs on the paler portions of the other segments can be discerned under the magnifying-glass only); venter brownish-yellow pollinose. Male forceps comparatively small, elongate, with sparse, black hair. Legs dark rufous, blackish about the knees, beset with pale yellowish, inconspicuous hairs, the bristles black; tarsi black; pulvilli brownish (and not yellowish-rufous as usual); front coxæ beset with whitish hair. Wings with a pronounced brownish-yellow tinge; the grey shadow in the first submarginal cell large, occupying the whole disc of the cell; a vestige of a shadow in the marginal cell.

Length, ♂, 26 millim.; ♀, 30–32 millim.

Hab. COSTA RICA, Cache (*Rogers*).

One male and two females.

An undescribed species from Texas, of which I have several male and female specimens, in its colouring very much resembles *P. nobilis*; the principal differences are that the grey cross-bands on the hind margins of the abdominal segments occupy nearly one half the breadth of the segment; that the grey shadow in the first submarginal cell is much smaller and narrower (it occupies about one third of the breadth of the cell); and that the pulvilli are yellowish-red and not brown.

The other species of *Promachus* from our region (mentioned in the table, *ante*, p. 192), all of which are from Mexico, described by previous writers, are as follows:—

Promachus magnus, Bellardi, Saggio &c. ii. p. 26.

- Promachus quadratus*, Bellardi, loc. cit. p. 27, t. 2. f. 3.
 — *trapezoidalis*, Bellardi, loc. cit. p. 28, t. 2. f. 4.
 — *pulchellus*, Bellardi, loc. cit. p. 29, t. 2. f. 5.
 — *truquii*, Bellardi, loc. cit. p. 30, t. 2. f. 6.

ERAX.

Erax, Macquart, Dipt. Exot. i. 2, p. 107 (1838).

This genus is numerously represented in North and South America. Owing to the difficulty of drawing good descriptions it is almost hopeless to identify specimens from the existing ones. What is needed are comparative descriptions of the species of a given fauna; it will be possible on that basis to determine specimens of that same fauna; but it will be impossible from those descriptions, and without comparing types, to establish the specific identity of specimens from a more distant region. The general colouring is not only difficult to describe, but variable; the yellowish greys, greyish yellows, brownish greys, and greyish browns pass into each other in the same species. The colour of the bristles on all the parts of the body is also variable.

In *E. prolificus*, sp. n., which I have attempted to describe from a large number of specimens, the stiff bristles on the upper part of the occipital orbit are either all black, pale whitish, or of both colours mixed. The same is the case with the macrochætæ on the thorax or on the legs of this and many other species. The sexes of *Erax* are so different in appearance, and the females of different species often look so much alike, that mistakes may easily occur in bringing together the sexes of the same species. I strongly suspect, for instance, after having seen the types, that *E. quadrimaculatus*, Bell., ♂, and *E. bimaculatus*, Bell., ♀, belong to the same species. A thorough study, which this genus has not yet received, may disclose some new characters available for the definition of species. As a slight contribution to that future study, I will advert to two secondary sexual characters existing in this genus:—1, on the hind side of the front tibiæ there are some long bristles, usually “four” in number in the female and only “two” in the male; in the latter bristles are inserted on the distal third of the tibia: 2, in many species, and principally in the group with a crest of hairs on the thorax, the stump of a vein on the anterior branch of the third vein exists in the female only; in the male it is either absent or rudimentary.

It may not be amiss to notice here that the terms “upper and lower,” “front and hind side,” are applicable to the legs of Diptera in an imaginary position:—*e. g.* as if the legs were stretched out perpendicularly to the longitudinal axis of the body (compare Mik, Dipterologische Untersuchungen, p. 3).

Analytical Table of the Species described or noticed below.

Second submarginal cell long (that is, its proximal end distinctly "anterior" to the proximal end of the second posterior cell).—None of these species have a thoracic crest, nor an expansion of the costa.

Femora dark reddish, with more or less black on the under and front side.

Venation abnormal; the usual stump on the anterior branch of the third vein prolonged so as to reach the second vein.

Palpi with yellow hair; a few black bristles at the tips 1. *anomalus*, Bell.

Palpi with black hair 2. sp.?

Venation normal; the usual stump on the anterior branch of the third vein not prolonged so as to reach the second vein.

Abdominal segments 4 and 5 black, with only narrow whitish margins.

Male: forceps small for an *Erax*.

Female: segments 6 and 7 white, with a black triangle in the middle } 3. *maculatus*, Macq.

Abdominal segments 4 and 5 white, with a black triangle in the middle.

Male: forceps large

Female: prevailing colour of segments 6 and 7 black, with white margins } 4. *triton*, sp. n.

Femora black; palpi with yellow hair 5. *rapax*, sp. n.

Second submarginal cell short (that is, its proximal end is "not" anterior to the proximal end of the second posterior cell).

No thoracic crest.

Palpi with white hair; costa in the male not thickened 6. *cinerascens*, Bell.

Palpi with black hair; costa in the male thickened and expanded 7. sp.?

A distinct crest of erect hairs in the middle of the thorax, ending in a more or less distinct tuft of white (sometimes yellowish) hairs in front of and on the scutellum; costa in the male more or less thickened and expanded; the usual stump on the third vein rudimentary in the male, distinctly developed in the female.

Femora altogether metallic blackish-green.

Male: Abdominal segments 5–7 silvery; no silvery hair, parted in the middle, on the segments

Female: ovipositor equal to about three of the preceding segments } 8. *prolificus*, sp. n.

Male: Nearly the whole abdomen silvery, with silvery hair parted in the middle and combed outwards

(?) *Female*: ovipositor equal to about five of the preceding segments } 9. sp.?

Femora reddish, blackish-green on the under and posterior side only.

<i>Male</i> : nearly the whole abdomen silvery, with silvery hair parted in the middle	} 10. sp.?
<i>Female</i> : abdomen uniformly grey	
<i>Male</i> : (?)	} 11. sp.?
<i>Female</i> : abdominal segments much darker in the middle than on the sides	

1. *Erax anomalus*.

Erax anomalus, Bellardi, Saggio &c. ii. p. 32, t. 2. f. 7 (♂ ♀)¹; Williston, Trans. Am. Ent. Soc. xii. p. 69 (1885)².

Hab. UNITED STATES, Arizona².—MEXICO, Northern Sonora (*Morrison*), Cuantla (*de Saussure*¹).

This species is easily distinguished by the anomalous formation of the submarginal cell (see the figure in Bellardi, *l. c.*). The palpi are beset with yellowish hair and a few black (rarely yellow) bristles at the tip. Second abdominal segment of the male blackish anteriorly, its sides and a broad interrupted cross-band on the posterior margin greyish-silvery; third segment blackish at the base, the rest silvery; segments 4–7 silvery; the long silky-white hair, parted in the middle and combed outwards, begins on the posterior half of the second segment and reaches the seventh. Hypopygium dark reddish-brown, hairy. I have seen Dr. Williston's type; Prof. Bellardi's specimens are not in very good condition, and for this reason I am not certain of the specific identity, which, nevertheless, is exceedingly probable.

This must be a very common species. I have nearly a hundred specimens before me, both sexes being represented in nearly equal numbers; all collected in Northern Sonora by the late Mr. Morrison.

2. *Erax* — ?

Hab. MEXICO, Northern Sonora (*Morrison*).

I have a single female from the above locality, with the same anomalous venation as *E. anomalus*, but certainly a distinct species. The palpi have black hairs and bristles; the grey portions of the abdomen are of a purer whitish-grey; the black on each segment is more intense, and the spots different in shape—less transverse, more like inverted triangles with a rounded apex; segment 6 is black, with narrow grey margins; the ovipositor is longer, equal to about four of the preceding segments; the thoracic stripes and other spots of a darker, purer brown.

Erax completus, Macq., Dipt. Exot. i. 2, p. 117, t. 9. f. 9 (North America), has the same venation as *E. anomalus*; the male only is described, but it is not at all likely that it belongs to the above-mentioned female.

3. *Erax maculatus*.

Erax maculatus, Macq. Dipt. Exot. i. 2, p. 111, t. 9. f. 6; Schin. Verh. z.-b. Ges. Wien, 1867, p. 392¹.

Erax lateralis, Macq. l. c. p. 116; Williston, Trans. Am. Ent. Soc. xii. p. 70 (1885)².

Erax ambiguus, Macq. l. c. Suppl. i. p. 84; O. Sacken, Catal. &c. 1878, p. 79.

Asilus interruptus, Macq. Hist. Nat. Ins., Dipt. i. p. 310.

Erax (Eristicus) villosus, Bellardi, Saggio &c. ii. p. 49³.

Hab. SOUTHERN UNITED STATES, Texas (*Boll*), Georgia and Florida².—MEXICO (*Sallé*³), Northern Sonora (*Morrison*), Presidio (*Forrer*), Yucatan; GUATEMALA, San Gerónimo (*Champion*).—COLOMBIA; GUIANA; BRAZIL¹; ANTILLES, Guadeloupe.

The figure of the female given by Macquart, and the explanations of Schiner, render the above synonymy very probable, Macquart's loose description and misleading outline of the forceps of the male notwithstanding. Williston recognizes the same species in *E. lateralis*, Macq., and there is nothing to object to in such an identification, although it would seem strange that Macquart should have described the same species twice within a few pages. There is little doubt, I think, that *E. ambiguus*, Macq., and *E. interruptus*, Macq., are the same species; the latter name in such a case would be the earliest. I prefer to adopt the name which is justified by a distinct figure. I have seen Prof. Bellardi's *E. villosus* and find in my notes that it is the same as *E. maculatus*, although the description alone would leave me doubtful.

Dr. Schiner has pointed out (*l. c.*) the differences between this species and *E. striola*, Wiedem. As Wiedemann's original type is in Vienna, his opinion has great weight. But that Wiedemann himself did not always distinguish both species is proved by a specimen in the Berlin Museum labelled as Wiedemann's type of *E. striola*, and which nevertheless is *E. maculatus*. *E. maculatus* seems to have an extensive area of distribution, while *E. striola*, so far as known, occurs in South America only.

Erax maculatus and *E. striola* form, within the genus, a natural group, distinguished by the smallness of the male forceps and the structure of the ovipositor, which latter is subcylindrical and flattened on the sides at the extreme tip only.

4. *Erax triton*, sp. n., ♂ ♀.

Face yellowish-pollinose; facial tubercle prominent, with a tuft of pale yellowish hairs and bristles; palpi beset with black bristles, mixed with yellow ones; cheeks with soft, whitish hair; upper occipital orbit with a row of stiff black bristles; basal joints of the antennæ reddish, the third joint darker; arista much longer than the third joint. Thorax with a well-marked, broad, dark brown dorso-central stripe, its median line feebly marked, reddish; sides of the dorsum yellowish, with slight brassy reflections; pleuræ brownish-yellow, with soft pale hairs; scutellum yellowish-grey pollinose, with black macrochætæ. Halteres reddish-yellow. Abdomen, male: its prevailing colour an impure, somewhat silvery, white, with a row of black triangles, the triangles gradually diminishing in size from segment 2 to segment 5, segment 6 with only a brownish line in the middle; segment 1 blackish, with some greyish pollen on the sides; forceps rather large, elongate, reddish-brown, beset with paler hairs and with a brush of hairs on the underside, in shape like those of *E. anomalus* (*cf.* Bellardi's t. 2. f. 7); female: the black triangles of nearly equal size on segments 2-4, occupying the whole middle of the segment and

touching the hind margin with the apex; the sides of the segments filled by triangles of an impure, silvery-white; on segments 6 and 7 the lateral margins only whitish, the middle occupied by an opaque square of brownish-black; segment 5 forms the transition in both sexes, but principally in the male; the silvery parts of segments 2-4 beset with sparse white hairs, combed outwards; ovipositor comparatively short, equal to about two or two and a half of the preceding segments. Legs deep reddish, with the usual appressed pubescence of whitish hairs, and long, soft, whitish or yellowish hairs (especially in the male) and black bristles; femora black on the underside. Wings with a slight yellowish-brown tinge; second submarginal cell distinctly appendiculate, rather long, its proximal end reaching considerably beyond the proximal end of the second posterior cell; no incrassation of the costa in the male.

Length, ♂, 23-25 millim.; ♀, without ovipositor 22-23 millim., with it about 26 millim.

Hab. MEXICO, Presidio (*Forrer*).

The rather unmeaning description of *E. argyrogastrer*, Macq. (Dipt. Exot. Suppl. i. p. 84, Yucatan), has something in common with the present species, especially as regards the abdomen; but the "tarière longue" does not agree at all. In my 'Catalogue,' 1878, p. 234, note 126, I have mentioned that *E. argyrogastrer*, the type of which I had a glimpse some years ago, has a superficial resemblance to *E. maculatus*, *E. ambiguus*, &c. This is also the case with *E. triton*.

5. *Erax rapax*, sp. n., ♂ ♀.

Face and front saturate yellow-pollinose; facial tubercle prominent, with dull yellow hairs and bristles; palpi black, with dull yellow hairs; antennæ black, the basal joints beset with short yellowish hairs; beard pale yellow, as are the other occipital hairs, except the black stiff bristles of the upper orbit; ocellar tubercle with black bristles. Thorax brownish-yellow; dorso-central stripe dark brown, well-marked; its median line subobsolete, merely marked by a light brownish pollen; the lateral stripes or spots ill-defined, shifting according to the incidence of the light; thoracic and scutellar macrochætæ usually black, but often, especially in the female, some of the macrochætæ are pale. Abdomen, male: black at the base, the sides with a yellowish-grey pollen and yellowish hairs; the distal half of the third segment, as well as segments 4, 5, 6, silvery, with silvery hairs, parted in the middle and combed outwards; segment 7 blackish, with white stripes at the sides and in the middle (in one of the specimens a white pollen covers nearly the whole surface, very little black remaining visible); forceps large, black, beset with yellowish and black hairs, without brush of hairs on the underside (like that of *E. anomalus*, *E. jubatus*, &c.); female: of a uniform golden yellowish-brown, with shifting darker shadows on the sides—the shadows produced by the dark brown ground-colour being modified by a short, recumbent, not very dense, golden-yellowish pubescence evenly spread over the whole surface, and by a thin yellowish-grey pollen irregularly spread over the central line of the back (more distinctly visible when the head of the insect is away from the light than in the opposite direction); on each side a distinct, rather broad, dull grey stripe reaching from the first to the seventh segment; the hind margins of the same segments having a yellowish-grey border, visible in a certain light only. Venter grey. Ovipositor equal in length to about three of the preceding segments. Legs black; besides the usual bristles, beset, especially on the tibiæ, with soft yellow hairs, which are short and more or less recumbent on the upperside and longer and erect on the underside; the long bristles on the hinder side of the tibiæ of the female yellow; the usual reddish down covering the hinder side of the hind tibiæ and of the corresponding metatarsus rather conspicuous. Wings with a very slight yellowish-brown tinge, especially on the distal half; second submarginal cell long, its proximal end being a little nearer to the anterior cross-vein than to the proximal end of the second posterior cell; the stump comparatively long; costal margin not expanded.

Length of the male, without the forceps, 19-21 millim.; of the female, without the ovipositor, about 21 millim.

Hab. MEXICO, Northern Sonora (*Morrison*). Three males and two females.

E. stamineus, Willist. (Montana), must be allied to this species; but it is much

smaller, the pollen on the face is yellowish-white, and not yellow; the whole third abdominal segment of the male is silvery (if I understand the description), and not its posterior half only, &c.

I have a species from Texas not unlike *E. rapax*, and with yellow hair on the palpi; but it is larger, the wings comparatively shorter, the tibiæ reddish on the upperside of the base, &c.

6. *Erax cinerascens*.

Erax cinerascens, Bellardi, Saggio &c. ii. p. 39, t. 2. f. 10¹; Schiner, Verh. z.-b. Ges. Wien, 1867, p. 394.

Erax furax, Willist. Trans. Am. Ent. Soc. xii. p. 67² (synonymy apud Williston, in litt.).

Erax albibarbis, Macq. Dipt. Exot. i. 2, p. 118³.

Hab. UNITED STATES² ³.—MEXICO (*Sallé*¹), Northern Sonora (*Morrison*), Presidio (*Forrer*), Tuxpango near Orizaba (*Sumichrast*¹).

This insect will be easily recognizable from Prof. Bellardi's figure; some clerical error renders this author's description of the abdomen obscure, and that of Williston will have to be relied upon. Schiner's description, although detailed, was drawn from a single specimen. The abdominal black spots are variable in size and outline. The white hairs on the palpi are characteristic.

E. cinerascens must not be confounded with the Mexican *E. tricolor*, Bellardi (*l. c.* p. 40, t. 2. f. 12), which is very like it in general appearance, but has black hairs in its mystax.

Macquart's description of *E. albibarbis* (*l. c.*) reads very much like that of *E. cinerascens*, the white hairs on the palpi being especially convincing; this author describes the male. I do not think that Schiner (*l. c.* p. 395) was right in identifying the female specimen he had with Macquart's description. At any rate Bellardi's specific name, justified as it is by a figure, should be retained.

7. *Erax* — ? , ♂ ♀ .

Hab. COSTA RICA, Cache (*Rogers*).

I have four males and one female of this rather ordinary-looking species. It seems to be related to *E. affinis*, Bellardi, but the femora of the latter have some red at the sides and at the tip, which is altogether wanting in these Costa Rican specimens; the description of the abdomen also does not agree.

8. *Erax prolificus*, sp. n., ♂ ♀ .

Male. Facial tubercle prominent, the hairs upon it white, mixed with some black, and sometimes with some yellowish, bristles; palpi and the hairs upon them black; tuft on the cheeks white; antennæ black, the arista longer than the third joint; the strong bristles on the upper occiput yellow, or reddish-yellow, sometimes mixed with black, or altogether black. Thorax: dorsum more or less yellowish-grey or brownish-grey; dorso-central stripe brown, comparatively narrow, distinctly marked; its median line bearing a crest of short

black bristles with longer bristles between them, this crest scattering posteriorly behind the suture into a cluster of sparse black bristles, between which, in front of the scutellum, a more or less distinct tuft of short, white hairs is visible; scutellum with short white hairs in the middle, and a row of long black bristles along the edge. Abdomen: segments 2-4 black in the middle, their lateral and posterior margins broadly grey; segment 5 silvery, with a black spot in the middle, seldom wanting; segments 6 and 7 silvery; forceps rather large, black, the lower half nearly as stout as the upper half (like t. 2. f. 8 in Bellardi), and with a brush of black hairs, more or less mixed with paler ones, on the underside. Legs beset with whitish hair and the usual black and pale bristles; front coxæ with a fringe of white hair; femora black, with a greenish metallic lustre; tibiæ red, darker at the tip; tarsi red. Halteres yellowish, with a brown knob. Wings with an almost imperceptible brownish tinge; costa slightly, but distinctly, expanded and thickened beyond the end of the auxiliary vein, the corresponding part of the costal cell infuscated; second submarginal cell rather short, its proximal end not quite reaching the proximal end of the second posterior cell; the usual stump of a vein rudimentary or wanting.

Length, including the forceps, 15-19 millim.

Female. Like the male, except the abdomen: segments 2-6 dull grey above and below, with dull black dorsal spots, leaving a broad, ill-defined grey margin posteriorly and on the sides (the posterior margin occupies somewhat less than one half of the segment). Ovipositor comparatively short, equal in length to about three of the preceding segments united. The wings without costal expansion; stump distinct.

Length, without ovipositor, 13-17 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

I have about forty males and thirty females, collected by the late Mr. Morrison.

In *E. prolificus*, as in many other species, the cephalic and thoracic macrochætæ often vary from black to yellowish; sometimes the mystax contains many yellow bristles, sometimes not. In some rare specimens the tuft of white hairs in front of the scutellum is wanting.

This species seems to be a very common one, judging from the number of specimens collected, and yet I cannot identify it with any description. In *E. jubatus*, Willist. (Trans. Am. Ent. Soc. xii. p. 66), from New Mexico, judging from the description, there is no white hair either on or in front of the scutellum; the abdominal segments 3, 4, 5 (and not 2, 3, 4) have grey margins, and the segments 6 and 7 (and not 5, 6, 7) are silvery; and the abdomen of the female is deep black, which is not the case in *E. prolificus* &c.

E. parvulus, Bellardi, from Mexico, has reddish rings at the tip of the femora.

E. nigrimystaceus, Macq. Dipt. Exot. Suppl. ii. p. 41 (Guadeloupe), has some points in common with *E. prolificus*, but cannot be identified with it.

N.B.—The species Nos. 8-11, as well as *E. unicolor*, Bell., *E. parvulus*, Bell., *E. carinatus*, Bell., and *E. comatus*, Bell., belong to a group which seems to be abundantly represented in Mexico and in the neighbouring regions of the United States. The species of this group have a crest of erect hairs along the middle of the thorax, the crest usually ending posteriorly in a tuft of white or yellowish hairs inserted on the præscutellar region and on the disc of the scutellum. The thorax itself is compressed from the sides, with a kind of keel or ridge along the dorso-central line upon which the crest is inserted: this character is more pronounced in some species than in others, and amongst those now before me it is most distinct in *Erax* No. 9. In the male the costa is expanded and thickened. A secondary sexual character in this group consists in the

disappearance in the male of the stump on the anterior branch of the third vein, although it is fully developed in the female. In the figures of the males of *E. parvulus*, Bell., and *E. carinatus*, Bell. (*cf.* Saggio &c. ii. t. 2. ff. 8 & 9), the stump is erroneously represented as being present. I have seen the typical specimens, in which it is wanting; and, moreover, the description in both cases says explicitly "cellula inappendiculata," although the cell is incorrectly called "first posterior."

9. *Erax* — ?

Hab. MEXICO, Northern Sonora (*Morrison*).

A single male, about 12 millim. long without the forceps. This specimen has the silvery abdomen beset with rather long silvery hair, which, beginning on the second segment, is parted in the middle and combed outwards; there seem to be some darker spots on the silvery ground of the second segment, but they are concealed by the hair; the venter beset with long white hair. The crest of erect black hairs on the thorax is more dense here than in *E. prolificus*, almost reaching the scutellum; on each side it has a fringe of short, delicate, white hairs closely applied to it; the tuft of scattered black and white hairs which, in *E. prolificus*, exists between the thoracic suture and the scutellum is replaced here by the prolongation of the black crest; hairs on the scutellum snow-white (except the usual fringe of black bristles); the hairs of the beard and mystax also of a purer white than in *E. prolificus*, those of the mystax mixed with black, especially on the upper part. Wings like those of *E. prolificus*, only a little purer hyaline; the thickening of the costa is similar, that is, only moderate, and less strong than in *Erax* No. 10. Prevailing ground-colour of the legs dark metallic green; tibiæ deep red on the proximal half only; coxæ, femora, and tibiæ beset with white hairs. Forceps of the same structure as in *E. prolificus*, only the upper part projects much less beyond the hairy brush on the underside.

Two females from the same locality may perhaps be paired with the above-described male. One, without the ovipositor, is 15–16 millim. long; the other 11–12 millim. In these specimens the black crest on the thorax does not reach so far back as in the male, but is replaced beyond the suture by scattered black hairs, with a strong admixture of white ones (as in *E. prolificus*). The abdomen is black above, with narrow grey margins to the segments, the lateral margins more broadly grey; with long white hair on the upper surface of segments 1–3, and shorter white hair on the hind margins of the following segments; the ovipositor equal in length to five of the preceding segments. Legs beset with long white hair; femora dark metallic green; tibiæ reddish, darker towards the tip. The mystax with black hairs, mixed with white ones, some rufous hairs also appearing among them. The coxæ with tufts of rufous hair, which are, however, much less apparent in the smaller specimen. I doubt that these hairs are a permanent character. These females are easily distinguished from the same sex of

E. prolificus by the darker abdomen, with narrower grey hind margins of the segments; the longer ovipositor, the darker mystax, &c.

N.B.—*E. unicolor*, Bell. (I have not seen the type, it is not in Bellardi's collection), from Orizaba, Mexico, described from the female sex only, has a great deal in common with the above-mentioned females. The keel-like elevation of the middle of the thorax, described by Bellardi, is quite conspicuous in my specimens; the ovipositor, as described by him, is long; the whole appearance very hairy. But the other details of Prof. Bellardi's description do not answer.

Van der Wulp has specimens of both sexes of an insect from Guanajuato, Mexico, which he refers to *E. unicolor*; according to him, the male agrees with the female in everything except the genitals (in other words, it has no silvery segments on the abdomen?): if this determination be correct, it justifies me in not identifying my specimen with *E. unicolor*.

10. **Erax** — ?

Hab. MEXICO, Northern Sonora (*Morrison*).

Very like *E. prolificus* in size, colouring, and in the structure of the male forceps. The principal differences are: the *male* has nearly the whole of the abdomen silvery, the segments 2–5 beset with silvery hairs which are parted in the middle and combed outwards, and the expansion of the costa larger and darker-coloured; the *female* (or at least the specimens which I refer as females to the above-mentioned males) has the abdomen uniformly grey, beset with short whitish hairs, the ovipositor equal in length to about five of the preceding segments, and therefore longer than in the preceding species. In both sexes the femora are red on the upperside. Two males and three females.

11. **Erax** — ?

(?) *Erax carinatus*, Bell. Saggio &c. ii. p. 36, t. 2. f. 9¹.

Hab. MEXICO (*Truqui*¹), Presidio (*Forrer*).

Belongs to the same group as *E. prolificus* and *Erax* Nos. 9 and 10, *e. g.* with a crested thorax. I have two females which cannot be referred to either of those species. The femora are red above, and dark metallic green on the underside only, and in this respect this species is like No. 10; it has the same long ovipositor, equal to about five of the preceding segments united. But the abdominal segments are much darker in the middle than on the sides, and not uniformly grey; the wings are shorter and more brownish; the hairs on the scutellum and on the præscutellar space are not white, but dingy yellowish. I suspect that this may be the female of *E. carinatus*, Bellardi, of which the male only is described; I obtained this impression on comparing the male in Turin.

The following species of *Erax* have been described by the older authors from our region:—

- Erax affinis*, Bell. Saggio &c. ii. p. 41.—Mexico, Cordova.
 — *aper*, Walk. List &c. vii. p. 621.—Mexico.
 — *argyrogaster*, Macq. Dipt. Exot. Suppl. i. p. 84.—Mexico, Yucatan.
 — *bicolor*, Bell. l. c. p. 47.—Mexico.
 — *bimaculatus*, Bell. l. c. p. 45, t. 2. f. 11.—Mexico.
 — *carinatus*, Bell. l. c. p. 36, t. 2. f. 9.—Mexico.
 — *cingulatus*, Bell. l. c. p. 42.—Mexico, Cuantla.
 — *comatus*, Bell. l. c. p. 34.—Mexico.
 — *eximius*, Bell. l. c. p. 38.—Mexico.
 — *flavofasciatus*, Wiedem. Aussereur. zweifl. Ins. i. p. 470.—Brazil (Wiedem.); Honduras (Walk. List &c. ii. p. 400).
 — *lascivus*, Wiedem. l. c. i. p. 474.—Brazil (Wiedem.); Honduras (Walk. l. c.).
 Syn. *Asilus amarynceus*, Walk. List &c. ii. p. 400; *ibid.* vii. p. 637.
 — *loewi*, Bell. l. c. Append. p. 24, t. 3. f. 17.—Mexico, Tuxpango.
 — *marginatus*, Bell. l. c. p. 46.—Mexico, Cuantla.
 — *bellardii*, Schin. Reise d. Novara, Dipt. p. 182.—Colombia.
 Syn. *Erax (Eristicus) nigripes*, Bell. l. c. p. 48.—Mexico.
 — *parvulus*, Bell. l. c. p. 35, t. 2. f. 8.—Mexico.
 — *pumilus*, Walk. List &c. vii. p. 640.—Mexico, Vera Cruz.
 — *4-maculatus*, Bell. l. c. p. 44, t. 2. f. 13.—Mexico, Playa Vicente, Cordova.
 — *tricolor*, Bell. l. c. p. 40, t. 2. f. 12.—Mexico.
 — *unicolor*, Bell. l. c. p. 37.—Mexico, Tuxpango.

PROCTACANTHUS.

Proctacanthus, Macquart, Dipt. Exot. i. 2, p. 120 (1838).

I have three species of this genus before me. One from San Gerónimo, Guatemala (*Champion*), is represented by a single female, not unlike *P. brevipennis* in colouring, but larger; the femora and tarsi black; the tibiæ red, black at the tip; the palpi red, beset with pale yellow hairs, and apparently unusually large; the lips at the end of the proboscis also more developed than usual. Another species, represented by four males from Northern Sonora (*Morrison*), is allied to *P. milbertii*: I do not venture to describe it, as I have no specimens of the latter for comparison; it is larger than *P. craverii*, Bell., and the tibiæ are as dark as the femora. The third species I describe as new; it is very peculiar, and will, I hope, be easily recognizable.

1. *Proctacanthus exquisitus*, sp. n., ♂ ♀. (Tab. III. fig. 12, ♀.)

Pale yellowish-grey; abdomen with a longitudinal brown, well-marked stripe strongly contrasting with the pale ground-colour.

Length, ♂, 19–20 millim.; ♀, including the ovipositor, 25 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Facial tubercle but little prominent; mystax white, with a very slight yellowish tinge; palpi with white hairs at the tip; face white pollinose; beard pure white; a tuft of white hairs on each side of the front; hairs on the vertex and the upper part of the occiput yellowish. Antennæ black, the second joint reddish; first joint beset with white pile. Thorax with a brown dorso-central double stripe, its median line pale brownish-yellow; the lateral stripes of a paler brownish; the interval between the dorso-central and lateral stripes greyish; all the hairs and macrochætæ on the thorax and scutellum pale yellowish-white; pleuræ yellowish-grey pollinose. Abdomen yellowish-grey; in the male each of the segments up to the sixth with an elongate, narrow, dark brown spot in the middle (that on the sixth only indicated by a brown line), the series of these spots along the back forming a longitudinal stripe slightly interrupted at the incisures; in the female the dorsal stripe reaches, without any diminution, to the end of the seventh segment. Ventral surface greyish-yellow pollinose, with a vestige of a brownish longitudinal line in the middle. Male forceps small; upper valves short, beset with whitish hairs. In the female the eighth abdominal segment is reddish-brown, horny, cylindrical, a little longer than the preceding segment, and slightly attenuate at the end; and the coronet of spinules at the end of the ninth segment is very small. Halteres reddish-yellow. Legs densely clothed with whitish hairs, the bristles mostly whitish; ground-colour of the front pair reddish, the front side of the femora (except the tip) and the tip of the tibiæ black; the middle pair of the same colour, but with the black on the front side of the femora more extensive, and reaching the tip, and the tibiæ not only dark at the tip but also with a blackish line from thence to the basis; the prevailing colour of the hind pair black, but with a reddish stripe on the hind side of the femora and of the tibiæ. Wings subhyaline; venation normal; tip of the posterior branch of the third vein slightly turned backwards.—One male and one female.

N.B.—The structure and small size of the male forceps, and the comparatively small coronet of spines at the tip of the ovipositor, distinguish this species from the normal *Proctacanthus*; nevertheless there is no ground for a generic separation.

Two species of this genus have already been described from Central America:—

Proctacanthus craverii, Bellardi, Saggio &c. ii. p. 50.—Mexico.

— *rufiventris*, Macq. Dipt. Exot. i. 2, p. 123, t. 10. f. 2.—Honduras.

ECCRITOSIA.

Eccritosia, Schiner, Verh. zool.-bot. Ges. Wien, 1866, p. 674.

1. *Eccritosia amphinome*.

Asilus amphinome, Walker, List &c. ii. p. 387 (♂ ♀)¹.

Hab. MEXICO, Presidio (*Forrer*); GUATEMALA, Rio Naranjo 450 feet (*Champion*); HONDURAS¹.

I have two male specimens before me; the species must be referred to *Eccritosia*, Schiner.

ASILUS.

Asilus, Linnæus, Fauna Suecica, 1761.

1. *Asilus chrysauges*, sp. n., ♀.

Black; upperside of the abdomen golden-fulvous pollinose; venter and sides of the abdomen black; legs black; wings infusate; ovipositor short.

Length about 28 millim.

Hab. GUATEMALA, Panima in Vera Paz (*Champion*).

Facial tubercle moderate, its upperside rising rather abruptly, the hairs and bristles upon it black; face and front black, the former with a brownish pollen on its sides. Antennæ black, the third joint gradually tapering beyond its middle and merging in the bristle, the latter nearly as long as the joint itself. Thorax (somewhat injured): the black dorsum showing traces of golden-fulvous stripes of pollen; a distinct stripe of such pollen on each side, along the dorso-pleural suture, between the humerus and the post-alar callosity; a patch of similar pollen in front of the scutellum; the latter fulvous-pollinose, with fulvous hairs and bristles. Halteres brownish-red. The dark ground-colour of the abdomen entirely concealed under a dense golden-fulvous pollen; a close, short, recumbent pubescence of the same colour visible (under the magnifying-glass) above the pollen, the pubescence longer on the posterior margins of the segments; longer erect yellowish hairs on the sides of segments 1-3; a tuft of black bristles on each side of the first segment. The eighth abdominal segment brownish, short; beyond it is the short black ovipositor. Ventral surface black, the black also encroaching on each side upon the dorsal segments. Legs black, only the pulvilli of the usual reddish colour. Wings rather uniformly infusate; with narrow subhyaline lines along the fourth vein and its branches and along the fifth and sixth veins.—A single female.

This species differs from the European *A. crabroniformis* and the North-American *A. sericeus* in the structure of the ovipositor. In *A. crabroniformis* the eighth abdominal segment is a narrow, elongate, horny cone, distinctly longer than the preceding segment, smooth and shining, and at its end are the small valves of the ovipositor; in *A. chrysauges* the eighth abdominal segment is short, pollinose, and hairy, and therefore does not have the appearance of forming a part of the ovipositor, which is thus represented by the small valves and the horny piece at their base only. The venation is very like that of *A. crabroniformis*, the discal cell being long and narrow, and the second posterior cell bulging out beyond it at the base.

The bristles on the tarsi of *A. chrysauges* are remarkably strong; a pair of them just above the ungues form a conspicuous fork, which might be mistaken for the ungues themselves, if the latter were removed. A similar structure exists in *A. midas*, but not in *A. crabroniformis* or *A. sericeus*.

2. *Asilus midas*.

Asilus mydas, Brauer, Sitzungsber. Ak. Wiss. Wien, xci. p. 387, figg. 1, 1 a (1885)¹.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*), Cuernavaca¹.

This recognizable species has been figured, but not described, by Dr. Brauer, in order to illustrate a case of mimicry between it and a *Midas* (*M. rubidapex*, Wiedem.) from the same locality. *A. midas* is easily described: it is altogether velvety-black, with black hairs and bristles; the face with a tuft of white hairs on each side, on the cheeks, in the male; wings of a rich reddish-yellow, brownish at the base, the alulæ brown, the apical margin brownish; pulvilli of the usual fulvous colour; male forceps rather large and stout; ovipositor short; the eighth abdominal segment shorter than the preceding one, smooth, shining, black, sparsely beset with hairs; the ovipositor proper with short valves, and beset with yellowish hairs. The venation like that of the preceding species; the second posterior cell bulging out and encroaching upon the first.

NEOMOCHTHERUS.

Neomochtherus, O. Sacken, Catal. N. A. Dipt. 1878, p. 82.

Mochtherus, Loew, Linn. Ent. iv. p. 58 (1849).

1. *Neomochtherus plebeius*, sp. n., ♂ ♀.

Brownish; thorax with brown stripes; abdomen dark brown, with the posterior margins of the segments pale; legs yellowish-red, the tarsi darker.

Length about 18 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Face yellowish-white sericeous, flat, but the mouth fornicate and projecting in profile in front of the eyes; no perceptible facial tubercle; mystax with a few whitish bristles; a few whitish bristles also along the edge of the mouth; beard very soft, white; front yellowish pollinose; ocellar bristles microscopic; occiput yellowish-white pollinose; bristles of the upper occipital orbit yellowish or black; antennæ black, the second joint brownish; palpi black, with a few white hairs at the tip. Thorax with a dark brown, opaque, dorso-central stripe, and a more or less distinct pollinose dividing line; lateral stripes distinct, but more feebly marked; the intervals and the scutellum brownish-yellow pollinose; pleuræ greyish pollinose. Halteres pale yellowish. Abdomen: first segment yellowish pollinose, its base greyish; the remaining segments dark brown, with pale orichalceous hind margins, the breadth of the margins less than one fourth of the length of the segment; lateral margins greyish pollinose. Forceps black, shining, not broader than the abdomen, moderately beset with blackish and whitish hairs. The segments 8 and 9, forming the ovipositor, compressed from the sides, black, shining. Legs smooth; the closely appressed pile visible only under a strong magnifying-power; the bristles few; yellowish-red, the femora with more or less distinct

brown stripes on the front side and dark brown dots at the tips; the tips of the tibiæ and of all the tarsal joints infuscated; the four anterior coxæ grey-pollinose and beset with white hairs, the hind coxæ reddish. Wings greyish-hyaline, purer hyaline towards the root. Two specimens.

N.B.—In all the essential characters this species is allied to the typical forms of *Neomochtherus*, e. g. the European *N. pallipes*, Macq., and *N. striatipes*, Loew; it very much resembles the former species in colour, but is larger. The most marked difference consists in the male forceps being not so swollen as in these two species. Loew, however, did not regard this character as essential, as he provisionally placed *N. castanipes* in the same genus. The latter species is much more aberrant than *N. plebeius*; it has four macrochætæ on the scutellum, while *N. plebeius* and the two above-mentioned European species have only two; the legs are more bristly, &c. The ovipositor of *N. plebeius* is also shorter and broader than that of *N. pallipes* and *N. striaticeps*.

The following species of *Asilus*, in a wider sense, have been described from our region by previous writers:—

- Asilus apicalis*, Bellardi, Saggio &c. ii. p. 57.—Mexico.
- *inamatus*, Walker, Trans. Ent. Soc. Lond. n. ser. v. p. 283.—Mexico.
- *infuscatus*, Bellardi, l. c. p. 56.—Mexico.
- *megacephalus*, Bellardi, l. c. p. 58.—Mexico.
- *mexicanus*, Macq. Dipt. Exot. Suppl. ii. p. 94.—Mexico.
- *perrumpens*, Walker, l. c. p. 283.—Mexico.
- (*Philonicus*) *tæniatus*, Bellardi, l. c. p. 55.—Mexico.
- (—) *tuxpanganus*, Bellardi, l. c. App. p. 22.—Mexico; Tuxpango.
- (*Lophonotus*) *humilis*, Bellardi, Saggio &c. ii. p. 51.—Mexico.
- (*Mochtherus*?) *fuliginosus*, Bellardi, l. c. p. 52.—Mexico.
- (*Mochtherus*) *truquii*, Bellardi, l. c. p. 52.—Mexico.
- (*Epitriptus*?) *albo-spinosus*, Bellardi, l. c. p. 54.—Mexico.
- (*Epitriptus*) *niveibarbus*, Bellardi, l. c. p. 53.—Mexico, Cordova.

OMMATIUS.

Ommatius, Wiedemann, Dipt. Exot. i. p. 213 (1821).

1. *Ommatius peregrinus*, sp. n., ♂.

Thoracic dorsum dull brown; abdomen red; legs yellowish-red, the hind femora and tibiæ with brownish rings in the middle; wings hyaline, with a grey shade on the apex.

Length 15 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Face orichalceous pollinose; facial tubercle but little projecting, beset with golden

hairs and a few black bristles; beard pale whitish-yellow. Antennæ reddish; third joint small, brown, the base reddish. Thorax: dorsum dull brown, the usual stripes being coalescent; a border of golden-yellow pollen along the dorso-pleural suture, emitting a branch along the thoracic suture and another between the humerus and the dorso-central stripe; two greyish longitudinal lines on the dorso-central stripe; a spot of grey pollen in front of the scutellum; the latter yellowish-grey pollinose; pleuræ pale orichalceous pollinose, the pollen also covering the coxæ. Halteres reddish; the fan-like row of bristles in front of them black. Abdomen brownish-rufous, the incisures darker; the surface and sides beset with golden-yellow hair. Legs yellowish-red; a feebly marked brownish ring on the hind femora and a more marked one on the hind tibiæ; a brownish spot on the upperside of the middle tibiæ; knees of the four posterior legs brownish. Wings subhyaline; a brownish-grey shade at the apex not quite reaching the proximal end of the second submarginal cell; on the posterior margin this shade becomes very narrow and evanescent in the fifth posterior cell.

The following species of *Ommatius* and *Emphysomera* have been described from Mexico (there are none from other parts of Central America) by previous authors:—

Ommatius fuscipennis, Bellardi, Saggio &c. Append. p. 23.—Mexico, Tuxpango near Orizaba.

— *pumilus*, Macq. Dipt. Exot. Suppl. ii. p. 42, t. 1. f. 10; Bellardi, Saggio &c. ii. p. 59.—Mexico, Cuantla.

— *parvus*, Bigot, Ann. Soc. Ent. Fr. 1875, p. 247.

Emphysomera pilosula, Bigot, l. c. p. 243.

— *bicolor*, Bigot, l. c. p. 244.

ANARMOSTUS.

Anarmostus, Loew, Südafr. Dipt. 1860*.

1. *Anarmostus iopterus*.

Asilus iopterus, Wiedem. Aussereur. zweifl. Ins. i. p. 438¹.

Hab. BRITISH HONDURAS (*Blancaneaux*).—BRAZIL¹.

A single specimen from British Honduras is apparently referable to this species; it has the abdominal segments 6, 7, 8 alone steel-blue, the others black, opaque; the tibiæ densely beset with white hair, but having, on the front side, a glabrous, metallic blue stripe. Notwithstanding these discrepancies from the description, I believe the determination to be correct, and my belief has not been shaken by the sight of the type in Vienna, which, however, I have not been able to compare in detail.

* This generic name has also been used in Pisces (Scudder, 1863); it has priority, however, in Diptera.

ATRACTIA.

Atractia, Macquart, Dipt. Exot. i. 2, p. 151 (1838).

1. *Atractia marginata*, sp. n.

Black, with a metallic green reflection, especially on the thorax; face yellowish-white sericeous, with a few black and yellowish bristles; the (very much damaged) thorax with traces of yellowish pollinose longitudinal stripes and also of lateral stripes along the dorso-pleural suture, the intervals between the stripes shining dark metallic green; pleuræ and scutellum similarly pollinose or sericeous; scutellum with four long black bristles; abdomen black, with a slight bluish-green reflection, densely punctate, the posterior edges of the segments with a narrow whitish sericeous line; knob of the halteres brownish, the stem pale yellow; coxæ black; anterior femora brownish-yellow, with a well-defined longitudinal black stripe on the posterior side; anterior tibiæ black or dark brown, yellow at the base, the yellow reaching further on the front side than on the hind side; middle femora black, brownish-yellow at the base, on the upper side; middle tibiæ black, brownish-yellow at the base; hind femora black, with a trace of brownish at the base; hind tibiæ black, the proximal third brownish-yellow; all the black of the femora and tibiæ with a metallic green reflection; tarsi black, hairy; wings tinged with brownish.

Length 9 millim.

Hab. NICARAGUA, Chontales (*Janson*).

A single, very much damaged, specimen of uncertain sex. I describe it, nevertheless, as this singular genus has not been found so far north before.

APIOCERA.

Apiocera, Westwood, Lond. & Edinb. Phil. Mag. 1835.

Tapinocera, Macquart, Dipt. Exot. i. 2, p. 78 (1838).

Pomacera, Macquart, Dipt. Exot. Suppl. i. p. 47 (1847).

Anypenus, Philippi, Verh. zool.-bot. Ges. Wien, xv. p. 702 (1865).

1. *Apiocera augur*, sp. n., ♂.

The second of the veins issuing from the discal cell reaching the margin behind the apex; both branches of the fork of the third vein ending in the margin; the greyish-white abdomen with a pair of velvety-black, triangular spots on each of segments 2, 3, 4.

Length, including ♂ forceps, 16-17 millim.

Hab. MEXICO, Presidio (*Forrer*).

Front and vertex silvery, beset with whitish pile; palpi yellowish-white, the last joint broad but ending in a point. Antennæ blackish-brown; first joint hoary; first and second joints beset with white bristles; third joint pear-shaped (like the fig. 26 *a* in Philippi, *l. c.* t. 25), but the tip drawn out into a short, curved point. Thorax black, shining above, with some greyish-white pollen along the margins of the mesonotum; pleuræ black, greyish pollinose. Abdomen greyish-white (that is, the black ground-colour is entirely hidden under a covering of greyish-white pollen); segments 2, 3, 4 with, on each side, at some distance from the lateral margin, a velvety-black, more or less distinct, triangle (the apex of which is turned towards the middle and the base parallel to the lateral margin); segment 5 shows, in the same place, a brownish spot; the following two segments are nearly unicolorous, greyish-silvery; near the lateral

margins of segments 3–5 elongated brown spots are perceptible; ventral surface greyish-silvery at the base, pale reddish towards the tip; male forceps rather large, black. Halteres brownish-yellow. Legs black, or brownish-black. Wings hyaline; veins brown, the auxiliary vein, and the first vein also, more yellowish.

N.B.—Since writing the above description, I have received Coquillet's article on *Apiocera* (Psyche, 1885, p. 244); this author there states that he has twenty-two Californian specimens, some of which agree with *A. haruspex*, O. Sack., but the others differ to such a degree from these, and also from each other, that he is at a loss to know whether to regard them as belonging to several species, or as merely varieties of one very variable insect; he inclines to the latter view of the case; and if this view be correct, my *A. augur* may perhaps also be merely a variety of *A. haruspex*.

In my detailed article on *Apiocera* (Berl. ent. Zeit. 1883, p. 292) I paid but little attention to the suggestion of Macquart as to the relationship of this genus to *Thereva*. I merely said that the venation of *Thereva*, "on account of the shortness of the first longitudinal vein," belongs to a different type, far remote from that of the Asilidæ and *Apiocera*. This argument is conclusive, and those who insist nevertheless upon upholding Macquart's view merely show that they have no eye for affinities based upon the venation of Diptera. The Tipulidæ, Asilidæ, Syrphidæ, and some other groups of Diptera have such a well-characterized venation that the sight of the wing alone is sufficient for defining the systematic position of the species belonging to them. Since I have shown that *Apiocera* is not a Midaid, the only debatable question is whether it is an Asilid, or an aberrant form allied to the Asilidæ.

Fam. DOLICHOPODIDÆ.

DOLICHOPUS.

Dolichopus, Latreille, Précis des Car. gén. des Ins. iv. p. 292 (1796).

1. *Dolichopus myosota*, sp. n., ♂.

Antennæ and legs black; cilia of the inferior orbit whitish; cilia of the tegulæ black; face silvery-white; wings hyaline, the distal half of the fourth vein bisinuate but not angularly broken, the costa without any incrassation.

Length about 4 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Bright metallic green, with bluish reflections; antennæ black, rather small, the third joint short and subtriangular; arista black, glabrous; face silvery; pleuræ slightly hoary; abdomen distinctly hoary on the sides; lamellæ of the hypopygium rather small, whitish, with black margins; legs uniformly black, the brown on the knees hardly perceptible; the femora, especially the anterior pair, with metallic green reflections; macrochætæ on the outer side of the four posterior femora, near the tip, rather strong.

Beyond the usual pile, there are no conspicuous fringes or other secondary sexual characters on the legs.

2. **Dolichopus** — ?, ♂ ♀.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

Of the group of *D. ramifer*, Loew, *D. bifractus*, Loew, &c. Two specimens in poor condition; these have the third joint of the antennæ elongate, black; the wings distinctly infuscate between the distal part of the anterior margin and the fourth vein.

PSILOPUS.

Psilopus, Meigen, System. Besch. der bek. europ. zweifl. Ins. iv. p. 35 (1824)*.

Of this genus, very abundantly represented in tropical regions, the collections before me contain about half a dozen species. Owing to the difficulty of defining the species of this group and the very large number (between 80 and 90) already described from North and South America, I do not attempt either to determine or to describe this small collection; the whole group requires a monographic treatment.

The species of Dolichopodidæ hitherto described from Mexico and Central America are as follows:—

- Psilopus dimidiatus*, Loew, Monogr. &c. ii. p. 246.—Mexico (S. America, Schiner, Reise d. Novara, Zool. iii. Abth. i. p. 212).
- *melampus*, Loew, l. c. p. 253.—Mexico (S. America, Schiner, l. c.).
- *incisuralis*, Macq. Dipt. Exot. Suppl. i. p. 120, t. 20. f. 6.—Mexico, Yucatan.
- *lepidus*, Walk. Dipt. Saund. p. 207.—Mexico.
- *peractus*, Walk. Trans. Ent. Soc. Lond. n. ser. v. p. 287.—Mexico.
- *permodicus*, Walk. l. c. p. 288.—Mexico.
- *solidus*, Walk. l. c. p. 287.—Mexico.
- *hæreticus*, Walk. l. c. p. 287.—Mexico.
- Hydrophorus punctipennis*, Say, Proc. Ac. Phil. vi. p. 170; Compl. Wr. ii. p. 362 (*Medeterus*).—Mexico.
- Lyroneurus cærulescens*, Loew, Monogr. &c. ii. p. 170.—Mexico.

Fam. EMPIDÆ.

EMPIS.

Empis, Linnæus, Syst. Nat. ed. 12, i. pt. 2, p. 1003 (1767).

* This name is preoccupied in Mollusca (1795); I do not think it necessary, however, to change it.

1. **Empis diaphorina**, sp. n., ♀.

Metallic green; antennæ and coxæ black; legs yellow, the hind pair with black fringes.
Length about 4 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

Differs from *E. dolichopodina*, Schiner (Brazil), by its black antennæ; from *E. cyanea*, Bell. (Mexico), by the front legs being altogether yellow and without fringes, and the wings yellowish, and not hyaline; and from *E. suavis*, Loew (Mexico), by the colour of the legs and wings.

Antennæ black; third joint elongate, about as long as the first two joints united, with a short style. Occiput hoary, beset with black pile; front metallic green. Thorax metallic green, shining, with a vestige of three pollinose stripes on the dorsum, the latter sparsely beset with long, erect, black pile; meso- and sternopleura shining metallic green; pteropleura black, slightly hoary; the fan-like row of bristles black; halteres black; metanotum slightly pulverulent. Abdomen metallic bluish, greenish at the base. Legs brownish-yellow, the tips of the tarsi brown; the front pair beset with moderately long, delicate hairs, their first tarsal joint long, swollen; on the middle pair the hairs are stouter and more dense, fringe-like, especially on the underside of the femora; the hind tibiæ are broad and flattened, and bear, on each side, a fringe of long, stout, almost scale-like hairs; similar fringes on the hind femora, but less conspicuous; coxæ black; trochanters brown. Wings with a pale brownish-yellow tinge towards the root and the anterior margin; stigma hardly visible; hind margin greyish; the branch of the third vein nearly perpendicular; the first vein issuing from the discal cell turning anteriorly before its end; the first and second veins reach the margin, but are very thin and evanescent before it. Two females.

2. **Empis benigna**, sp. n., ♂ ♀.

Metallic green, the antennæ and legs black, the knees yellowish; wings subhyaline, yellowish at the base and anteriorly.
Length 4-5 millim.

Hab. MEXICO, Ciudad in Durango (*Forrer*).

Differs from the description of *E. cyanea*, Bell., by its black legs, the knees only being yellowish. Compared with *E. diaphorina* the antennæ are shorter and have the third joint more lanceolate and less elongated; and the metallic green thorax is without any vestige of pollinose stripes.

Antennæ black; third joint a little shorter than the preceding two joints united, the division, or suture, occupying about two-thirds of its length and very distinct, the style short and stout. Face and front very dark metallic, shining, almost black. Thorax metallic green, shining, beset with long, erect, black pile; pleura metallic green, shining anteriorly, black, slightly hoary posteriorly; halteres and the fan-like bristles in front of them black. Abdomen metallic green (♂), or metallic blue, green at the base (♀);

male genitals black. Legs black, the last pair of coxæ slightly pulverulent at the base, the knees slightly brownish-yellow, the tarsi dark brown and with their first joint but slightly incrassate; in the 'male' beset with long, soft, blackish hairs, the tip of the hind tibiæ bearing, on the underside, a small brush of very short, stiff bristles (which produces the appearance of an incrassation), and the yellowish-brown first joint of the hind tarsi having, on the underside, a similar brush of bristles at the base, followed by a distinct emargination; in the 'female' the middle femora on the underside, the middle tibiæ, and the hind femora and tibiæ on both sides, beset with fringes of long, scale-like hairs, and the hind tibiæ broadened and with a groove on the outside. Wings of the male subhyaline, with a slight yellowish tinge in the subcostal cell, especially on the stigma; in the female this yellowish tinge is more extended and occupies the whole antero-proximal half; the venation as in *E. diaphorina*. One male, two females.

N.B.—In the male the eyes are contiguous and the genitals projecting (I cannot see the structure of the latter distinctly); the proboscis does not, in either sex, reach beyond the thorax.

3. *Empis pegasus*, sp. n., ♀.

Black, segments 1-4 of the abdomen ochraceous-yellow; wings infuscated; all the legs fringed with scale-like hairs.

Length 7 millim.

Hab. PANAMA, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Female. Black; front moderately broad, opaque; face shining. Antennæ black; third joint not longer than the first, triangular, slightly excised on the underside, the arista as long, or a little longer. Thorax black, with a trace of three greyish stripes. Abdomen with the four basal segments ochraceous-yellow, opaque, shining on the incisures only; the last segments black, shining. Legs dark brown, or black; femora, tibiæ, and tarsi beset with broad fringes of scale-like hairs (on the anterior femora alone the fringes are replaced by hairs); the four hinder femora and tibiæ distinctly flattened. Wings with a uniformly brown tinge; branch of the third vein slightly oblique. A single specimen.

The species of Empidæ hitherto described from Mexico (there are none from other parts of Central America) are as follows:—

Empis bicolor, Bellardi, Saggio &c. ii. p. 98.—Mexico, Cuantla.

— *cyanea*, Bellardi, l. c. p. 98.

— *spiloptera*, Wiedem. Aussereur. zweifl. Ins. ii. p. 5 (syn. *E. picta*, Loew, Centur. iii. no. 28).

— *suavis*, Loew, Centur. viii. no. 56.

— *totipennis*, Bellardi, l. c. p. 99.—Mexico, Morelia.

— *violacea*, Loew, Centur. viii. no. 55.

Hybos dimidiatus, Bellardi, l. c. p. 97.

S U P P L E M E N T *.

MYCETOPHILIDÆ (p. 1).

PLESIASTINA.

Plesiastina, Winnertz, Stett. ent. Zeit. p. 55 (1852).

1. *Plesiastina bifasciata*, sp. n. (Tab. IV. figg. 1, 1*a*, ♂.)

♂. Head yellow, the ocelli on small blackish spots; antennæ longer than the head and thorax together, light yellow, the last seven joints black, the flagellum flattened. Mesonotum light yellow, with three broad shining black stripes, the lateral ones abbreviated in front. Scutellum yellow, with the margin brownish. Pleuræ in part pitchy brown. Metanotum light yellow above, brown on the lower part. Abdomen: first segment and the venter light yellow; second to seventh segments, inclusive, shining black, with the hind margin yellow or yellowish, and clothed with yellow hair; remainder of abdomen black, with less abundant yellow hair; hypopygium yellow, with the superior organs blackish. Legs yellow; four posterior coxæ brownish; hind femora, tip of the hind tibiæ, the hind tarsi, and the tip of the middle tibiæ black; middle tarsi brownish; front tibiæ with weaker bristles; all the tibiæ with spurs, the hind pair with long and stout ones. Wings light yellow, with brown markings as follows: the whole of the costal cell, except sometimes a spot at the beginning of the yellow distally, the broad distal and narrow posterior margin, and a moderately broad band near the middle of the wing; the auxiliary vein vanishes in a fold that ends about opposite the beginning of the third vein; the third vein forks before its middle, the fourth a little beyond the middle of the second section of the third; the costal vein ends at the tip of the posterior branch of the third. Length $6\frac{1}{2}$ -7 millim.

Hab. MEXICO, Sierra de las Aguas Escondidas in Guerrero 7000 feet (*H. H. Smith*).

Three specimens.

MACROCERA.

Macrocera, Meigen, in Illiger's Magazin f. Ins. ii. p. 261 (1803).

1. *Macrocera concinna*.

Macrocera concinna, Willist. Trans. Ent. Soc. Lond. 1896, p. 255, t. 8. f. 7¹.

Hab. MEXICO, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).—ANTILLES, St. Vincent¹.

A single specimen. It differs somewhat from the Antillean types in the coloration

* Since the publication of Baron C. R. Osten Sacken's enumeration of the species of the Families of Diptera dealt with in this Volume, whose last contribution was issued in April 1887, we have obtained a

of the wings, but not to any great extent: the distal end is more broadly marked, and the middle spot is geminate. The prefurca of the fourth vein is short. The length is somewhat less—3 millim.; of the antennæ 10 millim. I am rather inclined to suspect that the species may prove to be inseparable from *M. inconcinna*, Loew, from the District of Columbia.

PLATYURA.

Platyura, Meigen, in Illiger's Magazin f. Ins. ii. p. 264 (1803).

1. *Platyura pictipennis*.

Platyura pictipennis, Willist. Trans. Ent. Soc. Lond. 1896, p. 257, t. 8. f. 10¹.

Hab. MEXICO, Vera Cruz, Chilpancingo in Guerrero (*H. H. Smith*).—ANTILLES, St. Vincent¹.

Two specimens. The female agrees with the description. The male, with a much narrower abdomen, is marked differently: it has the abdomen black, with the first segment, the distal margins of the second, third, and fourth, and the whole of the fifth, yellow.

2. *Platyura elegantula*, sp. n. (Tab. IV. fig. 2, ♀.)

♀. Head yellow, the upper portion, to a line just in front of the ocelli, shining black. Palpi and tip of the proboscis brownish. Antennæ brown, the first two joints yellow; in length equal to that of the mesonotum. Mesonotum yellow, with three coalescent black stripes, of which the lateral ones are abbreviated in front; just above the root of the wings the more abundant black hair gives the appearance of a slender black spot. Pleuræ yellow, the mesosternum and the lower part of the metasternum brown. Metanotum brown, the sides silvery in some lights. Scutellum blackish. Abdomen brownish; the anterior part of the first, third, and fourth segments reddish yellow; venter almost wholly of the latter colour. Coxæ and femora yellow; tibiæ and tarsi brownish or blackish. Wings strongly tinged with brownish-yellow, the distal portion clouded with brownish; anterior branch of the third vein oblique, a little shorter than the section of the costa beyond the tip of the first vein; auxiliary vein strong, terminating nearly opposite the origin of the third; prefurca of the fourth vein a little more than half the length of the first section of the third. Length 8 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

One specimen. This species is nearest allied to *P. elegans*, Coq., from Florida.

large amount of additional material from Mexico, from our collector Mr. H. H. Smith. The Mycetophilidæ, Bibionidæ, Simuliidæ, Culicidæ, Chironomidæ, Tipulidæ, Rhyphidæ, Stratiomyidæ, Tabanidæ, Leptidæ, Acanthomeridæ, Midaidæ, Nemestrinidæ, Bombyliidæ, Therevidæ, Cyrtidæ, and Asilidæ have been worked out by Prof. S. W. Williston, of the University of Kansas, and the Dolichopodidæ by Prof. J. M. Aldrich, of the University of Idaho. The whole of their MSS. is now in our hands, and we have decided to publish it as a continuation to Baron Osten Sacken's work.—ED.

CEROPLATUS.

Ceroplatus, Bosc, Actes Soc. d'Hist. Nat. de Paris, i. p. 42 (1792).

1. *Ceroplatus bellulus*, sp. n. (Tab. IV. figg. 3, 3 a, ♂.)

♂. Head black, the narrow face and the palpi brownish. Antennæ brownish-black, the first two joints somewhat yellowish; flagellum broad and flattened, about twice the length of the head. Mesonotum not shining, brownish in colour; in the middle with two coalescent stripes, terminating acutely behind and separated from a moderately broad oblique stripe of the same colour on each side by a slender V-shaped brown marking. Pleuræ light yellow along the noto-pleural suture and below the root of the wing, brown elsewhere. Scutellum brownish. Metanotum yellowish. Halteres blackish, with a yellow stem. Abdomen brown, blackish at the tip; the anterior part of the fourth and fifth segments yellow. Coxæ yellow, the distal half of the two posterior pairs brown; femora yellow; tibiæ and tarsi brownish. Wings tinged with brownish; auxiliary vein strong, not connected with the first vein; the third vein arising about opposite the middle of the distance between the humeral cross-vein and the tip of the auxiliary vein; anterior branch of the third vein oblique, terminating a little distance beyond the tip of the first vein, the costal section intervening not as long as the branch; the costal vein extends a little distance beyond the tip of the third vein; prefurca of the fourth vein nearly as long as the first section of the third. Length 5 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

One specimen. The tibiæ are without bristles.

SCIOPHILA.

Sciophila, Meigen, Syst. Besch. i. p. 245 (1818).

1. *Sciophila* — ?

♂. Head black, opaque. Antennæ brown, the basal portion yellowish; in length about equal to twice that of the thorax. Mesonotum dark brown, somewhat yellowish on the lateral margins. Pleuræ yellow below posteriorly. Metanotum brown. Abdomen deep brown, the segments somewhat yellowish in front. Legs yellow, the tarsi brownish. Wings cinereous-hyaline; anterior branch of the third vein rectangular, the cell before it about three times as long as wide; prefurca of the fourth vein longer than the branches; the posterior furcation takes place a little before the anterior cross-vein. Length $3\frac{1}{4}$ millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

NEOGLAPHYOPTERA.

Glaphyoptera, Winnertz, Pilzmucken, p. 45 (781) (1863) (nomen præocc.).

Neoglaphyoptera, Osten Sacken, Cat. Dipt. 1878, p. 10.

1. *Neoglaphyoptera amabilis*, sp. n.

♂. Head yellow. Antennæ longer than the head and thorax together; black, the scape and first three or four joints of the flagellum yellow. Thorax yellow; mesonotum with a large, deep, shining black spot on each side, leaving a narrow median stripe and the front part yellow. Metanotum and mesopleuræ shining black; immediately subjacent to the root of the wings the colour is blackish. Abdomen brownish-black, with the anterior margin of each segment and the venter yellow. Legs yellow; the tip of the hind tibiæ and the tarsi brownish; front tarsi nearly two and a half times the length of the tibiæ,

the tibiæ hardly longer than the metatarsi. Wings lightly tinged with brownish; anterior branch of the posterior furcation separated at its origin from the vein. Length 4 millim.

♀. Head above black. The yellow of the mesonotum has an elongated black spot or stripe in the middle, narrowed to a point, and separated from the same colour of the sides by a slender, curved, yellow stripe; posterior half of the pleuræ black. Wings with a brownish cross-band distally. Abdomen almost wholly black.

Hab. MEXICO, Cuernavaca in Morelos, Medellin, near Vera Cruz (*H. H. Smith*), Orizaba (*H. H. Smith & F. D. Godman*).

Two males and two females, no two of which agree in all respects, and possibly not belonging to the same species. The second male (from Medellin) differs in having the abdomen yellow, with a large black spot on each side of the segments, except the sixth; the hypopygium is also black. Both of the females are from Orizaba: in one, which is probably conspecific with the Cuernavaca male, the median triangular spot of the mesonotum is absent, the mesonotum being marked as in the male, and the fascia of the wings is obsolete. *N. opima*, Loew, from Connecticut, is certainly closely allied to the typical males described, but it has the wings nearly as in the females.

MYCETOPHILA.

Mycetophila, Meigen, in Illiger's Magazin f. Ins. ii. p. 263 (1803).

The species of this genus in the collection before me are each represented by a single example which I am unable to identify. As the identification of *Mycetophila* is often difficult, I do not think it advisable to name them till more material is obtained.

1. *Mycetophila* — ?

♀. Head yellowish-brown. Antennæ brown, the basal joints yellowish. Mesonotum yellowish-red, unicolorous, opaque; pleuræ in part more brownish. Abdomen brownish-black. Legs light yellow; tip of hind femora narrowly blackish; all the tarsi brownish. Wings yellowish; a small brown spot on the first section of the third vein and the prefurca of the fourth; neuration nearly as in the following, the furcation of the fourth vein a little more distal. Length $3\frac{1}{2}$ millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

2. *Mycetophila* — ?

♀. Front reddish-yellow, not shining; face and mouth-parts lighter yellow. Antennæ yellow, brownish distally; about as long as the mesonotum. Mesonotum uniform reddish-yellow, opaque; pleuræ lighter yellow. Abdomen reddish-brown. Legs light yellow, the tarsi brownish. Wings uniformly yellowish, the third vein terminating nearly midway between the tip of the first and that of the anterior branch of the third; prefurca of the fourth vein short, not longer than the first section of the third; the posterior furcation occurring a little before the proximal end of the anterior cross-vein. Length $4\frac{1}{2}$ millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

This species is related to *M. dolosa*, Willist.

3. *Mycetophila* — ?

♂. Head, mesonotum, and abdomen opaque black; pleuræ in part, coxæ, venter, and legs yellow; tibiæ and tarsi brownish. Wings yellowish, uniform; prefurca of the fourth vein about twice the length of the cross-vein; anterior furcation opposite that of the posterior forked cell. Front femora shorter than their tibiæ and less than half the length of the metatarsi. Length $2\frac{1}{2}$ millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

SCIARA (p. 1).

Sciara americana (p. 1).

To the localities given, add:—MEXICO, Xucumanatlan, Venta de Zopilote, Rincon, and Omilteme in Guerrero, Teapa in Tabasco, Orizaba (*H. H. Smith*), Santiago Iscuintla in Jalisco (*Schumann*).

Numerous specimens.

BIBIONIDÆ (p. 2).

PLECIA (p. 2).

Plecia plagiata (p. 2).

To the localities given, add:—MEXICO, Vera Cruz (*Schumann*), Teapa in Tabasco (*H. H. Smith*).

Three specimens.

1 (A). *Plecia nigerrima*.

Plecia nigerrima, Bellardi, Saggio etc. i. p. 14¹.

Hab. MEXICO (*Sallé*¹), Omilteme in Guerrero 8000 feet, Cuernavaca in Morelos, Mexico city, Teapa in Tabasco (*H. H. Smith*), Orizaba (*H. H. Smith & F. D. Godman*), Morelia in Mexico (*F. D. Godman*), Orizaba and Meztitlan (*Saussure*¹).

Seventeen specimens, agreeing fully with the short description. The anterior branch of the third vein is long and very oblique, being fully as long as the first section of the third vein. The anal cell is closed. *P. nigerrima* was unknown to Osten Sacken, who placed it in his list of unidentified Mexican Bibionidæ (*anteà*, p. 5).

Plecia ruficollis (p. 3).

To the localities given, add:—MEXICO, Atoyac in Vera Cruz, Venta de Zopilote in Guerrero, Teapa in Tabasco (*H. H. Smith*).

Four specimens.

4. *Plecia collaris*.

Hirtea collaris, Fabr. Syst. Antl. p. 54¹.

Plecia collaris, Wiedem. Dipt. Exot. i. p. 32²; Aussereur. zweifl. Ins. i. p. 74³; Schiner, Reise der Novara, Dipt. 21⁴.

Plecia bicolor, Bellardi, Saggio etc. i. p. 16⁵; O. Sack. anteà, p. 3⁶.

Hab. MEXICO^{5 6}, Cordova and Orizaba (*Saussure*⁴), Teapa in Tabasco (*H. H. Smith*).—SOUTH AMERICA^{1 2 3 4}.

Four specimens from Teapa agree well with Wiedemann's brief description, save that the stem of the halteres is not red. Ten other examples, from Teapa and Cuernavaca, differ in being smaller and in having the black of the mesonotum less extensive. Schiner⁴ says of the species: "In den Furchen schimmert die lichter Behaarung weisslich," nothing of which is apparent in these specimens.

5. *Plecia quadrivittata*, sp. n.

♂. Black throughout. Head lightly grey-pollinose; face prolonged in front of the eyes about as far as the vertex projects backwards; eyes elongate oval, the ocellar tubercle prominent. Thorax and scutellum lightly dusted with greyish, opaque, the mesonotum with four shining black stripes, the lateral ones abbreviated in front, the narrowly separated median ones behind. Abdomen moderately shining. Wings uniformly brown; the anterior branch of the third vein is at an angle of about forty-five degrees, arising nearly opposite the end of the second vein and terminating in the costa a little less than its own length from the tip of the second vein; penultimate section of the third vein a little longer than the length of the anterior cross-vein; furcation broad in the margin; anal cell wide open. Proboscis longer than the distance from the vertex to the lower end of the face. Length 6-7 millim.

♀. Larger; abdomen opaque brownish-black.

Hab. MEXICO, Rincon in Guerrero 2000 feet (*H. H. Smith*).

Six males and one female.

BIBIO (p. 3).

6. *Bibio dubius*.

Bibio dubius, Bellardi, Saggio etc. i. p. 18¹.

Hab. MEXICO¹, Jalisco (*Schumann*).

Four specimens, apparently belonging to the same species, though three of them have the posterior coxæ blackish, the tibiæ reddish, &c. These examples agree with the one from Costa Rica mentioned by Osten Sacken (*anteà*, p. 3, under sp. no. 1) in not having the stigma darker. *B. dubius* was placed by him amongst the unidentified Mexican Bibionidæ (*anteà*, p. 5).

7. *Bibio* — ?

♂. Deep shining black; femora for the most part red, the remainder of the legs chiefly pitchy or reddish-brown. Eyes hairy. Mesonotum with rather abundant dusky white pile. Abdomen whitish pilose. Wings brown; stigma distinct; second posterior cell sessile. Length 8 millim.

Hab. MEXICO, Mexico city, Jalisco, Atoyac (*Schumann*).

Three specimens. Four others, from Chilpancingo and Mexico city, have the wings very much lighter-coloured, only lightly tinged with brownish; they doubtless belong to the same species.

DILOPHUS (p. 4).

Dilophus melanarius (p. 4).

To the localities given, add:—MEXICO, Orizaba (*H. H. Smith & F. D. Godman*), Fortin and Atoyac in Vera Cruz, Amula and Rincon in Guerrero, Cuernavaca in Morelos (*H. H. Smith*), Mexico city (*F. D. Godman*), Jalisco (*Schumann*).

Twelve specimens, agreeing well with the description.

3. *Dilophus minutus*.

Dilophus minutus, Bellardi, Saggio etc., App. p. 7¹.

Hab. MEXICO, Orizaba (*H. H. Smith & F. D. Godman*), Tuxpango (*Sumichrast*¹).

Three specimens. The anal cell in this species is very distinctly closed at some distance from the margin of the wing. I suspect that *D. minutus* is identical with *D. stigmaterus*, Say. This and the following species were placed by Osten Sacken in his list of the unidentified Mexican Bibionidæ (*anteà*, p. 5).

4. *Dilophus orbatus*.

Bibio orbatus, Say, Journ. Acad. Phil. iii. p. 77¹.

Dilophus orbatus, Wiedem. Aussereur. zweifl. Ins. i. p. 77²; Bellardi, Saggio etc. i. p. 19³.

Hab. NORTH AMERICA, Pennsylvania¹.—MEXICO (*Truqui, Sallé*¹⁻³), Orizaba (*Saussure*³, *H. H. Smith, & F. D. Godman*), Santiago Iscuintla in Jalisco (*Schumann*), Mexico city (*Schumann, F. D. Godman*), Chilpancingo in Guerrero (*H. H. Smith*).

One female and eleven males. The female agrees well with the descriptions. I have not compared it with specimens from the United States. The males are somewhat smaller and have the wings whitish, without stigma.

SIMULIIDÆ (p. 5).

SIMULIUM (p. 5).

Osten Sacken (*anteà*, p. 5) enumerated three species of this genus as described from Mexico, all of which were unknown to him and therefore not numbered. The following has since come to hand:—

1. *Simulium argus*.

Simulium argus, Willist. North-Amer. Fauna, vi. p. 253¹.

Hab. NORTH AMERICA, California, Argus Mountains¹. — MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

A single male specimen. Whether the silvery markings on the abdomen are just as they are described I cannot say, as this portion of the body is injured in the Mexican insect. The mesonotum is velvety-black, with a silvery-pollinose spot on each side in front, and sparse golden pubescence.

CULICIDÆ (p. 5).

MEGARRHINA (p. 6).

2. *Megarrhina hæmorrhoidalis*.

Culex hæmorrhoidalis (Fabr.), Wiedem. Aussereur. zweifl. Ins. i. p. 2¹.

Megarrhina hæmorrhoidalis, O. Sack. Cat. Dipt. 1878, p. 18².

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).—GUIANA, Cayenne¹; CUBA².

Three males from Atoyac belong, in all probability, to this species, distinguishable by the entirely black tarsi and the brilliant red hairs at the end of the abdomen. The hairs are confined to the tip of the sixth and the sides of the seventh segments, and do not occur on the fifth segment, as Wiedemann stated. The femora are, for the most part, yellow.

3. *Megarrhina grandiosa*, sp. n.

♀. Antennæ brown. Proboscis black. Palpi black, covered with black and violet tomentum. Face somewhat reddish. Occiput black above, and covered with green and yellow tomentum. Thorax deep red, the ground-colour of the mesonotum mostly concealed beneath a metallic-green tomentum, that of the pleuræ more silvery or yellowish-white. Abdomen brown or yellowish-brown, the dorsum concealed beneath green tomentum, like that of the mesonotum. Legs yellow; dorsal surface of the femora blackish, with green and violet tomentum; base and extreme tip of the hind tibiæ brown, the remaining portion with yellow hair; dorsal surface of the front tibiæ blackish, with violet tomentum; front metatarsi, except the tip, blackish, the remainder of the front tarsi light yellow; hind tarsi blackish, the tip of the third joint, and the fourth and fifth wholly, nearly white; inner side of the hind metatarsi yellow. Wings tinged with yellowish, the scales dark brown. Length 10 millim., inclusive of proboscis 18–20 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

One specimen. Distinguishable from *M. rutila*, Coq., by the colour of the legs.

CHIRONOMIDÆ (p. 6).

CERATOPOGON.

Ceratopogon, Meigen, in Illiger's Magaz. f. Ins. ii. p. 261 (1803).

1. *Ceratopogon pachymerus*, sp. n.

♀. Head reddish-yellow; eyes not contiguous above. First two joints of the antennæ red; flagellum yellow, the distal joints somewhat infuscate. Thorax robust; mesonotum brownish-red, opaque, somewhat

brownish near the humeri. Pleuræ brownish. Scutellum yellowish-red, shining, blackish at the base. Abdomen subcylindrical; light yellow, the first segment black, the tip brownish. Legs yellow; femora in part, and the four posterior tibiæ at the base and extreme tip, brown or brownish; hind femora thickened; metatarsi as long as the following joints together; claws strong. Wings whitish; the first vein terminates near the middle of the wing, the third is much prolonged, distinctly separated throughout from the first vein, the intervening cell of nearly equal width in its whole extent; the furcation of the fourth vein occurs a little before the cross-vein. Length $3\frac{3}{4}$ millim.

Hab. MEXICO, Medellin near Vera Cruz (*H. H. Smith*).

One specimen. The species belongs in Winnertz's second division of the genus. The claws are simple, and the femora are unarmed.

HETEROMYIA.

Heteromyia, Say, Amer. Ent. ii. t. 35 (1825); Compl. Wr. i. p. 79, t. 35.

1. *Heteromyia clavata*, sp. n.

♀. Head and basal joints of the antennæ red; distal antennal joints blackish. Palpi slender, brown. Thorax obscurely ochraceous-yellow, the pleuræ in part brown; wholly opaque. Abdomen spatulate, yellowish and brownish. Legs yellow; middle and hind tibiæ with two brown rings before the tip; joints of the middle and hind tarsi narrowly brown at the tip; front femora with a brown spot near the end. Front femora much thickened and with short spines below on the inner side; front tibiæ terminating in a stout spine or spur; middle and hind femora clubbed at the extremity; hind tarsi extraordinarily elongated, longer than the whole body; the single claw of the hind feet is very long and stout. Wings hyaline, with a large irregular brownish spot in the middle, and a small spot of the same colour in the axillary cell, near the last vein; the furcation of the fourth vein occurs before the origin of the third vein. Length 4-5 millim.

Hab. MEXICO, Vera Cruz (*H. H. Smith*).

A single specimen. Structurally, this species must be very much like the type of the genus, and I hesitated at first in treating it as distinct from the variety mentioned by Say as having the "thorax entirely testaceous." The markings of the wings, however, are very different, and the four posterior "thighs" are considerably dilated at the tip.

TIPULIDÆ (p. 6).

TEUCHOLABIS (p. 6).

3. *Teucholabis annulata*.

Teucholabis annulata, Willist. Trans. Ent. Soc. Lond. 1896, p. 290, t. 10. f. 63¹.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).—ANTILLES, St. Vincent¹.

A single specimen, agreeing well with the description and figure*. The species is related to *T. molesta*, O. Sack. The sides of the occiput are yellow.

* In the fourth line of the description for "broad" read "black."

4. *Teucholabis chalybeiventris*.

? *Rhamphidia chalybeiventris*, Loew, Wien. ent. Zeit. v. p. 33¹.

Hab. MEXICO, Cuernavaca in Morelos (*H. H. Smith*).—ANTILLES, Cuba¹.

A single specimen, doubtfully belonging to this species. The wings are not hyaline, but are distinctly tinged with brown, and there are no cupreous reflections anywhere on the thorax, which is wholly light honey-yellow in colour; the abdomen is blackish-brown, but without steel-blue reflections. The wings agree closely with those of *T. complexa*.

RHIPIDIA.

Rhipidia, Meigen, Syst. Besch. i. p. 153 (122) (1818).

1. *Rhipidia subpectinata*.

Rhipidia subpectinata, Willist. Trans. Ent. Soc. Lond. 1896, p. 287, t. 9. f. 57, t. 10. f. 57 a¹.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).—ANTILLES, St. Vincent¹.

One male. It has the wings distinctly infuscated, but otherwise agrees with the description.

GNOPHOMYIA.

Gnophomyia, Osten Sacken, Proc. Acad. Phil. 1859, p. 223.

1. *Gnophomyia ferruginea*, sp. n.

♀. Dark ferruginous, the venter, coxæ, and legs yellow, the tarsi infuscated, the occiput and front opaque greyish on a black background. Antennæ somewhat brownish, the basal joints yellow. Wings uniformly and lightly tinged with brownish; neuration as in *G. tristissima*, as figured by Osten Sacken (Monogr. iv. t. 2. fig. 5), except that the anterior cross-vein is situated a little more proximally. Length 6 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

One specimen.

ERIOCERA (p. 10).

8. *Eriocera fasciata*, sp. n. (Tab. IV. fig. 4, ♂.)

♂ ♀. Head black or deep brown; frontal tubercle prominent. Antennæ brown, short in the female. Mesonotum reddish-yellow, but covered with light yellow dust; a short black stripe on each side. Scutellum opaque light yellow, the lateral angles brownish or blackish. Pleuræ black on the upper part, brownish or reddish-yellow below; halteres nearly black. Abdomen light yellow and black; the first four segments with a narrow posterior black band; remaining segments black, except the anterior portion in the male and the antero-lateral parts in the female; hypopygium and oviduct reddish-yellow. Legs black; base of front femora yellow; all the tibiæ in large part yellowish. Wings light yellowish-brown, nearly uniform; tip of auxiliary vein nearly opposite the proximal end of the first submarginal cell; four posterior cells present. Length 16–20 millim.

Hab. MEXICO, Cuernavaca in Morelos (*H. H. Smith*).

Two males and three females. A female specimen of a closely related species, from Amula, has the head browner, the mesonotum more golden-yellow, with the black stripes nearly obsolete, the first four abdominal segments with only a trace of the posterior black bands, and the wings uniformly pale brownish.

9. **Eriocera obsoleta**, sp. n.

♀. Upper part of head reddish-yellow, the strong frontal tubercle divided by a median furrow. Antennæ and palpi brown, the former about as long as the mesonotum. Mesonotum and scutellum reddish-yellow throughout. Pleuræ reddish-brown. Abdomen slender, yellow; second, third, and fourth segments blackish on the posterior and postero-lateral margins; remainder of abdomen dark brown, the fifth and sixth segments more or less yellow in the middle. Wings tinged with brownish, darker in the immediate contiguity of the veins; tip of auxiliary vein opposite the base of the second posterior cell, and more distal than the proximal end of the first submarginal cell; four posterior cells present. Hind legs brown the tibiæ largely luteous. Length 18 millim.

Hab. HONDURAS, Ruatan I. (*Gaumer*).

10. **Eriocera flavida**, sp. n.

♀. Head black, greyish-pruinose; frontal tubercle small. Palpi black. Scape of antennæ brown; flagellum light yellow. Thorax light orange-yellow, the scutellum and metanotum more purely yellow. Pleuræ near the noto-pleural suture brown. Abdomen of the same colour as the thorax; third segment with a small, fourth, fifth, and sixth segments each with a successively larger, and the seventh segment with a smaller, brown spot. Legs yellowish-brown; distal part of femora and proximal part of tibiæ yellow. Wings brownish, lighter-coloured in the interior of the cells; the auxiliary vein terminates a little before the proximal end of the first submarginal cell; four posterior cells present. Length 22 millim.

Hab. MEXICO, Cuernavaca in Morelos (*H. H. Smith*).

One specimen.

11. **Eriocera brunneipes**, sp. n. (Tab. IV. fig. 5, ♂.)

♂. Head black; frontal tubercle prominent; antennæ black. Mesonotum and scutellum yellow, the former with a large black spot above each wing, leaving a narrow stripe in the middle. Pleuræ brown along the noto-pleural suture, yellow below; coxæ black. Halteres, except the root, nearly black. First four segments and the hypopygium of the abdomen yellow; the remainder black. Legs deep brown, the tibiæ slightly yellowish. Wings of a uniform yellowish-brown tinge; the auxiliary vein terminates beyond the base of the first submarginal cell and nearly opposite the anterior cross-vein; four posterior cells present. Length about 15 millim.; of the wings 13 millim.

Hab. MEXICO, Orizaba (*H. H. Smith & F. D. Godman*).

One specimen.

TIPULA (p. 13).

Tipula monilifera (p. 13).

To the localities given, add:—MEXICO, Teapa in Tabasco (*H. H. Smith*).

The single specimen received from Mexico has hyaline spots in the distal part of the wing, as in the examples noted by Osten Sacken.

Tipula craverii (?) (p. 15).

To the localities given, add:—MEXICO, Patzcuaro (*F. D. Godman*), Cuernavaca in Morelos (*H. H. Smith*).

Two specimens, one of which is larger than the other. The femora are not annulate. These Mexican examples evidently belong to the same form as that mentioned by O. Sacken, if not to that of Bellardi.

7. *Tipula virgulata*, sp. n.

♂. Head reddish-yellow, the upper part of the nasus and the occiput darker, and all greyish-pollinose. First two joints of the antennæ yellow, the remaining joints black, the fourth and following joints binodose the distal node longer than the proximal. Mesonotum densely whitish-grey-pollinose; post-alar callosities yellow; pleuræ yellowish, and all pollinose; scutellum yellow. Abdomen yellow, opaque, a slender median stripe and the lateral margins black or blackish; the black is more pronounced posteriorly. Hypopygium for the most part light yellow. Legs brownish-red, the tarsi darker, the femora lighter-coloured. Wings greyish and brownish, with a nearly hyaline stripe filling most of the first two basal cells and the first posterior; the costal cell and narrow clouds bordering the second basal cell brown. Length 18–19 millim.

Hab. MEXICO, Amecameca in Morelos (*F. D. Godman*).

One specimen. This species is closely allied to *T. virgo*, O. S., but differs from it in the colour of the thorax, abdomen, wings, &c.

PACHYRRHINA (p. 15).

Pachyrrhina consularis (p. 17).

To the localities given, add:—MEXICO, Teapa in Tabasco (*H. H. Smith*).

A single female specimen from Teapa agrees perfectly with Osten Sacken's description. A female from Rincon, Guerrero (*H. H. Smith*), has the spots of the vertex a little smaller, the median stripe of the thorax largely yellowish posteriorly, and the black of the abdomen confined to a narrow posterior band on the first, second, third, and fourth segments.

Pachyrrhina ferruginea (p. 18).

To the localities given, add:—MEXICO, Cuernavaca in Morelos, Omilteme in Guerrero (*H. H. Smith*), Orizaba (*H. H. Smith & F. D. Godman*).

Some of the Mexican specimens agree well with Macquart's description of *P. quadrilineata*. This species seems to be very variable.

6. *Pachyrrhina* —?

♂. Head yellow, a minute blackish spot on the vertex. Antennæ deep brown, the first three joints yellow. Mesonotum with shining black stripes, the lateral ones incurved and not opaque at the anterior end, the middle one divided by a yellow stripe. Pleuræ yellow, with reddish-yellow spots. Abdomen yellow, with a small brown or black spot on the posterior angle of each segment. Legs yellow; tip of femora and tibiæ, and the tarsi wholly, infuscated or blackish. Wings with a pale yellowish tinge; stigma lightly infuscated. Length 16–18 millim.

Hab. MEXICO, Orizaba in Guerrero (*H. H. Smith*).

A single male specimen. This species is hardly referable to *P. affinis*, Bell, because of the small frontal spot, the median thoracic stripe, and the markings of the abdomen and legs. A female from the same locality, and undoubtedly belonging to the male, has a series of quadrangular blackish spots on the abdomen. Two other males, from Omilteme, scarcely differ, save in the entire absence of the vertical black spot.

BRACHYPREMNA.

Brachypremna, Osten Sacken, Berl. ent. Zeitschr. xxx. p. 162 (1886).

1. *Brachypremna dispellens*.

Tipula dispellens, Walk. Trans. Ent. Soc. Lond. n. s. v. p. 333¹.

Brachypremna dispellens, O. Sack. Berl. ent. Zeitschr. xxx. p. 162².

Hab. NORTH AMERICA, District of Columbia², Texas².—MEXICO¹, Teapa and Frontera in Tabasco, Medellin in Vera Cruz (*H. H. Smith*).

Six specimens, agreeing with O. Sacken's description. The species is included in his list of unidentified Central-American Tipulidæ (p. 19).

2. *Brachypremna similis*, sp. n.

♂. Very much like *B. dispellens*, but the legs are brown, with the knees light yellow, &c. Front brownish-yellow. Antennæ light yellow, the distal end and base of the first four flagellar joints black or brown. Rostrum brown, the upperside, save the nasus, yellow. Palpi yellow, the last joint brown. Median brown stripe of the mesonotum broad, separated by a linear yellow stripe in front, which broadens out and forks back of the suture, enclosing a brown spot in front of the scutellum, and then continues as two parallel stripes to the tip of the scutellum; separating the median stripes from the broad lateral stripes there is a narrow yellow stripe on each side, acute posteriorly; sides of the mesonotum in front, and the metanotum, light yellow, the latter with several small brown spots. Abdomen brown, the incisures somewhat yellowish; an indication of a median yellow stripe on the anterior segments. Legs dark brown, the terminal joints of the tarsi yellow; tip of femora and the immediate base of the tibiæ light creamy-yellow (the hind legs are wanting). Wings as in *B. dispellens*, the veins perhaps more infuscated and the tip browner. Length 16-17 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

One specimen.

RHYPHIDÆ (p. 20).

OLBIOGASTER (p. 20).

Olbiogaster —? (Tab. IV. fig. 6, ♂.)

♂. Face on the lower part shining black, convex; on the upper part, below the antennæ, whitish-pollinose. Palpi and proboscis yellow. Antennæ black, the first two joints yellow. Front and occiput black, rather thickly white-pollinose. Mesonotum deep shining black, with rather long, sparse, white hair; pleuræ shining black or pitchy-black, the upper part of the mesonotum white-pollinose. Abdomen flattened, ribbon-like, widened distally; deep black, moderately shining, with black hair; the posterior margin of each segment whitish and with white hair; lamellæ of hypopygium large, black. Legs yellow; the basal half of the four anterior femora, the hind femora wholly, the tip of the hind tibiæ, and the distal joints of all the tarsi, blackish or brown. Wings nearly hyaline; the distal half of the marginal cell, the subcostal before it, and a narrow cloud on the cross-veins, brown. Length 7-8 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

One specimen. I have compared it with a female of *O. cognatus*, O. Sack., from the Antilles, and find the structure almost identical throughout, save in the shape of the abdomen, which is as given for the male of *O. cognatus* by Osten Sacken. The antennæ

are a little stouter. I take our specimen to be a male, by reason of the large size of the abdominal lamellæ. I do not distinguish the two horny points between them, but instead there is a single elongate process. The black colour throughout, together with the absence of yellow bands on the abdomen, will distinguish our specimen from those of the male sex noticed by Osten Sacken. I believe that the Mexican species is different: otherwise the individual variation must be very great. I regret my inability to compare it with the description of *O. tæniatus*, Bell., which may apply to the same species.

STRATIOMYIDÆ (p. 22).

XYLOMYIA.

Subula, anteà, p. 22 (nomen præocc.).

Xylomyia, Rondani, Dipt. Ital. iv. p. 11 (1861).

2. *Xylomyia pallipes*.

Subula pallipes, Loew, Centur. iii. p. 9¹; Willist. Canad. Ent. 1885, p. 122².

Hab. NORTH AMERICA, Connecticut², Illinois¹, Wisconsin¹, Southern California².— MEXICO, Chilpancingo in Guerrero, Teapa in Tabasco (*H. H. Smith*), N. Yucatan (*Gaumer*).

Five specimens. The first two joints of the antennæ and the base of the third are yellowish-red.

BERISMYIA.

Berismyia, Giglio-Tos, Boll. Mus. Zool. ed Anat. Comp. Univ. Torino, vi. no. 108, p. 2 (1891); Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 102 (1892).

1. *Berismyia nigrofemorata*, sp. n. (Tab. IV. fig. 7, ♂.)

♂. Eyes with abundant, long, brown or blackish pile, closely contiguous for a long distance; frontal triangle and face shining black, the former with whitish dust on the sides, the latter dusted throughout, though less densely so in the middle, and with longer black pile. Antennæ black, the thickened basal annulus of the third joint reddish-yellow; third joint fully twice the length of the first two joints together, the latter of equal length. The three-jointed palpi longer than in *Beris*, black; proboscis brown. Thorax bluish-black, but little shining, with whitish pile along the lateral margins. Abdomen bluish-black, shining. Legs black, the trochanters, knees, middle and hind metatarsi, and the larger part of the second joint of the hind tarsi, light yellow. Wings brownish, a little darker anteriorly; stigma brown.

♀. Pilosity of the eyes abundant, but shorter than in the male. Front of equal width on the upper two-thirds; shining black, with black pile. Pile of the mesonotum shorter and yellow. Length 5–6 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Two specimens. This species seems to agree very well in structure with *B. fusca*, Giglio-Tos (as figured), but may be readily distinguished by the black femora. The antennæ are distinctly shorter and less slender, scarcely exceeding the length of the head at its lower part. The genus is a valid one.

SARGUS (p. 23).

1. *Sargus* — ?

Sargus —?, Osten Sacken, antea, p. 23¹.

Sargus lucens, Giglio-Tos, Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 103² (nec Loew).

To the locality given, add:—MEXICO (*Sallé*^{1 2}), Orizaba, Cuernavaca in Morelos, Atoyac in Vera Cruz, Dos Arroyos in Guerrero (*H. H. Smith*), N. Yucatan (*Gaumer*).

I do not doubt that the Mexican specimens before me belong to the species mentioned by Osten Sacken, in which Giglio-Tos thought that he recognized *S. lucens*, Loew, described from Cuba. I have, however, seen a specimen of *S. lucens* from the Antilles, and find the two to be quite distinct, the first-mentioned not having a white spot on the sides of the mesonotum.

Among the males there is a marked difference in the shape of the abdomen: in some it is very slender toward the base, and widened, spatulate distally; in others there is only a gradual widening from the base to near the tip. In the specimen from Northern Yucatan, for instance, the second segment is nearly as long as broad, while in a small male from Atoyac the second segment is cylindrical, and fully four times as long as broad: in the former the abdomen is almost wholly without the metallic green colour, but I can distinguish no other differences. Two males from Cuernavaca are almost intermediate between the above-mentioned males, the second segment being about twice as long as broad. Two other males, from Dos Arroyos, are of medium slenderness, but are of much larger size, and have the hind femora and tibiæ black in the middle. Two females from Cuernavaca are of the size of the largest males; they have the abdomen brilliant purple and blue, and only a little narrowed basally, and the hind femora, except the base and tip, the distal portion of the hind tibiæ, and the distal joints of the hind tarsi, black. These specimens all agree in having the wings lightly brownish, occasionally hyaline, and none of them have any yellow on the abdomen. Moreover, there is a white spot on the sides of the mesonotum that is wanting in the true *S. lucens*. *S. tenuiventris*, Bigot, seems to be very like some of our examples, except for the white spots on the abdomen. Macquart's and (especially) Rondani's descriptions of *S. speciosus* agree very well, except as regards the hind tarsi. The thorax is green in the males, deep blue in the females.

3. *Sargus coarctatus*.

Sargus coarctatus, Macq. Dipt. Exot. i. 1, p. 203, t. 25. f. 2¹; Walk. List &c. v. p. 92²; Willist.

Trans. Am. Ent. Soc. xv. p. 249³; Giglio-Tos, Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 122⁴.

? *Sargus notatus*, Wiedem. Aussereur. zweifl. Ins. ii. p. 34⁵.

Hab. MEXICO (*Sumichrast*⁴), Amula and Teapa (*H. H. Smith*).—BRAZIL^{1 5}, Chapada³; ? CHILI¹.

Two specimens from Mexico agree with those mentioned by me from Brazil³. I have scarcely a doubt that the name *S. coarctatus* is a synonym of *S. notatus*.

4. *Sargus cæsius*.

Sargus cæsius, Bellardi, Saggio etc. i. p. 40, t. 1. fig. 18 (♀)¹.

Sargus filiformis, Giglio-Tos, Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 28 (♂)².

Hab. MEXICO, Omilteme, Xucumanatlan, and Sierra de las Aguas Escondidas in Guerrero 7000 to 9000 feet (*H. H. Smith*), Anganguero (*Saussure*¹).

Two males and fifteen females. This species, placed by Osten Sacken (*anteà*, p. 41) amongst the unidentified Central-American Stratiomyidæ, may perhaps belong to the genus *Sargus*, but the sole character which I understand as characteristic of it—the inequidistant position of the ocelli—is very feebly marked, especially in the female. Giglio-Tos described the male. The females differ so greatly that it was only after careful scrutiny that I felt satisfied of their identity. I give therefore a full description of both sexes:—

- ♂. Head shining black, with two elongate, tear-shaped, subcontiguous, white spots on the upper part of the frontal triangle; pile yellowish and blackish. Eyes almost contiguous immediately above the white spots. Antennæ black, the third joint sometimes in part brown. Proboscis yellow. Mesonotum shining resplendent green, with short reddish-yellow pile; post-alar callosities red: a slender stripe along the dorso-pleural suture, the two nearly connected across the pronotum, yellowish-white. Pleuræ shining blue-black. Scutellum shining green, with a broad red margin. Metanotum shining green, the sides with red spots. Abdomen slender and elongate, shining black, with the very small posterior angles to the segments yellow or yellowish. Legs luteous-yellow; the four distal joints of the front tarsi, three of the middle, and all of the hind pair brown or blackish; hind tibiæ and the distal portion of the hind femora brownish or brown. Wings lightly infuscated, the stigma narrow, elongate, and brown.
- ♀. Front and face of equal width, the white spots on the lower part of the former small, rounded, and distinctly separated. Mesonotum yellowish-red, with a broad median stripe shining black, with purple and blue reflections; in some specimens the mesonotum is better described as having the margins broadly yellowish-red. Pleuræ wholly reddish-yellow, save a small black spot above the front coxæ; pectus black. Metanotum blue-black, on the lower part at least. Abdomen flattened, elongate, pointed posteriorly; shining blue, with purple reflections, the lateral margins narrowly yellow or yellowish. Hind femora without the brownish colour distally and the hind tibiæ with a distinct, median, yellowish ring. Length 9–14 millim.

ACROCHÆTA.

Acrochæta, Wiedemann, Aussereur. zweifl. Ins. ii. p. 42 (1830).

1. *Acrochæta fasciata*.

Acrochæta fasciata, Wiedem. Aussereur. zweifl. Ins. ii. p. 42¹; Macq. Hist. Nat. Dipt., Suites à Buffon, i. p. 260²; Walk. List &c. v. p. 68³; Loew, Verh. zool.-bot. Ges. Wien, 1855, p. 147⁴; Giglio-Tos, Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 112, t. 1. ff. 6, 6 a, b⁵.

Hab. MEXICO⁵, Orizaba⁵, Teapa (*H. H. Smith*).—BRAZIL¹.

A single specimen from Teapa, agreeing with the descriptions.

CHRYSOCHROMA.

Chrysonotus, Loew, Verh. zool.-bot. Ges. Wien, 1855, p. 146 (nomen præocc.).

Chrysochroma, Williston, Manual North-American Dipt. p. 47 (1896).

The genus *Chrysonotus* was separated from *Sargus* by Loew to include species in which the ocelli are equidistant, the colouring metallic, the hind femora not thickened, and the arista not thickened at the base. In *Merosargus* he placed lighter-coloured forms, with the hind femora thickened and the arista thickened on its proximal portion. These characters united are not tenable when applied to the American species. I have in the following pages placed the metallic forms with this genus and the non-metallic species with *Merosargus*. In all of them the eyes of the males are separated. *Merosargus* also closely approaches *Ptecticus*, though it is sometimes difficult to say whether the second antennal joint is prolonged on the inside or not. I thought at one time that the position of the point of origin of the second vein would serve to distinguish *Merosargus* from *Chrysochroma*, but I have not as much faith now in the character as formerly.

1. *Chrysochroma pulchrum*, sp. n.

♀. Front yellow in the middle, on the sides grooved and black; on the lower portion light yellow, moderately elevated and nearly square in shape. First joint of the antennæ black, second and third reddish-yellow; arista moderately thickened at the base. Face and proboscis light yellow, the oral margin very narrowly in front and the narrow cheeks black. Mesonotum finely scrobiculate, moderately shining, deep blue, with violaceous reflections; pile golden-yellow, short. Scutellum coloured and sculptured like the mesonotum. Pleuræ deep blue, with white pubescence; a spot below the dorso-pleural suture shining metallic green or blue. Abdomen deep indigo-blue, not shining, with slight violaceous reflections; the posterior part of the third segment, the larger part of the fourth segment, and the whole of the fifth segment covered with golden-yellow pile. Legs light yellow, including the front coxæ; distal half or more of all the femora and the two distal joints of each tarsus black. Wings lightly infuscated; the furcation of the second and third veins takes place a little beyond the junction of the anterior cross-vein. Length 6-9 millim.

Hab. MEXICO, Chilpancingo and Amula in Guerrero (*H. H. Smith*).

Two specimens.

2. *Chrysochroma flavopilosum*.

Chrysonotus flavopilosus, Bigot, Ann. Soc. Ent. Fr. 1879, p. 227¹.

Hab. MEXICO¹, Amula, Chilpancingo, Xucumanatlan, and Omilteme in Guerrero, Cuernavaca in Morelos (*H. H. Smith*), Tepic (*Schumann*).

Two females and thirteen males. I was first inclined to identify this species, not recognized by Osten Sacken (*antea*, p. 42), with *Chrysonotus æneiventris*, Giglio-Tos, and I am not sure but that the latter name is a synonym. The material is such as to warrant a full description of the species:—

♂. Front narrow, about as wide as the length of the second and third joints of the antennæ together; shining green, on the lower part white. Antennæ red, the first two joints brown. Face shining black, with long

black pile. Mesonotum bright shining green, with long and abundant yellow pile; a narrow line along the dorso-pleural suture white. Pleuræ shining black, with blue and green reflections. Abdomen shining bronze, with violaceous reflections, clothed with pile like that of the mesonotum, the posterior segments with black pile in the middle. Legs light yellow, the distal portion of the hind femora in all the specimens, and the distal part of the hind tibiæ in some, black; distal joints of the tarsi usually brownish. Wings nearly hyaline.

- ♀. Front and face of equal width, the former with two shallow longitudinal grooves. Mesonotum with strong violet reflections, the pile shorter and more or less whitish. Abdomen shining brassy, or brassy with violaceous reflections, clothed with shorter white and black pile. Front and middle femora more or less blackish at the distal extremity. Length 9–11 millim.

3. *Chrysochroma latifrons*, sp. n.

- ♀. Front and posterior orbits bright shining green, the former, from the ocelli to the narrow, narrowly interrupted transverse white band below, as broad as long. Antennæ reddish-yellow, blackish at the tip; first joint very short. Face shining green, in the middle as long as the antennæ. Thorax bright metallic-green, with a slender noto-pleural white stripe. Abdomen violaceous; first four segments each with the posterior angles yellow, the yellow coloration extending across the posterior margin of the second segment. Legs light yellow, the basal portion of the hind femora and the distal joints of the hind tarsi black. Wings nearly hyaline; the furcation of the second and third veins takes place a considerable distance beyond the anterior cross-vein. Length 4 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

One specimen. I am inclined to think that this species should be referred to the genus *Microchrysa*. The abdomen is, however, moderately elongate and the eyes bare. It may be distinguished from *M. nova*, Giglio-Tos, by the yellow bands of the abdomen and the yellow anterior tarsi.

MEROSARGUS.

Merosargus, Loew, Verh. zool.-bot. Ges. Wien, v. p. 144 (1855).

1. *Merosargus stamineus*.

? *Scæva staminea*, Fabr. Syst. Antl. p. 253¹.

Sargus stamineus, Wiedem. Aussereur. zweifl. Ins. ii. p. 39²; Walk. List &c. iii. p. 517³, v. p. 92⁴; Bellardi, Saggio etc. i. p. 44⁵.

Merosargus cingulatus, Schiner, Reise der Novara, Dipt. p. 62⁶; Giglio-Tos, Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 114⁷.

Hab. MEXICO (*Sallé*^{5 7}), Orizaba (*Sumichrast*⁷), San Lorenzo near Cordova (*M. Trujillo*), Xucumanatlan in Guerrero, Teapa in Tabasco (*H. H. Smith*), N. Yucatan (*Gaumer*).—
SOUTH AMERICA^{1 2 6}.

Five specimens. This is certainly the species described by Bellardi⁵ under the name of *S. (?) stamineus*, and I have no doubt as to its identity with Wiedemann's insect. Schiner's description, notwithstanding the darker wings, in all probability applies to it. Fabricius's brief description¹ of *Scæva staminea* seems to indicate another species.

M. stamineus was placed by Osten Sacken amongst the unidentified Stratiomyidæ (*antèa*, p. 41).

2. *Merosargus spatulatus*, sp. n.

♂ ♀. Front and face of equal width throughout, shining blue-black, with a longitudinal groove on each side, the lower portion light yellow: in the male the width equals that of the ocellar tubercle, the yellow portion being a little longer than broad; in the female the width is about twice that of the male, and the yellow portion is nearly square. Antennæ, face, and proboscis light yellow, the pile of the same colour. Thorax light yellow; mesonotum broadly black, as though formed by three confluent stripes, the lateral ones of which are abbreviated in front; scutellum black, with the margin yellow; the black of both mesonotum and scutellum is obscured by light golden pile. Metanotum shining black; an elongated black spot on each side of the pectus. Abdomen slender for the first three segments, in the male nearly cylindrical, in the female increasing more gradually in width; distal portion spatulate; shining black, with the broader posterior and narrow anterior margin light yellow, the hind margin of the fifth segment yellow; hypopygium, and the venter in great part, light yellow. Legs light yellow, the hind coxæ in great part, the hind femora, except the base and tip, and the two distal joints of all the tarsi, black or blackish; middle tibiæ in great part, the central portion of the front tibiæ, and also the immediate tip of the third joint of all the tarsi, brown or brownish. Wings with a yellowish tinge; the furcation of the second and third veins takes place nearly opposite the middle of the discal cell. Length 9-10 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Seventeen specimens, including four females. I place this species in the genus *Merosargus*, because of its great resemblance to others which seem properly to belong there. I must confess, however, that I do not know how to distinguish it from *Chrysochroma*. From *M. orizabæ*, Giglio-Tos, to which the present species seems allied, *M. spatulatus* may be at once distinguished, *inter alia*, by the white second and third tarsal joints. From *M. cercaceus* it will be best separated by the colour of the mesonotum and the length of the first antennal joint, which is shorter than the second and third together.

3. *Merosargus bulbifrons*, sp. n. (Tab. IV. figg. 8, 8a, ♀.)

♀. Front broad, its width equal to one-half the distance between the ocelli and the root of the antennæ, strongly convex transversely and prominent in profile above the ocular margins; shining reddish-yellow, bare; on the lower part yellower and with a small tubercular white spot near each eye-margin. Antennæ reddish-yellow, the first joint yellower and about equal in length to that of the other two joints together. Face yellow. Proboscis reddish-yellow. Thorax light yellow, the mesonotum and dorsum of scutellum light reddish or brownish-yellow. Abdomen brownish or reddish-yellow, apparently somewhat blackish in the middle of the posterior segments; gradually increasing in width from the base of the second segment to the fourth segment, where it is fully three times wider. Legs reddish-yellow; all the tarsi brownish, becoming blackish distally, the metatarsi of the front pair lighter-coloured. Wings yellowish-hyaline; the furcation of the second and third veins takes place opposite the anterior cross-vein. Length 12 millim.

Hab. MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

One specimen. This species, in the peculiar conformation of the front, is evidently allied to *M. frontatus*, Schiner, but may be at once distinguished from it by the absence of black on the front, thorax, &c.

4. *Merosargus concinnatus*, sp. n. (Tab. IV. fig. 9, ♂.)

♂. Front and face of equal width, equal to more than one-third of the distance from the ocelli to the root of the antennæ, shining black or blue-black, lightly sulcate on the sides, the lower third light yellow.

Antennæ reddish-yellow, the first joint yellow, and about as long as the third. Face yellow, in the middle not so long as the first joint of the antennæ. Proboscis reddish-yellow. Mesonotum deep green, but little shining, covered with short light yellow pile; the sides broadly reddish-yellow. Scutellum green, with the margins reddish-yellow. Metanotum in the middle black. Abdomen cylindrical, gradually tapering from the base to the end of the fourth segment, where it is about twice as wide; first three segments yellow, with a broad median black band; fourth segment black, with the anterior and posterior margins yellow; fifth segment black. Legs light yellow; hind coxæ in great part black; hind femora black on the basal half, the four posterior tibiæ brownish at the base; the front and middle tarsi with the terminal joints brownish. Wings yellowish; the furcation of the second and third veins takes place opposite the anterior cross-vein. Length 11–12 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Four specimens.

PTECTICUS (p. 24).

Ptecticus figlinus (p. 24).

To the locality given, add:—MEXICO, Omilteme and Sierra de las Aguas Escondidas, both in Guerrero (*H. H. Smith*), Jalisco (*Schumann*).

The nine specimens received from Mexico vary from 9–15 millim. in length: Osten Sacken described a single male. I believe my identification is correct, but the species is so variable that only a detailed description will suffice to separate it from the following:—

- ♂. Head, except the occiput and small ocellar tubercle, wholly yellow. Front very narrow below, the eyes not quite contiguous; the projection below is prominent and smoothly convex. Projection of the second antennal joint rounded and obtuse; third joint truncate at the tip; arista distinctly thickened at its extreme base. Mesonotum brown or yellowish-brown, the coloration indistinctly separated into stripes by very narrow intervals. Pleuræ, and the front and middle coxæ, yellow, the metanotal prominence somewhat brownish. Abdomen yellow, with a broad black or brownish-black cross-band on the second, third, fourth, and fifth segments, that on the second occupying about half of the segment, that on the fifth leaving only a yellow band posteriorly; first segment sometimes with a brownish spot in the middle; sixth segment, when exposed, black, with a posterior yellow band. Hypopygium prominent, reddish-yellow; forceps long and slender. Legs yellow; the distal three joints of the front and middle tarsi black or blackish, the second joint more or less blackish; hind femora in part and the basal portion of the hind tibiæ, and sometimes that of the middle tibiæ, brown or brownish; all the femora, but especially the front and hind pairs, considerably swollen; hind tarsi stout. Wings with a brownish-yellow tinge; the furcation of the second and third veins takes place a little beyond the junction of the anterior cross-vein; last section of the third vein not more than three-fourths the length of the penultimate section.
- ♀. Front on the sides narrowly black, brown, or brownish, wider below; convexity less prominent, more flattened. Abdomen more spatulate in shape, increasing gradually in width to the end of the fourth segment, where it is about three times the width of the base. Femora distinctly thickened, but less so than in the male. The two-jointed palpi-like appendages of the ovipositor brown. Length 9–15 millim.

2. **Ptecticus testaceus.**

Sargus testaceus, Fabr. Syst. Antl. p. 257¹; Wiedem. Aussereur. zweifl. Ins. ii. p. 35²; Macq. Dipt. Exot. Suppl. i. p. 185³; Walk. List &c. iii. p. 517⁴, v. p. 94⁵; Rondani, Esame di varie Sp. etc. p. 43⁶; Bellardi, Saggio etc. p. 45⁷ (nec Fabr.).

Ptecticus testaceus, Loew, Verh. zool.-bot. Ges. Wien, v. p. 147 (12) (1855)⁸; Schiner, Reise der Novara, Dipt. p. 64⁹; V. d. Wulp, Tijdschr. voor Ent. xxiv. p. 156 (1884)¹⁰; E. Lynch, Catal. de los Dipteros etc. p. 17¹¹.

Hab. MEXICO, Tampico (*Saussure*⁷), San Blas in Jalisco (*Schumann*), Dos Arroyos and Tierra Colorada in Guerrero, Teapa in Tabasco (*H. H. Smith*), N. Yucatan (*Gaumer*), Merida in Yucatan⁷.—SOUTH AMERICA^{1 2}, Brazil^{5 6 9 10}, Chapada, Pernambuco¹⁰, Buenos Aires¹¹.

Ten specimens. Placed by Osten Sacken amongst the unidentified Stratiomyidæ (*antea*, p. 42).

3. *Ptecticus cyanifrons*.

Sargus testaceus, Macq. Dipt. Exot. i. 1, p. 203¹.

Sargus cyanifrons, Rondani, Esame di varie Sp. etc. p. 43².

Ptecticus testaceus, var. *cyanifrons*, Giglio-Tos, Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 118³.

Hab. MEXICO, Tampico (*Saussure*³), San Blas in Jalisco (*Schumann*), Orizaba (*Sumichrast*³), Teapa in Tabasco, Cuernavaca in Morelos (*H. H. Smith*), Merida in Yucatan³.—BRAZIL^{1 2}.

Three males and two females. The only perceptible difference between this and the foregoing species is in the colour of the front, blue-black in *P. cyanifrons* and yellow in *P. testaceus*. The colour of the tarsi, mentioned by Giglio-Tos, is variable.

4. *Ptecticus sackeni*.

Ptecticus sackenii, Willist. Canad. Ent. xvii. p. 124¹.

Hab. NORTH AMERICA, New York, Virginia, Florida¹ (*Coll. Univ. of Kansas*).—MEXICO, Tierra Colorada in Guerrero (*H. H. Smith*).

Four males and one female from Guerrero seem to agree with the specimens of this species in the collection of the University of Kansas. They are rather smaller than the types, and the stripes of the mesonotum are not so well marked. *P. sackeni* apparently differs from *P. cyanifrons* only in the white colour of the hind tarsal joints, and I am not sure whether it can really be considered as more than a variety.

5. *Ptecticus nitidipennis*.

Ptecticus nitidipennis, Loew, Verh. zool.-bot. Ges. Wien, 1855, p. 13¹.

Hab. MEXICO, Dos Arroyos in Guerrero (*H. H. Smith*).—VENEZUELA¹.

A single male specimen from Dos Arroyos is referred somewhat doubtfully to this species, inasmuch as the third antennal joint is distinctly truncate at the tip; otherwise, the description applies fairly well. Both the front and middle metatarsi are wholly yellow, and the hind femora are somewhat redder at the extremity. The second vein arises before the junction of the anterior cross-vein, and the ultimate section of the third vein is shorter than the penultimate section.

6. *Ptecticus maculatus*, sp. n.

♀. Front and face light yellow, the small ocellar spot black; the lower vesicular portion of the front a little lighter-coloured. Antennæ light yellow, the third joint reddish-yellow, truncate at the tip. Thorax yellow or greenish-yellow throughout, the mesonotum scarcely darker. Abdomen light yellow, the second, third, fourth, and fifth segments each with two narrow, transverse, black spots, narrowly separated. Legs yellow; hind tibiæ and tarsi and the four distal joints of the other tarsi (excepting the basal portion of the second joint) black. Wings yellowish-hyaline; the furcation of the second and third veins is at the junction of the anterior cross-vein; ultimate section of the third vein as long as the penultimate section. Length 14 millim.

Hab. MEXICO, N. Yucatan (*Gaumer*).

One specimen. Another female example, from Tierra Colorada in Guerrero (*H. H. Smith*), is only 10 millim. in length, and has the hind tibiæ yellow and the hind metatarsi reddish-brown; it agrees, however, so well in other respects (the mesonotum may be darker above) that I believe it belongs to the same species.

7. *Ptecticus concinnus*, sp. n.

♂ ♀. Very like *P. figlinus*, but the front of the female without the black on the sides; the black bands of the abdomen are narrower and do not reach the lateral margins, that of the second segment sometimes largely obsolete; the femora are less thickened; and the hind metatarsi are slender. The hind tarsi in the female specimens are brown and black throughout, the distal joints darker in colour; in the males the metatarsi are redder. The forceps of the male hypopygium are less slender and long, their length only about equalling the distance between them at the base, while in *P. figlinus* they are more curved and touch each other at the tip. The last section of the third vein is relatively shorter. Length 10-12 millim.

Hab. MEXICO, Amula, Omilteme, and Xucumanatlan, all in Guerrero, 6000 to 8000 feet (*H. H. Smith*).

Two males and four females.

ANALCOCERUS.

Analcocerus, Loew, Verh. zool.-bot. Ges. Wien, 1855, p. 10.

1. *Analcocerus hortulanus*, sp. n. (Tab. IV. fig. 10, ♀.)

♀. Antennæ elongate, distinctly greater in length than the width of the head; first two joints elongate, the second only a little shorter than the first; third joint slender, composed of six closely united annuli, all of which are of nearly equal length, a little longer than broad, the last one obtusely pointed and wholly without pile or terminal arista. Front from the ocelli to the root of the antennæ rather more than twice as long as wide; convex, the median transverse groove feebly marked, the antennæ not situated upon a prominence; yellow, with a transverse, black, diamond-shaped spot below, which is narrowly connected with the black upon which the ocelli are situated; the space behind the ocelli to the edge of the occiput, and that between the lateral grooves from the upper angles of the eyes, is black. Face, cheeks, and occiput black, the former with white pile; the moderately broad occipital orbits light yellow. Mesonotum black, shining, punctulate; in the middle with two narrow yellow stripes, turned outward in front to connect with the yellow humeri; on the sides in front of the suture a triangular yellow spot, and another of about the same size situated on and before the post-alar callosities; the prominent prothorax with a yellow spot above. Scutellum greenish-yellow, with two rather stout black spines. Pleuræ black, with yellow spots. Metanotum black. Abdomen nearly opaque black, with the narrow lateral margins, and a

narrow posterior band on each segment, narrowly interrupted or subinterrupted, yellow; in addition, there is a transverse yellow spot on the anterior part of the first segment. Legs brownish or reddish-yellow; the front and middle tarsi browner, the hind tarsi yellow; hind metatarsi at the distal end with a prominence below. Wings nearly hyaline, expanded distally as in *Rhaphiocera*; the second vein forks before the anterior cross-vein. Length 7 millim.

Hab. MEXICO, N. Yucatan (*Gaumer*).

Two specimens. This species bears a strong resemblance to *Rhaphiocera* (*Hoplites*) *hortulanus*, Macq., as well as to *Campeprosopa longicornis*, described below. It has, furthermore, the *Rhaphiocera*-like expansion of the wing mentioned by Loew in his definition of the genus, and, curiously enough, there is a swelling on the underside of the distal portion of the hind metatarsi, similar to that described by Osten Sacken in *R. pampinus* (*anteà*, p. 26).

CAMPEPROSOPA.

Campeprosopa, Macquart, Dipt. Exot., Suppl. iii. p. 46 (1850).

The type of this genus is from Java, while an additional species has been described from Sumatra by Osten Sacken. According to Brauer, *Campeprosopa* has eight closely united annuli in the third antennal joint, terminating in a minute style. The Mexican insect here referred to it has but seven joints and no style whatever, apart from the thickened terminal joint, which may in itself represent the style. Brauer is inclined to place the genus among the Hermetiinae, rather than the Sarginae, on account of the variability of the neuration. Both *Analcocerus* and *Campeprosopa*, as here understood, clearly belong to the Sarginae, notwithstanding the entire absence of the arista.

1. *Campeprosopa longicornis*, sp. n. (Tab. IV. fig. 11, ♀.)

♀. Antennae arising from a conical protuberance, which is situated near the middle of the head (when viewed in profile), black, with black hair; first joint more than twice the length of the second; third joint much elongated, its length greater than the width of the head, composed of seven closely united annuli, the first four annuli nearly square, fifth and sixth distinctly narrower and longer; beginning with the third, the joints are flattened and grooved on the underside, in the seventh forming a spout-like body with everted margins; seventh annulus style-like, though nearly as thick as the preceding, in length equal to more than half of the entire third joint, not hairy, ending in a blunt point, wholly without terminal bristle. Front nearly as in *Rhaphiocera armata*, save that the lower part is more prominent; shining black, below the transverse groove with two subconfluent yellow spots, below which the space at the root of the antennae is deep brown; above the groove, near the middle, there are two small yellow spots; the black extends from the ocelli between the oblique grooves to the occiput; on the outer side of the grooves the broad posterior orbits are light yellow, save for a small dark brown spot. Face much receding, dark brown, with two partially confluent spots near the root of the antennae; cheeks black. Mesonotum finely punctulate, opaque black, with two yellow stripes turning out at the humeri to connect with the broader yellow lateral margins in front of the root of the wing; from the green post-alar callus a small triangular yellow spot, directed forwards. Scutellum green, black in the middle; the margin with two slender yellow spines. Pleurae black and light yellow. Abdomen black, punctulate; the narrow lateral margins, and a narrow, posterior, interrupted band on the margin of each segment, green. Legs yellowish-red, the basal half of all the femora and a ring on the middle of each tibia light yellow; front tarsi black, the terminal joints yellowish; middle tarsi brown or brownish-black, with the terminal

joints yellowish; hind tarsi light yellow, with the two distal joints blackish. Wings hyaline; narrow and elongate, not expanded distally as in *Rhaphiocera*; neuration of the *Sargus*-type; the furcation of the second vein takes place nearly opposite the distal end of the discal cell. Length 10 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

One specimen. Notwithstanding the presence of but seven annuli in the third antennal joint, I place this species under *Campeprosopa*, as the characters seem otherwise to agree exceedingly well. Possibly *Analcocerus* should be united with it, yet the frontal protuberance and the shape of the wings may be sufficient, apart from the lesser number of antennal annuli, to distinguish the two.

HERMETIA (p. 27).

Hermetia aurata (p. 28).

To the localities given, add:—MEXICO, Amula and Venta de Zopilote in Guerrero (*H. H. Smith*), San Blas in Jalisco (*Schumann*).

Osten Sacken (*anteà*, p. 28) has referred *H. chrysopila*, Loew, to this species as a synonym, but I do not feel sure that he is right. A specimen of what I believe to be *H. chrysopila*, from New Mexico, in the collection of the University of Kansas, differs as follows from the Mexican insects, which I take to be the true *H. aurata* of Bellardi: Front more yellow, style of antennæ relatively shorter, golden pile of thorax and abdomen more abundant, humeri yellow, scutellum with a broad yellow margin. Bellardi makes no mention of the yellow border to the scutellum, and in the five specimens before me the scutellum shows no trace of that colour.

Hermetia illucens (p. 32).

Hermetia nigrifacies, Bigot, Ann. Soc. Ent. Fr. 1879, p. 200.

Specimens of this species in the Mexican collection before me agree well with the description of *H. nigrifacies*, Bigot, an insect not identified by Osten Sacken in the earlier part of this work (*anteà*, p. 42). Bigot's name must be sunk as a synonym of *H. illucens* (Linn.).

9. **Hermetia albitarsis**.

Hermetia albitarsis, Fabr. Syst. Antl. p. 63¹; Wiedem. Aussereur. zweifl. Ins. ii. p. 24, t. 7. f. 4²; Macq. Dipt. Exot., Suppl. i. p. 177³; Schiner, Reise der Novara, Dipt. p. 70⁴; Willist. Trans. Am. Ent. Soc. xv. p. 246⁵.

? *Hermetia bimaculata*, Macq. Hist. Nat. Dipt., in Suites à Buffon, i. p. 228⁶.

? *Hermetia sexmaculata*, Macq. loc. cit. p. 229⁷.

Hermetia planifrons, Macq. Dipt. Exot., Suppl. i. p. 50⁸.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*), Merida in Yucatan⁸.—SOUTH AMERICA^{1 2}, Colombia^{3 4}, Brazil^{5 6}; ANTILLES, Puerto Rico⁷.

One specimen from Teapa, agreeing with that from Chapada, Brazil, mentioned by me in the above-cited paper⁵. The synonymy of *H. bimaculata*⁶ and *H. sexmaculata*⁷ is not certain, as it is possible that one or the other belongs to *H. apicalis*, an allied species. *H. planifrons*, Macq., was included by Osten Sacken (*antea*, p. 42) amongst the unidentified Central-American Stratiomyidæ.

10. *Hermetia æneipennis*.

Hermetia flavipes (Wiedemann, &c.), var. *æneipennis*, Giglio-Tos, Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 107¹.

Hab. MEXICO (*Sumichrast*¹), N. Yucatan (*Gaumer*).

Two specimens. The differences which they present from the brief description of *H. flavipes* given by Wiedemann are too great, in my opinion, to be considered merely varietal. To Giglio-Tos's description¹ it may be added that the eyes are pilose and the third antennal joint in the female is not dilated.

11. *Hermetia lativentris*.

Hermetia lativentris, Bellardi, Saggio etc. i. p. 27, t. 1. f. 9¹, App. p. 8² (nec Willist. Canad. Ent. 1885, p. 125).

Hab. MEXICO, Tampico (*Saussure*¹), Chilpancingo in Guerrero (*H. H. Smith*), N. Yucatan (*Gaumer*).

Ten specimens. The eyes are pilose, the tibiæ and tarsi light yellow. The species which I doubtfully referred to *H. lativentris* in the 'Canadian Entomologist' (*l. c.*) proves, upon comparison, to be quite distinct. As examples have been obtained from the southern part of New Mexico, not far from the frontier of Mexico, it is highly probable that it will be found to be a member of the Mexican fauna. I therefore give a description of it below. *H. lativentris* was included by Osten Sacken (*antea*, p. 42) amongst the unidentified Central-American Stratiomyidæ.

[12. *Hermetia concinna*, sp. n. (Tab. IV. fig. 12, ♀.)

Hermetia lativentris, Willist. Canad. Ent. 1885, p. 125¹ (nec Bellardi).

♂ ♀. Front and face reddish-yellow, clothed with yellow pile; a brownish spot on each side of the root of the antennæ, sometimes indistinct or absent; a small black spot at the ocelli. Antennæ reddish-yellow, the tip of the third joint and the style black; style a little longer than the remainder of the antennæ. Eyes pilose, with markings as in *H. relictæ*, Osten Sacken (*antea*, p. 30). Thorax black, moderately shining, the ground-colour obscured beneath bright golden yellow pile; lateral margins reddish. Scutellum opaque black, the margin reddish-yellow. Pleuræ shining black, the mesopleuræ reddish and with golden pile. Abdomen elongate, flattened, yellowish-red, with a narrow median black stripe, narrowly interrupted at the incisures and more or less obsolete on the terminal segments. Femora black, the tibiæ yellowish; tibiæ and tarsi light yellow. Wings yellow, the distal and posterior portions broadly brownish-yellow. Length 11-16 millim.

Hab. NORTH AMERICA, New Mexico¹ (*Snow*), Arizona (*Morrison*, Coll. Univ. of Kansas).

Differs from *H. lativentris* in the yellow head and antennæ, yellow border of the scutellum, markings of abdomen, &c. Five specimens.]

13. ***Hermetia ceria***, sp. n. (Tab. IV. fig. 13.)

Front black, the large bare tubercle shining blue-black; on either side of the ocelli a yellow spot, another near each orbit below, and a pair of small ones above the root of the antennæ. Antennæ red, the style black; third joint very long and slender, fully twice the length of the style. Eyes pilose. Mesonotum and scutellum opaque black; a small spot on the humeri, the post-alar callosities, and the narrow margin of the scutellum, luteous; pubescence golden. Abdomen shaped much as in the species of *Ceria*, broadest at the posterior part of the third segment, where it is fully twice as wide as at the distal margin of the first segment; opaque black, the second segment, save the narrow lateral margins, light yellow; posterior margins of the second and third segments with golden pile; fourth and fifth segments covered with similarly coloured pile, more abundant on the hind margins. Legs black; the basal portion of the hind tibiæ and the front and hind tarsi light yellow (middle legs wanting in the specimen described). Wings with the anterior border brown, sharply distinguished from the posterior part, which is nearly hyaline. Length 10–11 millim.

Hab. MEXICO, Ventanas in Durango 2000 feet (*Forrer*).

I have ventured to describe this species from a single specimen, not in a very good state of preservation, and the sex of which I cannot determine, on account of its striking characters. It resembles certain species of *Ceria* and *Conops*.

CHRYSOCHLORA.

Chrysochlora, Latreille, Règne Anim. p. 486 (1829).

It is perhaps strange that so little has been written concerning this genus, established so long ago, considering the fact that specimens of various species belonging to it are not at all rare in collections. About half a dozen American forms have been described, some of which it is quite certain do not belong to it, or at least are not congeneric with such species as *C. vespertilio*. If *C. amethystina* (Fabr.), from the Isle of France, is taken as the type, it seems probable that the American species will have to be separated, especially so if Macquart is correct in his statement that the males of *C. amethystina* have the eyes contiguous. In the six American forms known to me the structure of the body throughout is quite alike in the two sexes, except that the antennæ are more elongate in the female than in the male. Nor am I aware of any differences in coloration between the two sexes. In fact, in single specimens, when the genitalia are withdrawn within the abdomen it is often difficult to determine the sex. A separation of the American species is also very desirable from the fact that they are light-coloured insects, with much uniformity of markings, while *C. amethystina* is deep metallic green and blue in colour. The heterogeneous character of the species at present included in the genus is noticed by Loew in his paper on *Sargus* (Verh. zool.-bot. Ges. Wien, 1855). I have already remarked (Trans. Am. Ent. Soc. xv. p. 1) that it is difficult, if not impossible, to determine the described

species from the existing descriptions, from the fact that no attention has been paid to structural differences, and the colour-characters are vague in the extreme.

From Central America there is a single species in our collection, which is not identical with any of the four others known to me from Brazil. It is not impossible, however, that one or the other has been described.

1. *Chrysochlora pulchra*, sp. n.

♀. Front and face light sulphur-yellow, the space between the ocelli black; front long and narrow, its length from the ocelli to the root of the antennæ at least three times its breadth; in profile, with a scarcely visible convexity above the eyes, the depression on the lower part shallow. Antennæ elongate, yellowish-red, the first two joints yellow; if bent backwards, the antennæ would reach three-fourths of the distance to the ocelli; arista shorter than the third joint. Face, in profile, with the lower part receding rectangularly, the latter not wider than the front, and only very slightly wider than the vertex. Proboscis and palpi light yellow; occiput black, save the continuation of the front down to the neck. Thorax light yellow, in places with a greenish tinge; mesonotum with three brown or brownish stripes of the usual shape, more or less obsolete in places; pleuræ almost wholly light yellow; scutellum yellow, with the base black. Abdomen yellow, with four broad brown or blackish bands. Legs light yellow. Wings tinged with yellow, the distal part and a small spot in the distal end of the first basal cell infuscated. Length 12 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

The female antenna is distinctly annulated, showing six divisions. The male antenna will doubtless prove to be much shorter and the divisions almost imperceptible. Other species of the genus vary in the depth of the markings on the thorax and abdomen, and in having a brownish spot on the legs; probably *C. pulchra* will show similar variations. One specimen.

CYPHOMYIA (p. 34).

Cyphomyia varipes (p. 34).

To the localities given, add:—MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

Five specimens, agreeing well with Gerstäcker's description. The thorax is without pilose markings.

Cyphomyia albitarsis (p. 35).

Stratiomys albitarsis, Fabr. Syst. Antl. p. 80¹.

Cyphomyia albitarsis, Gerst. Linn. Ent. xi. p. 300²; Bellardi, Saggio etc. i. p. 22³; Schiner, Reise der Novara, Dipt. p. 53⁴; Giglio-Tos, Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 105⁵.

Cyphomyia fenestrata, Macq. Dipt. Exot., Suppl. i. p. 48⁶; Walk. List &c. v. p. 16⁷.

To the localities given, add:—MEXICO (*Sallé*⁵, *Sumichrast*⁵), Cuernavaca in Morelos, Teapa in Tabasco (*H. H. Smith*).—SOUTH AMERICA⁴, Colombia⁶, Essequibo².

Nine specimens, including male and female, have been sent to us from Mexico, I see but little reason to doubt the identity of Bellardi's species.

5. *Cyphomyia pilosissima*.

Cyphomyia pilosissima, Gerst. Linn. Ent. xi. p. 293¹.

Hab. MEXICO¹, Mexico city (*Schumann*), Cuernavaca in Morelos (*H. H. Smith*).

Three specimens, including both sexes, belonging evidently to this species, though the male shows some discrepancies from Gerstäcker's description. The third joint of the antennæ is not "abgestumpft," but is obtusely pointed; the erect pile of the mesonotum is not blackish, but dusky white; the tip of the first joint of each tarsus and the whole of the second joint are dark coloured. The differences shown by the female (Gerstäcker described the male) are as follows:—

♀. Front broad, sparsely white-pilose; in the middle with a sharp carina, which is most prominent a little below the ocelli; posterior orbits with white pile; pile of the face less abundant and long in the middle. Mesonotum with three elongate white-tomentose spots in front; the pile elsewhere much shorter and less abundant than in the male. The pile of the eyes is distinct, but much shorter than in the male.

C. pilosissima was placed by Osten Sacken (*anteà*, p. 43) amongst the unidentified Mexican Stratiomyidæ.

6. *Cyphomyia lasiophthalma*, sp. n. (Tab. IV. fig. 15, ♂.)

♂. Eyes densely black-pilose. Antennæ slender, the first joint unusually long and slender, nearly four times the length of the second, which is about twice as long as wide; first joint yellow, clothed with black pile; second joint also yellow, but clothed with black and white pile; third joint yellowish on the basal portion, black distally; the last segment of the third joint is nearly three times the length of that preceding it. Face shining black, at the immediate margin of the eyes more thickly pilose, in the middle with long white pile. Mesonotum rather thickly clothed with yellowish-white tomentum, apparent, when seen obliquely from behind, as three stripes, and with long, erect, moderately abundant, dusky pile; scutellum clothed with black pile, except on the margin and spines, where it is longer and white; spines yellow, about as long as the scutellum, slender, gently divaricate, and curved upward at the tip. Pleuræ with abundant white pile. Abdomen nearly opaque black, with four distinct triangular spots composed of yellowish-white appressed pile on each side. Legs black, with white pile; the basal half or two-thirds of each of the femora and the first two joints and proximal part of the third joint of all the tarsi light yellow. Wings yellowish-hyaline, with a broad brownish band across the middle, becoming narrower and darker anteriorly.

♀. Front narrow, its width about equal to one-third of the distance from the antennæ to the ocelli; broadly sulcate in the middle and lightly carinate on the sides; in colour shining black; on the lowermost portion covered with close-lying white pile. Eyes less densely pilose. Length 8–10 millim.

Hab. MEXICO, San Blas in Jalisco (*Schumann*), Acaguizotla, Dos Arroyos, and Tierra Colorada in Guerrero (*H. H. Smith*).

Five specimens.

7. *Cyphomyia bicarinata*, sp. n.

♀. Front broader than in *C. lasiophthalma*, shining black; on each side a prominent tuberculiform carina; lower part with white pile. Antennæ wholly black, clothed with black pile proximally; first joint elongate; the first two joints nearly equal in length to one-half that of the third joint; eighth annulus a little shorter than the seventh, which is a trifle longer than the sixth. Face clothed with long white pile, which is less abundant in the middle. Thorax, except the yellow spines of the scutellum, wholly

shining black; mesonotum clothed with moderately abundant, appressed, nearly white tomentum; pleuræ with white pile. Abdomen with spots of light golden pile on the sides of the second, third, and fourth segments, the pile extending over the larger part of the fourth and fifth segments. Legs black, with white pile; first two joints of the anterior tarsi, and most of the third joint also of the hind tarsi, light yellow. Wings broadly brownish distally.

♂. Eyes with longer and more abundant black pile. Face with long black pile in the middle. Mesonotum with long, erect, dusky white pile. Length 7-10 millim.

Hab. MEXICO, Xucumanatlan in Guerrero, Cuernavaca in Morelos (*H. H. Smith*), Jalisco, Atoyac in Vera Cruz (*Schumann*).

Four specimens. This species differs from *C. lasiophthalma* in the narrower front, the more prominent lateral tubercle, the more obtuse third joint of the antennæ, the broad light golden covering of the posterior part of the abdomen, and the wholly black femora.

ODONTOMYIA (p. 36).

1. *Odontomyia trivittata* (p. 36).

Stratiomys trivittata, Say, Journ. Acad. Phil. vi. p. 160¹.

Odontomyia trivittata, Johnson, Trans. Am. Ent. Soc. xxii. p. 259, t. 4. f. 19².

Odonthomyia tritæniata, Bellardi, Saggio etc. i. p. 38, t. 1. f. 17³.

Odontomyia tritæniata, Osten Sacken, anteà, p. 36⁴.

To the localities given, add:—NORTH AMERICA¹, Colorado, Texas, and Florida².—MEXICO, Jalisco (*Schumann*).

A single specimen from Jalisco, Mexico, agreeing well with the description of *O. trivittata*², save that the black of the abdomen is broader. Bellardi's description of the abdomen is indefinite, yet I believe that Johnson is right in the above synonymy.

2. *Odontomyia lefebvrei*.

Odontomyia lefebvrei, Macq. Dipt. Exot. i. 1, p. 189¹.

Odonthomyia lefebvrei (sic), Bellardi, Saggio etc. i. p. 33².

Stratiomys lefebvrei, Walk. List &c. v. pp. 40, 311³.

Stratiomyia euchlora, Gerst. Linn. Ent. xi. p. 328⁴.

Odontomyia prasina, Jaenicke, Neue Exot. Dipt. p. 16, in Abhandl. Senckenb. Ges. vi. p. 5⁵.

Hab. MEXICO¹⁻⁵, Morelia in Michoacan (*Höge*), Orizaba, Toluca (*Saussure*²).

A single male specimen from Morelia, differing from Macquart's description¹ in lacking the spot on the base of the third abdominal segment, and in having the hind femora wholly yellow; the front and middle femora have the upperside distally black, but the black is not extensive. The post-alar callosities are yellow. Bellardi² says that the spots on the sides of the abdomen may be two, four, or six in number, or may be wholly wanting. From *S. euchlora*, Gerst., it differs only in the presence of the small femoral spots, evidently a variable character. *O. prasina*, Jaenn., has redder pile on the mesonotum. *O. lefebvrei* was not identified by Osten Sacken in the earlier

part of this work (*antea*, p. 42), and the same remark applies to *O. truquii*, *O. viridis*, and *O. quadrimaculata*, Bellardi, and *O. rubricornis*, Macq.

3. *Odontomyia truquii*.

Odonthomyia truquii, Bellardi, Saggio etc. i. p. 34, t. 1. f. 11¹.

Odontomyia truquii, Johnson, Trans. Am. Ent. Soc. xxii. p. 273².

Odontomyia megacephala, Loew, Centur. vi. p. 20 (nec Oliv.)³.

Odontomyia binotata, Loew, Centur. vi. p. 22⁴; Day, Proc. Acad. Phil. 1882, p. 81⁵; Johnson, Trans. Am. Ent. Soc. xxii. p. 251, t. 3. ff. 29-32⁶.

Odontomyia bicolor, Day, Proc. Acad. Phil. 1882, p. 78⁷.

Hab. NORTH AMERICA, California^{3 6}, Illinois^{4 6}, Utah⁶, Texas⁶, Kansas⁶, Nebraska⁶, Indiana⁶, Michigan⁶.—MEXICO, Iguala in Guerrero (*H. H. Smith*), Cuernavaca (*Truqui*¹).

A single female example from Iguala, agreeing fairly well with Bellardi's description of *O. truquii*, and better still with Johnson's. I have seen Day's types in the Museum of the University of Kansas.

4. *Odontomyia viridis*.

Odonthomyia viridis, Bellardi, Saggio etc. i. p. 36, t. 1. f. 16¹.

Odontomyia viridis, Johnson, Trans. Am. Ent. Soc. xxii. p. 270, t. 4. f. 18².

Hab. NORTH AMERICA, Waco, Texas².—MEXICO¹ (*Saussure*²), Teapa in Tabasco (*H. H. Smith*), Cuautla (*Saussure*¹).

One female specimen from Teapa, agreeing with the descriptions, save in the abdomen having a narrow yellowish-green margin, dilated angularly at the incisures. A second example of the same sex, and from the same locality, has the eyes bare and the black less extended on the femora.

5. *Odontomyia quadrimaculata*.

Odonthomyia quadrimaculata, Bellardi, Saggio etc. i. p. 37, t. 1. f. 15¹.

Odontomyia quadrimaculata, Johnson, Trans. Am. Ent. Soc. xxii. p. 274².

Hab. MEXICO^{1 2}, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

A single male specimen from Guerrero agreeing throughout with Bellardi's description, save that the dilated spots of the abdomen are on the second and third segments, instead of on the third and fourth; the fourth and fifth segments have a reddish-yellow margin (Bellardi gives the fifth only thus coloured).

6. *Odontomyia fratella*, sp. n.

♀. Antennæ black, second joint about two-thirds the length of the first, the third not twice the length of the first two joints together. Head narrower than the thorax; eyes bare. Front black on the upper half

or more, the yellow extending up in the middle and somewhat dilated below the ocelli; occipital margin of the front narrowly yellow, save just behind the ocellar tubercle. Face prominent in the middle, yellow, with a large black shield-shaped spot in the centre, reaching from the root of the antennæ to the oral margin in front and to the lateral grooves on the side. Posterior orbits yellow. Mesonotum black, with rather abundant yellow pile and tomentum. Scutellum yellow, black at the base; spines small. Pleuræ black and yellow. Abdomen black; second and third segments with a large yellow spot on each side, extending acutely inward on the posterior margin, but not meeting; anterior angles of the third segment with a black spot; fourth segment with a posterior narrowly interrupted band; fifth segment with a narrow yellow hind-margin. Legs black, the proximal portion of all the tibiæ and of the middle metatarsi yellow. Third vein of the wings with an anterior branch. Length 13 millim.

Hab. MEXICO, Guadalajara in Jalisco (*Höge*).

One specimen.

7. *Odontomyia concinnata*, sp. n.

♂. Head broader than the thorax. Eyes bare. Frontal triangle and face shining black, the latter prominent and broadly yellow below. First two joints of the antennæ reddish-yellow, the second joint a little shorter than the first; third joint brown, becoming blackish distally, not twice the length of the first two joints together. Mesonotum, except a small yellow spot on the post-alar callosities, wholly black, with short yellowish pile. Scutellum greenish-yellow, narrowly black at the base, the spines of moderate size. Pleuræ black, with the anterior part reaching back as a stripe below the root of the wings, and a small spot on the mesosternum, greenish-yellow. Abdomen: first segment opaque black; second and third segments yellow, the two together showing a large, hourglass-shaped spot or median portion; fourth segment black, with the lateral margins, dilated posteriorly, yellow; fifth segment black, with a yellow margin. Venter greenish-yellow. Legs: femora brown and black, with the proximal portion, on the front pair narrowly, on the posterior pair broadly, yellow; tibiæ black, yellow on the proximal portion; tarsi black, the metatarsi, except the tip, yellow. Stigmatic portion of the wings brown; anterior branch of the third vein indistinct. Length 10 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

One specimen. This species seems to be allied to the Mexican *O. dissimilis*, Bellardi, but may be distinguished by the spots on the pleuræ and the colour of the femora.

8. *Odontomyia rubicornis*.

Odontomyia rubicornis, Macq. Dipt. Exot., Suppl. i. p. 181¹.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*), Merida in Yucatan¹.

A single male specimen from Teapa, resembling *O. quadrimaculata*, but smaller (length 7 millim.). The eyes are nearly bare, the scutellum has a narrow yellowish border, the spots on the abdomen are larger, and the tibiæ and tarsi are yellow, the latter infuscated at the tip. In *O. quadrimaculata* the eyes have a long and abundant pilosity.

9. *Odontomyia* (?) *comma*, sp. n.

♀. Antennæ longer than the head, the first two joints elongate, the second about two-thirds the length of the first, and the third of nearly the same length as the first two together. Deep black throughout, with the following parts yellow: two triangular spots on the sides of the front, the lower one smaller and situated just above the root of the antennæ; a transverse, narrow band on the face, a little above the oral margin;

a U-shaped spot on each side of the mesonotum in front, the inner arm pointed, the outer one broader; a small spot on each side of the mesonotum behind the middle and a small triangular spot on and in front of each post-alar callus, the humeri, the spines of the scutellum, the very slender lateral margin of the abdomen, and a small comma-like spot on the second, third, and fourth segments, connected with the yellow border at each posterior angle, and the slender hind margins of the ventral segments. Body bare. Head as broad as the thorax; face protuberant; front with a median carina. Eyes bare. Wings tinged with brownish, more deeply so in front; third vein with an anterior branch. Length 10 millim.

Hab. MEXICO, Dos Arroyos in Guerrero (*H. H. Smith*).

One specimen. This species is a very aberrant one and would perhaps be better associated with some others in a separate genus.

STRATIOMYIA (p. 36).

Stratiomyia mutabilis (p. 37).

Stratiomyia mutabilis (Fabr.), Willist. Trans. Am. Ent. Soc. xv. p. 256 (♀)¹; Johnson, Trans. Am. Ent. Soc. xxii. p. 243, t. 4. f. 3².

To the localities given, add:—MEXICO, Chilpancingo in Guerrero, Atoyac in Vera Cruz (*H. H. Smith*), Temax in Northern Yucatan (*Gaumer*), Orizaba², Tehuantepec².—BRAZIL, Corumba¹, Chapada¹.

Seven males and twelve females from Mexico are contained in the collection before me.

Stratiomyia subalba (p. 37).

Stratiomyia subalba (Walk., Bellardi), Johnson, Trans. Am. Ent. Soc. xxii. p. 246¹.

Stratiomyia mutabilis, Willist. Trans. Am. Ent. Soc. xv. p. 256 (♂)² (nec Fabr.).

To the localities given, add:—MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).—BRAZIL, Chapada².

Two specimens from Atoyac, agreeing closely with those from Brazil mentioned in the above-cited paper², which I then thought to be males of *S. mutabilis*.

3. **Stratiomyia bimaculata.**

Stratiomys bimaculata, Bellardi, Saggio etc., App. p. 8, t. 3. f. 7¹.

Stratiomyia bimaculata, Johnson, Trans. Am. Ent. Soc. xxii. p. 245².

Hab. MEXICO, Cosamaloapam (*Sallé*¹), N. Yucatan (*Gaumer*).

Three specimens from Yucatan, agreeing well with the description. *S. bimaculata* was not identified by Osten Sacken in the earlier part of this work (*anteà*, p. 42).

EUPARHYPHUS (p. 39).

3. **Euparhyphus elongatulus**, sp. n. (Tab. IV. fig. 14, ♀.)

- ♂. Antennæ wholly black, the first two joints with black hair; the first joint one-half longer than the second. Face reddish-yellow, the orbital margins black and covered for the most part with dense silvery tomentum; a small, round, black spot in the middle above. Frontal triangle black, small. Occiput black, the lower orbits covered with silvery tomentum. Eyes distinctly pubescent. Mesonotum with erect black hair; opaque black, with four narrow, reddish-yellow stripes, of which the inner ones are a little narrower than the others, the outer ones connecting the yellow humeri with the yellow post-alar callosities. Pleuræ shining black, with a slender yellow stripe immediately below the noto-pleural suture, becoming wider below the root of the wings. Scutellum and its spines yellow, the small basal angles brown. Abdomen shining black; the narrow lateral margins, expanded into a rounded spot on the sides of the second, third, and fourth segments, reddish-yellow. Legs yellow; distal four joints of all the tarsi and the hind metatarsi black. Wings tinged with yellowish: third vein furcate.
- ♀. Head shining yellow, the vertex between the oblique impressed lines extending narrowly along the frontal orbits to about their middle, a slender spot in the centre of the front above, a round spot in the middle of the upper part of the face, and a large trifoliate spot on the occiput, black. The broad occipital orbits on the lower half and the facial orbits silvery-pollinose. Eyes sparsely pubescent. Mesonotal yellow stripes broader than in the male, conjoined in front and behind; pleuræ in large part yellow. The greater part of the first and fifth segments of the abdomen is yellow, the lateral spots on the intervening segments larger than in the male. Length 7-7½ millim., with the antennæ 9-9½ millim.

Hab. MEXICO, Omilteme and Xucumanatlan in Guerrero 7000 to 8000 feet (*H. H. Smith*).

Two specimens.

ACANTHINA (p. 41).

Acanthina argentea (p. 41).

To the localities given, add:—MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

A single male specimen.

2. **Acanthina inornata**, sp. n. (Tab. IV. fig. 17, ♀.)

- ♂. Frontal triangle, the narrow occipital orbits, and the vertical triangle reddish-yellow; orbital margins of the frontal triangle narrowly silvery-pollinose. Antennæ reddish or slightly brownish-yellow, the terminal annulus and the style black; first joint only a little longer than the second; third joint about twice the length of the first two together. Mesonotum shining black, with erect black pile and four stripes of light golden-coloured tomentum. Scutellum shining black, with light golden-yellow tomentum or pile, the tips of the spines yellow. Abdomen opaque black, the sides of the second, third, and fourth segments shining, sometimes reddish, and covered with golden pile like that of the mesonotum. Wings nearly hyaline. Legs black, the knees and the four posterior metatarsi yellow.
- ♀. Front yellow, a little wider than the ocelli above and somewhat narrowed anteriorly before expanding into the large frontal triangle; posterior orbits a little wider than in the male. Length 5-6 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

Three males and one female. The eyes in the male are broadly and closely contiguous, and very densely pilose; in the female the pilosity is shorter, yet abundant. In the single female specimen the proximal portion of the posterior metatarsi only is

yellow. This species may be immediately distinguished from *A. bellardii*, Giglio-Tos, which seems to be its nearest ally, by the black scutellum.

LOPHOTELES.

Lophoteles, Loew, Berl. ent. Zeitschr. 1858, p. 110.

1. *Lophoteles pallidipennis*, sp. n. (Tab. IV. fig. 16, ♀.)

♀. Head black, covered with whitish dust, with the exception of a slender median line and the lowermost portion, which are shining. At the vertex the eyes are separated by the ocelli, the front gradually widening anteriorly. Antennæ black, the first two joints yellow; arista densely pubescent, appearing almost like a solid mass, in length equal to about twice that of the first three joints together. Thorax deep black, moderately shining, the colour mostly concealed beneath silvery tomentum, which is arranged in slender stripes, leaving the black colour apparent between them. Scutellum subtriangular, the middle portion of the margin produced into a thin edge, upon which a number of minute points are visible; the basal part uniformly and thickly silvery-tomentose, the apical portion opaque black. Abdomen black, for the most part concealed beneath a dense silvery tomentum. Legs light yellow; all the femora, except their tip, black. Wings hyaline, the veins yellow and not at all stout. Length $3\frac{1}{2}$ millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

One specimen, which I take to be a female. The only known species other than this, belonging to the genus, is *L. plumata*, Loew, from the Polynesian island of Radak. The generic description and figures given by Loew apply very well to the present insect, *L. pallidipennis* being easily distinguishable by the silvery tomentum.

EURYNEURA.

Euryneura, Schiner, Verh. zool.-bot. Ges. Wien, 1867, p. 308.

Euryneura — ?

Hab. MEXICO, Chilpancingo and Tierra Colorada in Guerrero (*H. H. Smith*).

In his generic description of *Euryneura* (Reise der Novara, Dipt. p. 57), Schiner describes the scutellum as having two long spines, a character also ascribed to the type-species, *E. fascipennis*, by Wiedemann. In his comparative description of *E. propinqua*, Schiner does not refer to the scutellar spines, and the assumption is that they are long, whereas in *E. elegans*, Willist. (Trans. Am. Ent. Soc. xv. p. 252), from Brazil, they are very small. Giglio-Tos [Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 111] identifies *E. propinqua* from Orizaba, Mexico, but mentions the fact that the spines are small. Two specimens, male and female, from Guerrero, now before me, agree almost entirely with the type of *E. elegans*, except in the colour of the legs and antennæ and in having a little broader front. In both these species the hyaline band of the wing reaches the posterior margin beyond the fifth posterior cell, in which there is a rounded clear spot, a character not mentioned by Schiner. Whether one or the other of these insects is really referable to *E. propinqua* I cannot now say.

MYXOSARGUS.

Myxosargus, Brauer, Denkschr. der k. Akad. Wissenschaften in Wien, xliv. 2, p. 77 (1882).

1. *Myxosargus fasciatus*.

Myxosargus fasciatus, Brauer, loc. cit. p. 78¹; Osten Sacken, on Prof. Brauer's paper, "Ein Versuch etc.," p. 6²; Roeder, Ent. Nachr. 1886, p. 139³; Willist. Trans. Am. Ent. Soc. xv. p. 254⁴; Giglio-Tos, Mem. della Reale Accad. delle Sci. di Torino, (2) xliii. p. 109⁵.

Hab. NORTH AMERICA, Georgia³, North Carolina⁴, Texas².—MEXICO (*Sumichrast*⁵), Atoyac in Vera Cruz (*H. H. Smith*), Orizaba (*Bilimek, in Mus. Vind. Cæs.*¹).

A single male specimen from Atoyac is somewhat doubtfully referred to this species. The two pearly-white spots are at the tip of the frontal triangle.

2. *Myxosargus scutellatus*, sp. n. (Tab. IV. fig. 18, ♀.)

♀. Head shining, greenish-black. Front in the centre with a small geminate tubercle; a distinct transverse depression below the middle. Antennæ black, the first two joints yellow; third joint divided into six annuli, of which the first three are very short and closely united, the terminal annulus longer than the preceding two together. Thorax black, clothed with delicate white pile. Mesonotum opaque deep green, with feeble indications of coppery stripes. Scutellum wholly light yellow. Abdomen black, shining. Legs black; base of the four posterior femora and the distal portion of the front ones, all the tibiæ except a more or less broad ring, and the four posterior tarsi, save the distal two or three joints, light yellow. Wings as in *M. fasciatus*.

Length 5–6 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Two female specimens. The present species differs from *M. fasciatus*, the female of which is known to me only by the description, in the absence of the lateral tubercles of the front, the wholly light yellow scutellum, &c. From the corresponding sex of *M. braueri*, Willist., it differs in the smaller frontal tubercle, the shorter antennæ, the colour of the antennæ and legs, &c.

NEMOTELUS.

Nemotelus, Geoffroy, Hist. Abrégée des Ins. ii. p. 542 (1764).

1. *Nemotelus polyposus*.

Nemotelus polyposus, Say, Journ. Acad. Phil. vi. p. 160 (1829)¹; Compl. Wr. ii. p. 356².

Hab. MEXICO^{1 2}, Mexico city (*H. H. Smith*).

Seven specimens, agreeing with Say's description. The last two joints of the tarsi are black.

2. *Nemotelus unicolor*.

Nemotelus unicolor, Loew, Dipt. Centur. iii. p. 11¹; Willist. Canad. Ent. xvii. p. 126².

Hab. NORTH AMERICA, Illinois¹, Pennsylvania², Arizona².—MEXICO, Teapa in Tabasco (*H. H. Smith*).

A single female specimen from Teapa probably belongs to this species, although the front and middle tibiæ are largely black; the basal joints of the antennæ are yellowish.

CYNIPIMORPHA.

Cynipimorpha, Brauer, Denkschr. der k. Akad. der Wissenschaften in Wien, xliv. 2, p. 75 (1882).

1. *Cynipimorpha minuta*, sp. n. (Tab. IV. figg. 19, 19 a, ♂.)

♂. Eyes separated by the ocelli, gradually becoming wider below; ocelli situated upon a tubercle, otherwise the front is plane. First two joints of the antennæ very short; third joint transversely ellipsoidal, finely roughened, with the very slender arista springing from the upper front part. Face silvery-white, not at all projecting in profile; the oral opening extends to the root of the antennæ, which arise from near the middle of the head, as seen in profile. Thorax wholly black; mesonotum in the middle clothed with dense, short, silvery pubescence, somewhat variable in different reflections, the sides with a patch of sparse, coarser, silvery tomentum. Knob of the halteres white. Abdomen black, moderately shining, broader than the thorax and only a little longer than wide; near the tip with some sparse white pile. Legs light yellow; the femora, except the tip, nearly black. Wings hyaline; neuration as described for *C. bilimeki*, Brauer. Scutellum triangular, obtusely pointed, the basal portion with white pubescence. Length $2\frac{1}{2}$ millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

One specimen. This insect differs distinctly from the type of the genus, *C. bilimeki*, in having the eyes of the male separated by the narrow front. Another species, closely allied to this, measuring nearly 4 millim. in length, from Santarem (Amazons), in my collection, has the antennæ wholly yellow, the fine bristle springing from the tip; the front broader, on the lower part with a smooth, triangular, black spot bounded by silvery-white on the sides; the pubescence of the mesonotum slightly yellowish, sparser, and forming indistinct stripes; the tip of the scutellum attenuated into a short, thick, obtuse process, the white pubescence arranged in spots; the femora yellow or only slightly brownish.

TABANIDÆ (p. 43).

PANGONIA (p. 43).

Table of Species recognized in the supplementary collection sent to me for examination.

Those marked with an asterisk were not identified by Osten Sacken (*anteà*, p. 58).

- | | |
|--|-----------------------------|
| 1. Eyes hairy; face produced | 2. |
| Eyes bare; face receding | 3. |
| 2. Abdomen deep shining black throughout | <i>pyrausta</i> , O. S. |
| Abdomen for the most part yellow | <i>rostrifera</i> , Bell.* |
| 3. Wings with the immediate base dark brown, the colour sharply limited. | 4. |
| Wings with the immediate base not sharply limited dark brown | 6. |
| 4. Antennæ reddish-yellow | 5. |
| Antennæ for the most part black; abdomen conspicuously yellow-pilose. | <i>pavida</i> , sp. n. |
| 5. First segment of abdomen deep black, the remainder light yellow | <i>semiflava</i> , Wiedem.* |
| Abdomen for the most part yellow, the first segment not deep black | <i>wiedemanni</i> , Bell.* |

6. Thorax red or brownish-red 7.
 Thorax deep brown or black 8.
7. Abdomen reddish-yellow throughout *flavohirta*, Bell.*
 Abdomen brown, the first segment yellowish-white *illota*, sp. n.
8. Deep brown, the abdomen with black pile only *saussurii*, Bell.*
 Mesonotum densely yellowish-pollinose on a black background ; abdomen for the most part yellow *nigronotata*, Macq.*

1. *Pangonia pyrausta*.

Pangonia pyrausta, O. Sack. anteà, p. 43¹; Willist. Kans. Univ. Quart. iii. p. 189².

To the localities given, add:—MEXICO², Navarete in Tepic (*Schumann*), Mazatlan (*coll. Williston*²).

Four specimens, which I refer to this species, notwithstanding the fact that they all have the first posterior cell closed. The characters otherwise agree well. The abdomen is abraded, so that I can offer no opinion as to the differences between this species and *P. rhinophora*, Bell., which must be very closely allied.

2. *Pangonia rostrifera*.

Pangonia rostrifera, Bellardi, Saggio etc. i. p. 47¹.

Hab. MEXICO¹, Misantla (*F. D. Godman*), Teapa in Tabasco (*H. H. Smith*).

3. *Pangonia pavidà*, sp. n.

♂. Ocelli present. Eyes bare. Antennæ black, the slender, aristiform termination of the third joint red. Face receding, brown. Palpi narrow, black, with black pile. Proboscis longer than the height of the head. Thorax brownish-black throughout, clothed with black hair. Abdomen yellowish-red, the first segment and a spot in the middle of the second black; pile on the first segment black, on the remainder of the abdomen yellow or yellowish-red. Legs black, the tarsal joints yellowish at the base. Wings brownish, a little darker anteriorly and dark brown at the immediate base; first posterior cell closed; a long stump on the anterior branch of the second vein.

♀. Front narrow, dark brown, with a narrow longitudinal groove on each side. Abdomen black or reddish-black, red at the extreme tip only, but covered everywhere, except on the first segment, with yellow or orange-coloured pile. Length 14–16 millim.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

Six males and twelve females.

4. *Pangonia semiflava*.

Pangonia semiflava, Wiedem. Aussereur. zweifl. Ins. ii. p. 622¹; Walk. List &c. v. p. 120²; Bellardi, Saggio etc. i. p. 51, t. 2. fig. 2³.

Pangonia bicolor, Macq. Dipt. Exot., Suppl. iv. p. 27⁴.

Hab. MEXICO¹⁴, Chilpancingo, Acaguizotla, and Rincon in Guerrero (*H. H. Smith*), Orizaba³.

Three specimens.

5. *Pangonia wiedemanni*.

Pangonia basilaris, Wiedem. Aussereur. zweifl. Ins. ii. p. 621¹; Walk. List &c. v. p. 120² (nomen præocc.).

Pangonia wiedemanni, Bellardi, Saggio etc. i. p. 48, t. 2. fig. 3³.

Hab. MEXICO^{1 2 3}, Venta de Zopilote in Guerrero (*H. H. Smith*).

One specimen, 14 millim. in length. It has all the femora black.

6. *Pangonia flavohirta*.

Pangonia flavohirta, Bellardi, Saggio etc. i. p. 49¹.

Hab. MEXICO¹, Tierra Colorada in Guerrero (*H. H. Smith*).

Two male specimens agree throughout with Bellardi's description¹, save that the abdomen is almost wholly yellowish, instead of "flavo-fuscous." They measure 14 millim. in length. The third joint of the antennæ is slender, the width of the basal annulus scarcely exceeding its length. The species is apparently allied to *P. aurulans*, Wiedem.

7. *Pangonia illota*, sp. n.

♀. Dark brownish-red. Eyes bare. Face receding. Antennæ red. Palpi red, with black hairs. Proboscis about as long as the height of the head. Pleuræ white-pollinose. Abdomen a little darker than the mesonotum, brown; first segment yellowish-white, with white hairs. Wings brownish, a little darker in front and at the base; first posterior cell closed; second submarginal cell appendiculate. Legs yellowish-red throughout. Length 15 millim.

Hab. HONDURAS, Ruatan Island (*Gaumer*).

One specimen.

8. *Pangonia saussurii*.

Pangonia saussurii, Bellardi, Saggio etc. i. p. 49, t. 2. fig. 4¹.

Hab. MEXICO, Acaguizotla, Tepetlepa, Rincon, and Hacienda de la Imagen in Guerrero (*H. H. Smith*), Orizaba¹.

Eleven specimens, of the identification of which I have scarcely a doubt. The species has a very long setiform termination to the third antennal joint; the abdomen varies in depth of colour, sometimes to almost black; the tibiæ and tarsi and the tip of the femora are yellow. *P. saussurii* must be closely related to *P. caustica*, O. Sack., but the presence of yellowish pile on the mesonotum in front, the absence of the tufts of white pile under the root of the wings, and also of the abdominal markings, will sufficiently distinguish it.

9. *Pangonia nigronotata*.

Pangonia nigronotata, Macq. Dipt. Exot., Suppl. iv. p. 27, t. 11. fig. 5¹; Bellardi, Saggio etc. i. p. 51².

Pangonia incerta, Bellardi, Saggio etc. i. p. 52³.

Hab. MEXICO¹, Acaguizotla, Venta de Zopilote, Hacienda de la Imagen, and Chilpancingo in Guerrero (*H. H. Smith*), Orizaba^{2 3}.

A variable species, as regards the colour-markings of the abdomen. Bellardi had but a single poorly-preserved female example for his description of *P. incerta*, which description, so far as it goes, applies well to the insect before me. The specimens that Bellardi described as *P. nigronotata*, var., do not seem to differ from some of these. In the present collection there are eighteen specimens, which may be described as follows:—

- ♂. Frontal triangle and face brownish-yellow, lightly covered with yellowish dust. First two joints of the antennæ yellow; third joint yellowish-red, the first annulus disciform, the others slender, the last as long as the five preceding together. Palpi yellow, with black hairs. Mesonotum, except the lateral margins, black in ground-colour, which is concealed beneath a dense yellowish-grey dust and yellowish pile. Abdomen yellow; fourth, fifth, and sixth segments black, greyish-dusted, and with the hind margin lighter-coloured; second segment with a median, triangular, black spot, sometimes small, at other times of considerable size; third segment usually with a small median spot of the same colour. Legs brown, the femora black; the four front tibiæ and tarsi yellow or yellowish. Wings tinged with brown, more so anteriorly; first posterior cell closed; second submarginal cell appendiculate.
- ♀. Front rather narrow, a little wider and not at all prominent below. Abdomen sometimes wholly yellow, except the distal two or three segments; at other times the first and second segments are yellow, with a large black spot in the middle, the other segments black, with a narrow yellowish hind-margin. Legs sometimes wholly yellow; at other times dark, as described for the male. Length 11–15 millim.

CHRYSOPS (p. 45).

1 (A). *Chrysops virgulatus*.

Chrysops geminatus, Macq. Dipt. Exot., Suppl. iv. p. 39¹ (nec Wiedem.).

Chrysops virgulatus, Bellardi, Saggio, etc. i. p. 71, t. 2. fig. 17².

Chrysops crassicornis, v. d. Wulp, Wien. ent. Zeit. iii. p. 141³.

Hab. MEXICO, Guanajuato (*Dugès*³), Cuautla (*Saussure*²), Guadalajara and Santiago Iscuintla in Jalisco (*Schumann*), Amula and Chilpancingo in Guerrero (*H. H. Smith*).

Seven specimens. Bellardi² imperfectly described the male. It has the antennæ yellow or brownish-yellow, with the narrowed portion of the third joint black; the first joint is very much swollen, the second is a little shorter than the first and also much swollen, the third not longer than the second, broad on its basal part, narrow on the distal part. This peculiar structure of the male antennæ, together with the narrow separation of the eyes and the prominent facial tubercles, will readily distinguish the species. In the female the first basal cell has a square hyaline spot; the second basal cell has the proximal third and the tip brown, and the anal cell is brown only at the distal end. Both sexes have a triangular hyaline spot in the fifth posterior cell.

C. virgulatus was not identified by Osten Sacken (*antea*, p. 59).

Chrysops costatus (p. 46).

Chrysops costatus, Townsend, Ann. & Mag. Nat. Hist. (6) xix. p. 18 (1897)¹.

To the localities given, add:—MEXICO, San Rafael in Vera Cruz (*Townsend*¹), Teapa in Tabasco (*H. H. Smith*).

2 (A). **Chrysops** — ?

♂. Antennæ altogether black, the first joint incrassate. Facial tubercles yellow. Mesonotum dark brown, with inconspicuous stripes and yellow pile. Abdomen opaque brownish-black; second and following segments each with a narrow posterior yellow border, dilated into a minute spot in the middle; second segment yellow on the sides. Legs black; base of the front tibiæ, the middle tibiæ and the base of the middle metatarsi, the hind femora and tibiæ in part, and the hind metatarsi for the greater part, red. Wings with a hyaline spot in the distal end of the two basal cells, and in the anal cell; the brown of the distal costal margin scarcely exceeds the anterior branch of the third vein; the fourth and fifth posterior cells are for the most part subhyaline. Length 10 millim.

Hab. MEXICO, Mexico city (*H. H. Smith*).

A single specimen. It is not impossible that this belongs to some described species of which the female alone is known.

Chrysops latifasciatus (p. 46).

To the localities given, add:—MEXICO, Jalapa (*M. Trujillo*).

A single female specimen from Jalapa I refer with some doubt to this species. The first joint of the antennæ is somewhat swollen proximally; the second joint is stout, and only a little shorter than the first; the third joint is fully one and a half times the length of the second. The abdomen has a small yellow spot on the side of the first segment, a large triangular spot on the sides of the second, and three small spots on the posterior margin of the latter, of which the middle is the larger; the following segments have each three small posterior spots. The first two basal cells of the wings are brown for two-thirds of their length; the broad median band reaches nearly to the posterior border, with a subhyaline incision in the fifth posterior cell.

5. **Chrysops neglectus**, sp. n. (Tab. IV. fig. 20, ♀.)

♀. Black. Front blackish above, across the middle yellowish-pollinose; the large frontal tubercle brown above, yellowish below. Antennæ elongate; first joint slightly thickened; second joint about two-thirds the length of the first; third joint as long as the first two together; first two joints and the immediate base of the third yellow, the third joint for the most part black. Face reddish-yellow and almost wholly shining; palpi reddish. Thorax shining black, nearly bare; mesonotum lightly greyish in front. Abdomen black; second, third, fourth, and fifth segments each with a small, triangular, yellow spot, successively decreasing in size, on the hind margin; first segment with a small, second with a large, yellowish spot on the sides. Legs reddish-brown; the distal half of the four posterior femora, the middle tibiæ, and the first two or three joints of the four posterior tarsi, reddish-yellow. Wings with a broad brown band reaching the posterior margin in the fourth posterior cell and emarginate in the fifth; the brown of the costa continues narrowly to just beyond the anterior branch of the third vein; two basal cells brown at the immediate base only. Length $8\frac{1}{2}$ millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

One specimen. The single row of yellow spots on the abdomen distinguishes this from the black species hitherto described.

TABANUS (p. 48).

The determination of the species of *Tabanus* inhabiting Central America is very difficult when one takes into account, necessarily, the numerous imperfectly described forms from South America. I have spent many tedious hours reading the descriptions of these latter with only meagre results. I give below a Table of the species from Central America that have been described or mentioned in the present work, or are otherwise known to me. Six species described or noticed by Osten Sacken I have not seen, but I believe that their identification will be not at all difficult. Those marked with an asterisk were not recognized by him (*anteà*, p. 59).

- | | |
|--|----------------------------------|
| 1. Altogether black species; wings black | 2. |
| Altogether light yellow | <i>mexicanus</i> , Linn. |
| Not wholly black nor yellow | 6. |
| 2. Halteres with a yellowish-white knob | 3. |
| Halteres black | 4. |
| 3. Upper angle of the third antennal joint drawn out into a long point;
subcallus flat, opaque | <i>erebus</i> , O. S. |
| Upper angle rectangular, not drawn out; subcallus concave,
shining | <i>corone</i> , O. S. |
| 4. Front unusually broad, the frontal callosity transverse; front tibiæ
whitish at the base; first posterior cell strongly coarctate, often
closed | <i>atratus</i> , Fabr. |
| Front not unusually broad, the frontal callosity not transverse;
front tibiæ altogether black; first posterior cell only moderately
coarctate | 5. |
| 5. Narrow portion of the third antennal joint not remarkably elongate. | sp. |
| Narrow portion of the third joint unusually long | [<i>lugubris</i> , Macq.] |
| 6. Scutellum conspicuously velvety-black, with a white border; first
posterior cell closed | <i>albonotatus</i> , Bell. |
| Scutellum not so marked | 7. |
| 7. Wings with distinct brown markings, or brown with subhyaline
spaces | 8. |
| Wings nearly uniform in colour or hyaline | 14. |
| 8. Wings with four or five small brown spots; abdomen with three
rows of white spots; eyes hairy | <i>quadripunctatus</i> , Wiedem. |
| Wings with spots or bands; abdomen not so marked | 9. |
| 9. Body altogether black; wings with two broad brown bands | <i>chionostigma</i> , O. S. |
| Body not altogether black | 10. |
| 10. Body black, the margins of the mesonotum and the tip of the
scutellum red; wings brown, lighter distally, with a minute spot
at the furcation of the third vein (male) | sp. |
| Abdomen more or less yellowish-red | 11. |

Tabanus quadripunctatus (p. 48).

Tabanus quadripunctatus, Willist. Kans. Univ. Quart. iii. p. 195¹.

To the localities given, add:—MEXICO, Acaguizotla and Amula in Guerrero (*H. H. Smith*), Jaral in Guanajuato (*Schumann*).—BRAZIL, Rio Janeiro¹.

1 (A). **Tabanus aurantiacus**.

Tabanus aurantiacus, Bellardi, Saggio etc. i. p. 67, t. 2. fig. 9¹.

Hab. MEXICO, Guadalajara, San Blas (*Schumann*), Orizaba¹.

Three specimens. The broad orange-coloured sides of the first four abdominal segments, and the wings with blackish spots on the cross-veins and brown clouds along the longitudinal veins, make this handsome species easily recognizable.

4. **Tabanus caliginosus**.

Tabanus caliginosus, Bellardi, Saggio etc. i. p. 68, t. 2. fig. 10¹.

? *Tabanus ebrius*, O. Sack. anteà, p. 49².

To the localities given, add:—MEXICO¹, Atoyac in Vera Cruz (*Schumann*), Omealca (*M. Trujillo*).

This species will be best recognized by the very narrow front and palpi, and the markings of the wings, which are brown, with three hyaline spots, the largest over the proximal cross-vein, a small one across the outer cross-veins, and another at the furcation of the third vein; the tip of the wing and the anal angle are less deeply coloured. Bellardi's figure does not well represent it.

T. ebrius, O. S., seems only to differ in the more washed-out markings of the wings.

6 (A). **Tabanus atratus**.

Tabanus atratus, Fabr. (For the synonymy, see Osten Sacken's Catalogue of N. Am. Diptera, p. 57.)

Hab. EASTERN UNITED STATES.—MEXICO, Chihuahua (*Kerr*).

Four female specimens, agreeing with others from the United States.

9. **Tabanus chionostigma** (p. 54).

To the locality given, add:—MEXICO, Teapa in Tabasco (*H. H. Smith*).

A single female specimen. The abdomen is black, not brown, as is also the mesonotum, save the lateral margins. The first and second abdominal segments have a minute yellow spot in the middle behind. The tibiæ are hardly perceptibly yellowish proximally. Notwithstanding these discrepancies, the species is so strongly marked that there can be no question of the identity.

11. **Tabanus albonotatus** (p. 55).

To the localities given, add:—MEXICO, Teapa in Tabasco (*H. H. Smith*).

13. **Tabanus lineola** (p. 56).

Tabanus propinquus, Bellardi, Saggio etc. i. p. 65¹.

To the localities given, add:—MEXICO¹, Amula in Guerrero (*H. H. Smith*).

Four specimens. *T. propinquus*, Bell. (*nec* Macq.), differs in the colour of the hind legs and in the appendiculation of the submarginal cell; the first-mentioned character is of no importance, as similarly coloured specimens of *T. lineola* are known.

14. **Tabanus subruber**.

Tabanus ruber, Macq. Dipt. Exot., Suppl. ii. p. 42¹ (*nec* Thunb.).

Tabanus subruber, Bellardi, Saggio etc. i. p. 55².

Hab. MEXICO^{1 2}, Teapa in Tabasco, Amula (*H. H. Smith*), Atoyac in Vera Cruz (*Schumann*).

Five specimens.

15. **Tabanus pumiloides**, sp. n. (Tab. IV. figg. 21, 21 *a*, ♀.)

♀. Front yellowish-brown, with a square shining black callosity below, with a slender line reaching to a darker brown spot above. Antennæ red, the first joint and the annulate portion of the third joint black; annulate part a little shorter than the basal portion, obtuse at the tip; basal portion somewhat angulated, but not produced into a process above. Face opaque light grey. Palpi yellowish-white, with white and black hairs. Mesonotum greyish-brown, opaque, with sparse white hairs and indistinct stripes. Abdomen greyish or yellowish-brown, the segments each with a narrow whitish hind margin and an obsolescent median stripe. Legs black; the basal half of the front tibiæ, and the middle and hind tibiæ, except the immediate tip, yellow; basal joints of the posterior tarsi yellowish, the distal joints blackish. Wings hyaline; first posterior cell broadly open; anterior branch of the third vein with a stump. Length 9–11 millim.

Hab. MEXICO, Xucumanatlan and Omilteme in Guerrero, 7000 to 8000 feet (*H. H. Smith*).

This species is allied to *T. pumilus*, Macq., *T. sparus*, Whitn., and *T. cribellum*, O. S., from all of which it will be easily distinguished. The eyes are bare, with green cross-bands.

16. **Tabanus furunculus**, sp. n.

♂. Face and front silvery-white, the latter blackish above; hair white. Eyes bare. Antennæ black; basal annulus of third joint with a tuberculate process above, longer than the following annuli together. Palpi light yellow, with white hair. Mesonotum brownish-black, whitish-pruinose, with dusky hair. Pleuræ white-pollinose, with white hair. Abdomen black, with a median continuous white stripe; sides of the first four segments broadly red, leaving the black as a broad median stripe; all the segments with a narrow whitish hind-margin. Wings hyaline; first and fourth posterior cells broadly open; second submarginal cell not appendiculate. Legs black; base of front tibiæ, the tip of the four posterior femora and their tibiæ, except the distal end, yellow; hair of front femora black, of the other femora white.

♀. Front of nearly equal width; callosity quadrilateral, shining mahogany-coloured, with a slender prolongation above. Basal joint of antennæ in part red. Palpi with white and black hairs. Sides of abdomen more broadly red. Length 14–15 millim.

Hab. MEXICO, Tepetlapa in Guerrero (*H. H. Smith*), Santiago Iscuintla in Jalisco (*Schumann*).

Two specimens.

17. *Tabanus fur*, sp. n.

♀. Front a little wider above, opaque ochraceous; callosity rather small, shining reddish. Supra-antennal space opaque, of the same colour as the front. Antennæ dark red; attenuated portion of the third joint black, a little shorter than the basal annulus, the latter with a small vertical process above. Face white, with white hair. Palpi, for the most part, with short black hair. Eyes bare. Mesonotum deep brown, slightly pruinose, with short, recumbent white hairs forming indistinct stripes; ante-alar callosity reddish. Pleuræ white, with white hair. Abdomen reddish-brown, the tip blackish, not at all shining; in the middle with a narrow continuous white stripe, reaching nearly to the tip; on either side with a rather broader continuous white stripe reaching on the third segment; narrow lateral margins of the abdomen light yellow, with white hair. Wings hyaline; first and fourth posterior cells broadly open; second submarginal cell not appendiculate. Legs yellow, the upperside of the front femora, the distal portion of the front tibiæ, the immediate tip of the hind tibiæ, and all the tarsi, black or blackish. Length 13 millim.

Hab. MEXICO, Misantla (*F. D. Godman*).

One specimen.

18. *Tabanus hæmagogus*, sp. n.

♂. Eyes bare, the upper facets not much larger than the lower, the areas not sharply limited. Face ochraceous-yellow, the palpi of nearly the same colour. Antennæ red, the attenuate portion of the third joint black; basal portion of the third joint rather narrow, angulated above, longer than the attenuated portion. Mesonotum deep brown, almost black, lightly pruinose. Abdomen brownish-red, darker at the extremity; immaculate, or with a black spot in the middle of the second segment and another at the base of the first segment. Wings brown, lighter distally and behind; all the posterior cells open; second submarginal cell not appendiculate. Legs brownish-red and brown, the tarsi darker, the base of the front tibiæ lighter.

♀. Front of moderate width; callosity shining, reddish. Third joint of antennæ somewhat broader. Thorax and abdomen of about the same colour, red, immaculate; the abdomen sometimes yellow. Length 11–13 millim.

Hab. MEXICO, Temax in Northern Yucatan (*Gaumer*).

Six specimens.

19. *Tabanus filiulus*, sp. n.

? *Tabanus rufiventris*, Macq. Dipt. Exot. i. 1, p. 141¹ (nec Wiedem.).

♀. Red or brownish-red throughout, the tip of the antennæ, the end of the front tibiæ, and the greater part of the tarsi, black or blackish. Front rather narrow, of equal width; callosity red, continued above as a slender line. Basal portion of the third antennal joint longer than the annulate portion, angulated or slightly toothed above. Face yellowish. Palpi rather slender, light yellow, with white hairs. Abdomen usually of a lighter colour than the thorax, sometimes blackish at the tip. Wings yellowish or brownish; second submarginal cell not appendiculate; first posterior cell broadly open.

♂. Third antennal joint more slender. Thorax black throughout, the pleuræ greyish-pollinose. Legs darker than in the female, the front pair blacker. Length 12 millim.

Hab. MEXICO, Northern Yucatan (*Gaumer*).—ANTILLES, Cuba¹.

Ten specimens. It is very probable that this species is identical with *T. rufiventris*, Macq., though there is no trace of white spots on the abdomen. The name had been previously used by Wiedemann. The colour varies not a little, from red to reddish-brown, the abdomen sometimes almost yellow. The wings also vary in the intensity of their colour.

LEPIDOSELAGA (p. 57).

*Hadrus**, Perty, Del. Anim. art. Bras. p. 182 (1834).

1. *Lepidoseлага lepidota*.

? *Hæmatopota crassipes*, Fabr. Syst. Antl. p. 108¹.

Tabanus lepidotus, Wiedem. Aussereur. zweifl. Ins. i. p. 193².

Hadrus lepidotus, Perty, Del. Anim. art. Bras. p. 183, t. 36. fig. 9³; Walk. List &c. i. p. 209⁴; v. p. 272⁵; Bellardi, Saggio etc. i. p. 75⁶; Schiner, Reise der Novara, Dipt. p. 96⁷; Willist. Kans. Univ. Quart. iii. p. 192⁸.

Lepiselaga lepidota, Macq. Dipt. Exot. i. 1, p. 154, t. 18. fig. 3⁹.

Lepidoseлага lepidota, Loew, Dipt. Centur. viii. no. 8¹⁰; O. Sack. Prodr. N. Am. Tabanidæ, p. 475¹¹.

Lepidoseлага recta, Loew, loc. cit.¹²; O. Sack. anteà, p. 57¹³.

To the localities given, add:—MEXICO, Santiago Iscuintla in Jalisco (*Schumann*).—SOUTH AMERICA; ANTILLES.

One male and two females have been sent from Jalisco. Loew separated *L. recta* from *L. lepidota* chiefly on account of the difference in the colour of the lower part of the front, but I do not believe that the distinction is valid. This part in the male before me is yellowish, with the middle dark, and in the females blackish. A single male from Brazil, in my collection, has the lower portion of the front light yellow, and it would be clearly referable to *L. recta*; but in the four females sent, obtained at the same time and place, the colour of this part varies from yellowish to deep black. I can distinguish no difference whatever in the markings of the wings in any of the specimens; neither do I find any appreciable difference in the shape of the tibiæ. From *L. albitarsis*, Macq. (= *Hadrus parvus*, Willist.), the shape of the front and the spots in the brown of the wings will at once distinguish the present species.

* This name is preoccupied in Coleoptera (Dejean Catalogue, 1833), though the genus was not characterized till 1854.

DIACHLORUS (p. 57).

Diachlorus ferrugatus (p. 57).

To the localities given, add:—MEXICO, Teapa in Tabasco (*H. H. Smith*).

DICHELACERA (p. 58).

Dichelacera cervicornis (p. 58).

To the localities given, add:—MEXICO, Navarete in Tepic, Santiago Iscuintla in Jalisco (*Schumann*), Acapulco and Rio Papagaio in Guerrero (*H. H. Smith*).

Four specimens. Were it not for the observations made by Osten Sacken I should have felt little hesitation in treating these insects as a new species, so poorly do they agree with Wiedemann's and Schiner's descriptions. In one example, the smallest, the brown of the outer part of the wings is partly dissolved into spots. In all the others the wings are dark brown, with the following light yellowish-hyaline markings: a triangular spot in the marginal cell, the basal half of the first submarginal cell, the basal third or less of the first posterior cell, the basal two-thirds of the discal cell, the proximal end of the fourth and fifth posterior cells, and the whole of the second basal cell. In the first-mentioned specimen, the middle legs are wholly yellow, the distal joints, only, of the tarsi being somewhat infuscated; in the others the tip of the tibiae and the tarsi are dark brown. In all of them, the front and hind tibiae and tarsi are dark brown or black, the basal portion of the tibiae more or less yellow. The present species is evidently not *D. januarii*, to judge from the large size of the frontal callosity.

2. **Dichelacera pulchra**, sp. n. (Tab. IV. figg. 22, 22 a, ♀.)

♂. Eyes with an area of enlarged facets above, which are clearly distinguished from the small ones below. Frontal triangle and the sides of the face opaque light yellow; convex portion of the face for the most part shining, pitchy-black. Antennæ rather longer than the head; yellow, the annulate portion of the third joint black, the distal part of the non-annulate portion brownish; the upper projection is acute, and extends a little beyond the base of the annulate portion. Proboscis black, the labella enlarged; in length a little less than the vertical diameter of the head. Palpi black; third joint curved upward, somewhat swollen at the tip and clothed with black hair. Mesonotum black, moderately shining, with black hair; in front with the beginning of a broad cinereous stripe; a triangular spot at the outer ends of the suture, and a narrow band in front of the scutellum, covered with bright golden-yellow pile. Pleuræ black, with black pile; lightly cinereous-pollinose below. Scutellum somewhat reddish on the margin. Abdomen black or pitchy-black; posterior part of the first segment yellow, as is also the narrow hind margin of the next two or three segments; pile black. All the femora black, with the exception of the immediate tip, which is yellowish; all the tibiae light yellow, with the exception of the distal half of the front pair, which is dark brown; front tarsi brown, the four posterior tarsi brownish distally. Wings with a broad dark brown band, the inner margin of which extends obliquely from near the end of the first vein to the fifth posterior cell near its proximal third (the band leaves the outer margin of the wing and the largest part of the fifth posterior cell nearly hyaline); a similar dark brown colour fills out the outer half of the anal cell; costal, subcostal, and the proximal part of the marginal cells brownish-yellow; the large triangular space behind this front-border is yellowish-hyaline.

♀. Front rather wide, black, covered with a greyish dust; the square shining black callosity with an elongate, pointed projection above. Palpi elongate, slender, and curved downward. Length 10–13 millim.

Hab. MEXICO, Rincon, Dos Arroyos, and Acapulco in Guerrero (*H. H. Smith*).

One female and two males. This species will be distinguished from *D. scapularis*, Macq., from Tehuantepec, by the light yellow tibiae, &c.

LEPTIDÆ (p. 60).

PHENEUS.

Pheneus, Walker, Ins. Saunders. p. 155 (1851).

Arthrostylum, Williston, Kans. Univ. Quart. iv. p. 108 (1895).

1. *Pheneus tibialis*.

Pheneus tibialis, Walk. Ins. Saunders. p. 155, t. 4. fig. 3¹.

Arthrostylum fascipennis, Willist. Kans. Univ. Quart. iv. p. 109².

Hab. MEXICO, Xucumanatlan² in Guerrero (*H. H. Smith*).—ANTILLES, Jamaica¹.

A single specimen. The genus has not before been identified since its description by Walker. The antennæ have a long, jointed, terminal style, composed of five distinct segments. The front tibiae have a single spur, the others two each. The male is dichoptic; the wings have the fourth posterior and anal cells closed.

CHRYSOPILA (p. 60).

5. *Chrysopila plebeia*, sp. n.

♂ ♀. Eyes separated by a linear space. Occiput, front, and face black, covered with bluish-white dust; bulbous portion of the face shining yellow. Proboscis and palpi yellow. Thorax shining yellowish-red, the mesonotum brownish, the scutellum and pleuræ yellowish. Abdomen reddish-yellow; second, third, and fourth segments each with a broad brown band anteriorly; fifth and sixth segments with a blackish band, the seventh wholly black; in the female the fifth segment is yellow. Wings tinged with brown; stigma brownish-yellow; the second vein terminates beyond the first at a distance about as great as the length of the anterior cross-vein; marginal cell but little dilated; anterior branch of the third vein angulated; vein between the second posterior cell and the discal cell very short or punctiform. Legs yellow, the tibiae a little darker, the tarsi blackish. Length 7–8 millim.

Hab. MEXICO, Omilteme and Sierra de las Aguas Escondidas in Guerrero, 8000 feet (*H. H. Smith*).

Three males and twelve females. In one male the mesonotum has short depressed yellow hair, which is scarcely perceptible in the other specimens. One example has the thorax yellow, with the brown bands of the abdomen almost obsolete.

6. *Chrysopila aterrима*, sp. n.

♂. Deep black, the tip of the femora, tibiae, and basal joints of tarsi yellow or yellowish. Face somewhat greyish. Eyes broadly contiguous, with an area of enlarged facets above. Mesonotum velvety; hair of

thorax black. Scutellum, pleuræ, and abdomen with a brownish tint; hair of abdomen yellow. Wings hyaline; stigma round, deep brown; marginal cell considerably dilated; contact of second posterior cell about equal to the length of the posterior cross-vein. Length 5 millim.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

One specimen. This species will be at once distinguished from *C. humilis*, Loew, by the black hair of the head and thorax.

7. *Chrysopila basilaris*.

Leptis basilaris, Say, Journ. Acad. Phil. ii. p. 46¹; Compl. Wr. ii. p. 55²; Wiedem. Ausserer. zweifl. Ins. i. p. 228³.

Hab. UNITED STATES, Pennsylvania^{1 2 3}.—MEXICO, Vera Cruz (*H. H. Smith*).

Two male specimens. The brief description applies to the Mexican insect, but this does not make the identification certain.

8. *Chrysopila invalida*, sp. n.

♂. Eyes broadly contiguous. Occiput, frontal triangle, and face bluish-white on a black background. Palpi black; proboscis yellow; beard white. Antennæ reddish-brown. Thorax black in ground-colour, but thickly covered with a bluish-white dust; tomentum of mesonotum golden-yellow. Abdomen black; first two segments light yellow, except for a black band or spot on the second; tomentum golden-yellow. Legs light yellow, the coxæ excepted, the tibiæ a little darker than the femora, the tarsi blackish. Wings hyaline, the small stigma brown; neuration as in *C. aterrima*. Length 7 millim.

Hab. MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

One specimen.

9. *Chrysopila puella*, sp. n.

♂. Head and thorax nearly as in *C. invalida*, the eyes a little less closely approximated, the proboscis black, and the mesonotum perhaps darker. Abdomen opaque black; first, third, fourth, fifth, and sixth segments each with a broad, anterior, golden-tomentose band, the hair black. Wings infuscated distally, otherwise as in *C. invalida*, the stigma perhaps more elongate. Length 5 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

One specimen.

10. *Chrysopila nana*, sp. n.

♂. Head as in *C. plebeia*, the bulbous portion of the face somewhat fuscous. Thorax blackish-brown, the pleuræ in part obscurely yellowish or reddish; mesonotum and scutellum covered with green and golden tomentum. Abdomen yellow, the tip black; second segment with a brownish, the third and following segments each with a broad black anterior band; hair black. Wings brown on the distal half, the basal portion to within the discal cell subhyaline; stigma a little darker; neuration nearly as in *C. plebeia*. Legs as in *C. plebeia*. Length 7-8 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Three specimens. This species is nearly related to *C. quadrata*, Say.

11. *Chrysopila latifrons*, sp. n.

♀. Front as broad as long, opaque yellowish- or greyish-brown; occiput, and face from below the impressed line above the antennæ, lighter-coloured, greyish or plumbeous-brown. Antennæ deep brown, the basal joints somewhat reddish. Palpi black, proboscis yellowish. Mesonotum dark opaque brown, with the lateral margins and three median linear stripes in front lighter-coloured; covered with light yellow tomentum. Pleuræ nearly of the colour of the occiput. Abdomen uniform blackish-brown, a little shining; tomentum or short hair light yellowish. Legs yellow, the underside of the femora brown, the tarsi distally brown, tomentum of the femora yellowish. Wings nearly hyaline proximally, lightly infuscated distally; a narrow brown band across the proximal cross-veins and over the tip of the anal cell; across the outer cross-veins a broad diffuse brownish band, beginning in the small brown stigma; outer part of the marginal cell more expanded than in *C. plebeia*; anterior branch of the third vein angulated; contact of the second posterior cell with the discal cell about equal to the length of the posterior cross-vein. Length 7 millim.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

One specimen. A single female specimen from Atoyac (*H. H. Smith*) closely resembles the one described, but has the wings hyaline, save for the brown stigma.

ATHERIX (p. 62).

2. *Atherix latipennis*.

Atherix latipennis, Bellardi, Saggio etc. ii. p. 93¹.

Hab. MEXICO, Sierra de las Aguas Escondidas and Omilteme in Guerrero 7000 to 8000 feet (*H. H. Smith*), Angangueo¹, Oaxaca¹.

Twenty specimens. The males agree with the description; the females differ very materially in having the wings more largely hyaline, the basal brown spot being much smaller, the legs for the most part yellow, &c. *A. latipennis* was not identified by Osten Sacken in the earlier part of this work (*anteà*, p. 62).

3. *Atherix concinna*, sp. n. (Tab. IV. figg. 23, 23 a, ♀.)

♂. Frontal triangle whitish, with a median opaque black spot. Antennæ deep reddish-brown. Palpi black and with black hair. Mesonotum shining black, somewhat pollinose in front. Pleuræ for the most part white-pollinose. Halteres black. Abdomen opaque black, first four segments with a broad, posterior, bluish-white pollinose band, broadly interrupted in the middle; fifth and sixth segments with the band entire; hypopygium somewhat reddish. Legs yellow; middle and hind femora, except the tip, front tibiæ and tarsi, the middle tarsi for the most part, and the tip of the hind tarsi, black or blackish. Wings brown, with the following spaces hyaline: the base of the first basal cell, an elongate spot in the anal angle extending into the anal cell, a transverse spot from the marginal cell across the outer part of the first and second basal cells, a narrow band from the fourth vein to the hind margin in the fifth posterior cell, and a narrow band from the costa into the base of the second posterior cell; a hyaline or subhyaline spot on the costa beyond the tip of the first longitudinal vein; tip of the wing subhyaline.

♀. Legs in greater part yellow; the hind femora yellow, except for a distal brown band, the middle femora black on the basal half. Mesonotum more pollinose than in the male. Hyaline spaces of the wings larger. Length 9–10 millim.

Hab. MEXICO, Acaguizotla and Rincon in Guerrero (*H. H. Smith*).

Three specimens.

ACANTHOMERIDÆ.

ACANTHOMERA (p. 67).

Acanthomera ——? (p. 68).

To the locality given, add :—MEXICO, Cuesta de Misantla (*M. Trujillo*).

Three specimens, evidently of the same species as that noticed by Osten Sacken, though I should not have described the antennæ as “disciform,” but rather as flattened-subulate or fusiform. The examples are all males, so that I cannot solve the doubt expressed by him as to the identity of the insect.

MYDAIDÆ (p. 68).

LEPTOMIDAS (p. 68).

Leptomidas brachyrhynchus (p. 69).

To the locality given, add :—MEXICO, Teapa in Tabasco (*H. H. Smith*).

A single male specimen, somewhat doubtfully referred to the present species. It is black throughout, the abdomen shining, with the cross-bands distinct. The legs are brown; the hind pair black, with the basal half of the tibiæ and femora light yellow. The humeri are yellow. The wings are nearly hyaline. The species must be closely allied to, if not identical with, *L. tenuipes*, Loew.

MYDAS * (p. 70).

Mydas, Osten Sacken, Berl. ent. Zeitschr. xl. p. 345 (1895).

Midas, antea, p. 70.

Mydas rubidapex (p. 70).

Mydas rubidapex, Brauer, Sitzungsber. der Akad. Wissensch. 1883, p. 151, tab. fig. 2¹; Willist.

Trans. Kans. Acad. Sci. xiv. p. 55².

To the localities given, add :—MEXICO², Venta de Zopilote, Dos Arroyos, and Acaguizotla in Guerrero (*H. H. Smith*), Yucatan (*Gaumer*).

Three specimens. One, a female, has the antennæ black, with the bulbous portion of the lamella yellow, and the anal angle of the wings largely whitish. The others, male and female, have the first two joints only of the antennæ black, and neither has any whitish colour in the anal angle. In all of them the abdomen is deep black, without distinct violet or blue lustre. A single example from Yucatan has the alulæ black and the abdomen deep violet. I am unable to see any other differences.

* [Prof. Williston prefers to use the original name, *Mydas*, for this genus, instead of the amended form, *Midas*, adopted in the earlier portion of this volume.—Ed.]

Mydas decor (p. 71).

To the locality given, add:—MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

6. Mydas annularis.

Mydas annularis, Gerst. Stett. ent. Zeit. 1868, p. 100¹.

Hab. MEXICO¹, Chilpancingo in Guerrero (*H. H. Smith*).

A single male specimen, which I do not doubt is of this species. The band on the posterior part of the second segment is broadly interrupted on each side by a black spot. *M. annularis*, as well as *M. militaris*, Gerst., was not identified by Osten Sacken in the earlier part of this work (*antea*, p. 73).

7. Mydas militaris.

Mydas vittatus, Macq. Dipt. Exot., Suppl. iv. p. 60, t. 4. fig. 6¹; Bellardi, Saggio etc. ii. p. 7² (nec Wiedem.).

? *Mydas rufiventris*, Macq. Dipt. Exot., Suppl. iv. p. 60³.

Mydas militaris, Gerst. Stett. ent. Zeit. 1868, p. 99⁴; Willist. Trans. Am. Ent. Soc. xiii. p. 290⁵; Trans. Kans. Acad. Sci. xiv. p. 56⁶.

? *Midas rufiventris*, Loew, Centur. vii. no. 22⁷.

Mydas ventralis, Gerst. Stett. ent. Zeit. 1868, p. 38⁸.

Hab. UNITED STATES, California⁷, Arizona⁵.—MEXICO^{1 2}, Venta de Zopilote nad Iguala in Guerrero (*H. H. Smith*), Vera Cruz⁴.—BRAZIL³.

I have already⁵ called attention to the great variation of this species, and I feel pretty confident that the above synonymy will be found to be correct. If such is the case, Macquart's name *rufiventris* will have to be used; the fact that Loew adopted the same specific term for what he supposed to be a new species was a coincidence only.

8. Mydas quadrilineatus.

Mydas quadrilineatus, Willist. Trans. Kans. Acad. Sci. xiv. p. 56¹.

Hab. MEXICO¹, Tierra Colorada and La Venta in Guerrero (*H. H. Smith*), San Blas in Jalisco (*Schumann*).

Four specimens.

9. Mydas crassipes.

Mydas crassipes, Westw. Arcana Ent. i. p. 51, t. 13. fig. 3¹.

Hab. ? NORTH AMERICA¹.—MEXICO, Teapa in Tabasco (*H. H. Smith*).

One male specimen, agreeing with Westwood's brief description, and differing from *M. decor* in the details already given by Osten Sacken (*antea*, p. 71). The abdomen is conical.

NEMESTRINIDÆ (p. 73).

RHYNCHOCEPHALUS (p. 73).

1. *Rhynchocephalus volaticus*.

Rhynchocephalus volaticus, Willist. Canad. Ent. 1883, p. 71¹; Trans. Am. Ent. Soc. xiii. p. 293².

Rhynchocephalus — ?, O. Sack. anteà, p. 73³.

To the locality given, add:—UNITED STATES, Florida^{1 2}.—MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

Three specimens. Osten Sacken's failure to positively identify this species was due to errors in my original description.

BOMBYLIIDÆ (p. 75).

EXOPROSOPA (p. 77).

Exoptata, Coquillett, Canad. Ent. xix. p. 13 (1887).

Osten Sacken has the merit of being the first to clearly define the genus *Exoprosopa*, which previously had been made to include all those species with three submarginal cells and a jointed style. The genus might include forms with but two submarginal cells. Unfortunately, the species of *Exoprosopa* having a brown anterior margin to the wings are not so satisfactorily characterized. Upon first attempting their separation in the collection before me, the task seemed to be an easy one; further study, however, convinces me that very much more careful work is needed before we can safely distinguish many of them.

The genus *Exoptata* of Coquillett cannot be satisfactorily separated from *Exoprosopa*. It differs solely in the division of the first posterior cell. The typical species, *E. divisa*, I have seen from Las Cruces, New Mexico, near the border of Mexico. *E. singularis*, Macq., has the same peculiarity.

Table of Species examined for this Supplement.

- | | |
|---|----------------------------|
| 1. The pattern of the wings consisting of more or less distinct brown bands | 2. |
| No cross-bands on the wings, but a more or less broad brown anterior margin, the cross-veins sometimes clouded | 3. |
| 2. First posterior cell closed, the brown cloud at the base of the second posterior cell not connected with the brown in front (length 7-9 millim.) | <i>iota</i> , O. Sack. |
| First posterior cell open; the brown at the base of the second posterior cell confluent with that in front | <i>pueblensis</i> , Jaenn. |
| 3. First posterior cell closed or narrowly open | 4. |
| First posterior cell distinctly open | 6. |

4. First abdominal segment black-tomentose; first posterior cell usually closed at some distance before the margin 5.
 First posterior cell closed in the margin; abdomen white, with narrow black borders [pennis, Macq.).
 sp. ? (under *limbi-*
5. Abdominal segments, except the second and last, black-tomentose, with a narrow fringe of pale rufous; cross-veins of the wings clouded *sackeni*, sp. n.
 Abdominal segments, except the fifth, usually, with a white band; cross-veins not distinctly clouded *limbipennis*, Macq.
6. Face rounded in profile, not conical; proboscis protruding from the oral margin as far as or farther than the length of the head 7.
 Face distinctly conical; proboscis protruding not more than the length of the labella beyond the oral margin 9.
7. Antennal style shorter than or about as long as the third joint 8.
 Antennal style twice as long as the third joint *socia*, O. Sack.
8. The portion of the proboscis protruding beyond the oral margin shorter than that of the head; style distinctly shorter than the third antennal joint *filia*, O. Sack.
 The portion of the proboscis protruding beyond the oral margin longer than that of the head *rostrifera*, Jaenn.
9. Wings with conspicuous brown clouds on the cross-veins *pavida*, sp. n.
 Wings without brown clouds on the cross-veins 10.
10. Third antennal joint very much elongated, more than three times the length of the style; brown of the wings less sharply limited posteriorly *brevistylata*, sp. n.
 Third joint not extraordinarily elongated, the style equal to about half its length *brevirostris*, sp. n.

Exoprosopa pueblensis (p. 82).

To the localities given, add:—MEXICO, Acaguizotla and Amula in Guerrero (*H. H. Smith*), San Blas and Santiago Iscuintla in Jalisco, Jaral in Guanajuato (*Schumann*).

Nine specimens.

Exoprosopa iota (p. 82).

Exoprosopa iota, Coquillett, *Canad. Ent.* xxiv. p. 174¹.

To the locality given, add:—UNITED STATES, California¹.—MEXICO, Acaguizotla in Guerrero (*H. H. Smith*).

Four specimens. Coquillett¹ thinks that this species is almost certainly identical with *E. doris*, O. S. An examination of a number of examples of both forms convinces me that such a union is premature. *E. doris*, it is true, does sometimes

have the closed first posterior cell of *E. iota*, but the wing-markings are always paler and less extensive, especially in the proximal brown band.

Exoprosopa limbipennis (p. 84).

To the localities given, add:—MEXICO, Dos Arroyos, Rincon, Tierra Colorada, and Amula in Guerrero (*H. H. Smith*), Northern Yucatan (*Gaumer*).

Sixty specimens. The majority of them, both male and female, agree fairly well with the description given by Osten Sacken; but there are others that do not, and I am inclined to doubt the distinctness of *E. procne*, O. S. I find that there is a variation in the relative length of the third antennal joint, apart from other differences.

Several examples from Dos Arroyos, which at first sight seemed to belong to a very different species, have the first posterior cell closed in the margin or narrowly open, the abdomen almost wholly white-tomentose, the hind margin of the segments only being black, and the brown of the wings narrower.

7 (A). **Exoprosopa sackeni**, sp. n.

Exoprosopa, sp. ? no. 1, O. Sack. anteà, p. 86¹.

♂. Closely allied to *E. limbipennis*, differing more particularly in the markings of the abdomen. The second segment has a broad white band, and the seventh also has white hairs, the abdomen elsewhere being black-tomentose, with a fringe or narrow posterior band of rufous tomentum on each of the segments. The wings have the anterior border coloured darker brown and more narrowly than in *E. limbipennis*; there is a brown cloud at the base of the fourth posterior cell, another, less distinct, at the base of the third, and one also on the vein that closes the outer anterior submarginal cell near its junction with the second vein; and the anterior cross-vein has a broad cloud, coalescent with the brown of the anterior margin of the wing. Antennæ black, the first joint in large part reddish; style rather more than half the length of the third joint. Face and lower part of the front with fulvous pile; face on the sides yellowish-red. Hair on the front and sides of the throat and at the base of the abdomen reddish-yellow. The four posterior femora in great part, and the front femora also in part, yellow. Length 12–13 millim.

Hab. MEXICO (*Sumichrast*¹), Hacienda de la Imagen and Venta de Zopilote in Guerrero (*H. H. Smith*).

Three specimens. The one from Venta de Zopilote, a female, has the face wholly, and the antennæ in great part, as well as the femora and tibiæ, yellow; the brown of the wings encroaches more in the second basal cell, and the stump in the discal cell is longer. It is possible that these differences are sexual. I believe that this is the species mentioned by Osten Sacken (*anteà*, p. 86, no. 1, under *E. anthracoides*).

Exoprosopa rostrifera (p. 86).

To the localities given, add:—MEXICO, Xucumanatlan, Amula, and Omilteme in Guerrero (*H. H. Smith*).

Fifteen specimens.

Exoprosopa filia (p. 86).

To the locality given, add :—MEXICO, San Blas in Jalisco (*Schumann*).

Two specimens, which agree in all respects with Osten Sacken's description, save as regards the terminal abdominal segments. The third and following segments are clothed for the most part with whitish tomentum, somewhat intermixed with black in front or in the middle. The proboscis seems to be a little longer than he described, though far shorter than in *E. rostrifera*.

9 (A). **Exoprosopa brevirostris**, sp. n.

♂. Third joint of the antennæ elongate-conical, the style equal to about three-fifths of its length; face prominent. First posterior cell coarctate; wings brown anteriorly and with clouds upon the cross-veins. Structure of the head nearly as in *E. limbipennis*, the proboscis barely projecting beyond the oral margin, the style of the antennæ perhaps a little shorter. Front and face clothed with black and rufous tomentum: lower part of the front and ground-colour of the face reddish-yellow. Hair of the front and sides of the thorax yellowish. Scutellum red. Abdomen black-tomentose, the second segment with a yellowish-white band, narrower in the middle; fourth segment with a whitish spot on each side, and the seventh segment with white hairs; the segments all have some rufous or yellowish tomentum on the posterior margin. Wings brown in front, the brown margin running from the base of the fourth posterior cell, where it coalesces with the dark brown clouds on the base of this and the third posterior cell, to the tip of the first vein; base of the anal cell brown; first posterior cell open. Legs wholly black. Length 12–14 millim.

Hab. MEXICO, Santiago Iscuintla and Guadalajara in Jalisco (*Schumann*).

Two specimens.

9 (B). **Exoprosopa brevistylata**, sp. n.

♂. Allied to *E. brevirostris*, but differing from it in having the third joint of the antennæ much elongated, the style short and not one-third the length of the joint. The wings are less hyaline posteriorly, the brown in front paler in tint, and its limits indistinct, more so than in *E. limbipennis*. The second basal and the discal cells are not clouded throughout with brown, but are subhyaline, like the posterior part of the wings; the clouds on the cross-veins, though indicated as in *E. brevirostris*, are, except those at the base of the third submarginal and posterior cells, indistinct: the first posterior cell is narrowed. Abdomen with a complete yellowish-white cross-band on the fourth segment, and with similarly coloured spots on the sides of the second, fourth, and fifth segments. Length 15 millim.

Hab. MEXICO, Acapulco in Guerrero (*H. H. Smith*).

One specimen. The species is at once distinguished from any other of this group by the very long third antennal joint and short style. The front tibiæ, as in *E. brevirostris*, are without spinules. A second example, sent with the other, has a white spot on the sides of the second, third, fourth, and perhaps the fifth, segments. The abdomen has the elongated form of that of *E. limbipennis*, &c.

Exoprosopa socia (p. 87).

To the locality given, add :—MEXICO, Amula in Guerrero (*H. H. Smith*).

A single specimen, which, though somewhat injured, agrees well with Osten Sacken's description. There is a hyaline spot on the inner marginal cell.

12. **Exoprosopa pavida**, sp. n.

♂. Face conical; proboscis with the tip of the labella protruding beyond the oral margin; third joint of the antennæ elongate-conical, the style equal to about one-third the length of the joint, short. Front tibiæ without spinules; front tarsi with erect pile. Wings brown in front, the brown including the base of the second basal cell; basal veins of the second, third, and fourth posterior cells, the outer submarginal cell, the posterior veins, and the anterior end of the inter-submarginal vein, with conspicuous dark brown clouds; first posterior cell open. Legs black. Length 12 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

One specimen. The abdomen has black and white tomentum. A second, larger, example, from Amula, has the spots of the wings smaller, and those on the posterior veins absent; the third antennal joint shorter, the style two-thirds of its length; and the second abdominal segment with a complete white band. Other specimens, from Acaguizotla, are rather smaller than the first, the wings more nearly as in the second, the style intermediate in length. I am not sure whether these all belong to one species.

HYPERALONIA (p. 89).

Velocia, Coquillett, *Canad. Ent.* xviii. p. 158 (1886).

The characters applied to this genus by Osten Sacken limit it sharply from *Exoprosopa*; nevertheless, in *E. erythrocephala*, Wiedem., the third joint of the antennæ has a minute style, very much like that of *Stonyx*, though the front legs, the hind ungues, and the wings agree otherwise with those of the normal species of *Hyperalonia*. This character alone is hardly sufficient to define a genus, especially as the wings do not show a very different pattern of coloration. The metallic body is, however, aberrant. The definition of the genus must therefore be modified to include species with a long or a short style to the third antennal joint.

Hyperalonia proserpina (p. 92).

Exoprosopa cerberus, Macq. *Dipt. Exot.* ii. 1, p. 38, t. 16. fig. 5¹.

To the localities given, add:—MEXICO, Teapa in Tabasco (*H. H. Smith*).

Eleven specimens, all agreeing with the observations of Osten Sacken. I have numerous others agreeing with these, from Chapada, Brazil.

Hyperalonia kaupi (p. 94).

To the locality given, add:—MEXICO, Amula in Guerrero (*H. H. Smith*).

Two specimens, agreeing with Jaennicke's description and figure.

STONYX (p. 94).

Stonyx clotho (p. 95).

To the localities given, add:—MEXICO, Amecameca in Morelos (*F. D. Godman*).

A single injured specimen clearly belongs to this species, though Osten Sacken's figure of the wing does not quite agree with it: the brown of the distal is as dark as that of the proximal portion, and not light yellowish, as shown.

3. Stonyx lacera.

Anthrax lacera, Wiedem. Aussereur. zweifl. Ins. ii. p. 634¹.

Hab. MEXICO¹, Acaguizotla and Hacienda de la Imagen in Guerrero (*H. H. Smith*), Oaxaca¹.

Three specimens from Guerrero, agreeing well with the description.

4. Stonyx melia, sp. n. (Tab. V. figg. 1, 1 *a*, ♀.)

♂ ♀. Deep black throughout, and clothed with black hair and tomentum, save on the immediate base of the abdomen, where there is a lateral tuft of yellowish hair (perhaps also some white hairs on the sides of the second and third segments). Wings dark brown and hyaline, the brown coloration nearly uniform. The markings are similar to those of *S. lacera*, and may be described as follows: the brown ends abruptly near the tip of the first vein, its margin thence extending outwardly to about midway between the angles of the anterior branch of the third vein, and thence to and across the vein in front of the third posterior cell, forming a small spot in that cell; the outer part of the discal cell is brown, the brown margin again beginning at the fourth vein a little beyond the anterior cross-vein and extending to the tip of the anal cell; in the outer part of the anal angle there is usually a small hyaline spot, reaching into the anal cell; at the tip of the second vein a brown spot, sometimes connected with the brown proximally, extending narrowly along the costa; a small hyaline spot on the outer part of the first submarginal cell, and another at the anterior angle of the first basal cell. Structure throughout as in *S. lacera*. Length 9–12 millim.

Hab. MEXICO, Rio Papagaio and Acapulco in Guerrero (*H. H. Smith*).

Seven specimens. In some of them the small hyaline spot in the anal angle of the wings is wholly obsolete; there may be a minute brown spot on the outer angle of the anterior branch of the third vein.

5. Stonyx lelia, sp. n. (Tab. V. fig. 2, ♂.)

♂. Very much like *S. melia*, but with a conspicuous row of light yellow hairs along the noto-pleural suture and back of the halteres. The hair of the pronotum is yellowish, and the white hairs on the sides of the abdominal segments are more abundant, the distal segments being apparently covered with white tomentum. The hyaline excision extending across the anal angle into the anal cell is much larger than in any specimen of *S. melia* before me, and there is less or no brown within the third posterior cell. Length 10–12 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

Four specimens. The contrast between the deep black and the light yellow hair on the sides of the thorax is very marked, the species differing in this respect from *S. melia*.

DIPALTA (p. 98).

Coquillett is of opinion that the name *Dipalta* should be suppressed and the species united with *Anthrax*, on the ground that the cross-vein uniting the anterior branch of the third with the second is adventitious. I have seen many specimens of *D. serpentina* from various regions of the United States and Mexico, but never one with the cross-vein wanting. I am not prepared to reject the genus, though, as I have remarked before, I am not satisfied of its distinctness from *Diplocampta*, Schiner, notwithstanding the remarks of Osten Sacken. Even though the cross-vein should be wanting, the peculiar shape of the second vein is characteristic.

Dipalta serpentina (p. 98).

To the localities given, add:—MEXICO, Amula in Guerrero (*H. H. Smith*), Atoyac in Vera Cruz (*Schumann*).

Six specimens.

ARGYRAMŒBA (p. 98).

The genus *Spogostylum*, Macquart [Dipt. Exot. ii. 1, p. 53 (1840)], has twenty years' priority over *Argyramœba*, Schiner, from which it merely differs in having three submarginal cells formed in the usual way—that is, by a cross-vein connecting the anterior branch with the second vein: Schiner suspected that they were synonymous*. Coquillett has referred North-American species to *Spogostylum*, in which the third cell was formed by the division of the outer submarginal cell, or, as he describes it, by the presence of a cross-vein connecting the anterior branch of the third vein with the third vein, which is quite another thing. Abnormal specimens of *Argyramœba* with three submarginal cells are not rare.

Argyramœba simson (p. 100).

To the localities given, add:—MEXICO, Amula in Guerrero (*H. H. Smith*).

Argyramœba acroleuca (p. 101).

To the localities given, add:—MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

Argyramœba œdipus (p. 102).

To the localities given, add:—MEXICO, Northern Yucatan (*Gaumer*).

10. **Argyramœba angustipennis.**

? *Anthrax angustipennis*, Macq. Dipt. Exot. ii. 1, p. 64, t. 21. fig. 9¹.

Hab. MEXICO, Acapulco in Guerrero (*H. H. Smith*).—GUIANA¹.

A single specimen from Acapulco, without head, may be a variety of this species. The

* Reise der Novara, Dipt. p. 120. nota.

wings differ from the figure in having the first posterior discal and the fourth posterior cells brown at the base, the anal cell and anal angle almost wholly brown. A specimen from Brazil, in my collection, which I identify as belonging to this species, is marked more nearly as in Macquart's figure, and it has the tip of the abdomen wholly silvery. The anal cell in both specimens is remarkably narrow.

LEPIDANTHRAX (p. 107).

Lepidanthrax disjuncta (p. 108).

To the localities given, add:—MEXICO, Chilpancingo and Hacienda de la Imagen in Guerrero (*H. H. Smith*).

Three specimens. *L. disjuncta* bears the same relation to its congeners that *Exoptata divisa*, Coq., does to the species of *Exoprosopa*.

Lepidanthrax proboscidea (p. 109).

? *Anthrax proboscidea* (Loew), Coquillett, Trans. Am. Ent. Soc. xiv. p. 168¹.

Lepidanthrax proboscidea, var., O. Sack. anteà, p. 110².

To the localities given, add:—UNITED STATES, Arizona¹.—MEXICO, Hacienda de la Imagen and Acaguizotla in Guerrero (*H. H. Smith*).

Four specimens from Guerrero, apparently belonging to the same species as those mentioned by Osten Sacken² from the Tres Marias Is.

ANTHRAX (p. 111).

Isopenthes, anteà, p. 96.

Anthrax cyanoptera (p. 115).

To the locality given, add:—MEXICO, Tepetlapa and Palo Blanco in Guerrero (*H. H. Smith*).

1 (A). **Anthrax (Isopenthes) blanchardiana**.

Isopenthes blanchardiana, O. Sack. anteà, p. 96.

To the localities given, add:—MEXICO, Xucumanatlan in Guerrero (*H. H. Smith*), Puebla (*F. D. Godman*).

Six specimens, in one of which there are but two submarginal cells. The very great variability in this respect convinces me that the genus *Isopenthes* does not present sufficient claims for generic independence.

1 (B). **Anthrax (Isopenthes) sackeniana**, sp. n.

♂. Black, front with black hair, and golden tomentum below. Face projecting conically. Antennæ with a slender style, not twice the length of the bulbous portion. Proboscis withdrawn within the oral cavity.

Thorax with yellowish hair along the sides and in front. Abdomen with black hair along the sides, intermixed with white, especially in front; last two segments clothed with silvery hair. Front tibiæ smooth; pulvilli wanting. Wings brown and hyaline: the brown coloration fills out the basal two-thirds or thereabouts of the anal cell, the base of the third and fourth posterior cells, the base of the discal, first posterior, and first submarginal cells, and the marginal cell as far as the tip of the first vein; in addition, there is a spot on the outer cross-vein and on the veins at the base of the other submarginal cells. Length 9 millim.

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*).

One specimen. This species differs materially from *A. blanchardiana* in having a conical, not receding face; the style of the antennæ is thicker (instead of hair-like), and the smooth tibiæ are also otherwise formed. These differences again indicate that *Isopenthes* is not a valid genus. Possibly the present species has normally but two submarginal cells and has been described under *Anthrax*; if so, I fail to find it.

Anthrax lucifer (p. 116).

Anthrax lucifer (Fabr.), Coquillett, Trans. Am. Ent. Soc. xiv. p. 180¹.

To the localities given, add:—UNITED STATES, California¹, Louisiana¹.—MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

Three specimens.

Anthrax arethusa (p. 116).

To the localities given, add:—UNITED STATES, Colorado, New Mexico (*Mus. Univ. of Kans.*).—MEXICO, Acaguizotla, Rincon, and Venta de Zopilote in Guerrero (*H. H. Smith*).

Six specimens from Guerrero. In one of these the fourth posterior cell has a stump of a vein and is not bisected, though otherwise agreeing with the rest; another has five posterior cells.

3 (A). **Anthrax pluricella**, sp. n. (Tab. V. fig. 3, ♂.)

♂. Wings with five posterior cells, all open, the first a little coarctate in the margin, the fourth about one-half the width at the margin of the third; second vein strongly curved forward at the tip; anterior branch of the third vein sinuous, and with a stump of a vein at the angle; contact of the discal cell with the fifth posterior cell a little greater than the length of the anterior cross-vein. The brown coloration fills out the marginal cell, except a hyaline spot beyond the middle, and reaches across the first submarginal cell: its margin extends from the second vein nearly opposite the furcation, and covering the furcation, to the posterior angle of the second posterior cell, thence along the vein separating the third from the fourth cell and the outer end of the discal cell to the third vein, running backward a little beyond the anterior cross-vein, through the extreme base of the fourth posterior cell and the base of the fifth to the tip of the anal cell; there is a small hyaline spot opposite the sixth vein at the outer part, and a brown cloud covering the vein between the fourth and fifth posterior cells, nearly confluent with the brown of the second cell. Legs yellow, with light yellow tomentum; the distal portion of the femora, the tip of the tibiæ, and all the tarsi, brown; front tibiæ with spinules; front tarsal joints clearly differentiated and not hairy; all the claws small; pulvilli present, though small. Abdomen dark brown, opaque, with black and fulvous tomentum; sides of the fourth segment with silvery pile; the hair on either side of the base of the abdomen longer and yellowish. Scutellum subtriangular in shape, black, not shining, with

fulvous tomentum and distinct black bristles along the margin. Mesonotum brownish-black, opaque, the tomentum fulvous and black (the specimen is somewhat abraded); pleuræ whitish, with white hair, which is bushy and silvery above the front coxæ. Head black, rounded in shape, the face scarcely visible in profile, and clothed, like the front, with black and yellow pile. Antennæ small; third joint short, onion-shaped, with a slender style nearly as long as the whole of the preceding portions of the antenna together. Proboscis very short, with large, fleshy, pseudo-tracheate labella. Length 10 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

A single example. The head has been glued on, and I am not quite sure that it belongs to the remainder of the specimen.

In not a few species of *Anthrax*, such as *A. arethusa*, &c., the fourth posterior cell is divided by a cross-vein, and the vein is usually considered adventitious. In the present insect this vein runs to the margin of the wing, and is quite as in those families where the full complement of five posterior cells is present. This would indicate that the stump, whenever present, is vestigial, and that those forms in which the fourth posterior cell is divided have really five true posterior cells, a character lost in nearly all the species of the family.

Anthrax edititia (p. 119).

Anthrax impiger, Coquillett, Trans. Am. Ent. Soc. xiv. p. 177¹.

To the localities given, add:—UNITED STATES, Arizona¹.—MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

I have no doubt whatever that the present insect is the real *A. edititia* of Say, whose description agrees perfectly, and it is altogether probable that his types came from Mexico. Coquillett's *A. edititia* (*loc. cit.* p. 175) is a different species, and the synonyms quoted by him¹ therefore do not apply here. The Guerrero specimens agree well with those of Osten Sacken, but in his figure the basal portion of the wings is paler. It is evident that Coquillett must have overlooked this author's description and figure, as he makes no mention of them in his later papers on *Anthrax*.

Anthrax paradoxa (p. 120).

To the localities given, add:—MEXICO, Acaguizotla in Guerrero (*H. H. Smith*).

Two specimens appear to belong to this species. The face is not red, but black; the first two joints of the antennæ are black; the abdomen is black, with yellow hair, and some black hair on the sides, and with black tomentum. The legs are black. The wings agree with Jaennicke's figure, save that there are no brown spots on the anterior branch of the third vein, and the stumps are wanting. The bisinuosity of the second vein is also wanting. Is Osten Sacken's insect from Texas of the same species?

7 (A). **Anthrax hirsuta**, sp. n.

Black; abdomen clothed thickly with yellow pile, obscuring or concealing the sparse tomentum of the same colour. Wings hyaline, with the base and two cross-bands brown, the proximal one extending across the wing to the tip of the anal cell, with two hyaline spots, one just back of the second vein, the other in the proximal end of the discal cell; the second cross-band reaches from the tip of the first vein over the posterior cross-vein; a small brown spot at the tip of the anterior furcation of the third vein; first posterior cell narrowed in the margin. Tip of the abdomen with black pile on the sides, and a tuft of white pile in the middle. Mesonotum with yellow pile, intermixed with black, the disk apparently bare; tomentum yellow. Pleuræ with more whitish pile. Legs yellow, the femora in part, and the tip of the tarsi, blackish. Front tibiæ with spinules; front tarsi small, without hair; pulvilli wanting. Face strongly conical. Third antennal joint short, conical, not one-half the length of the styliform prolongation. Front rather narrow above, clothed with erect black pile and yellow tomentum. Cheeks reddish. Length 13 millim.

Hab. MEXICO, Acaguizotla in Guerrero (*H. H. Smith*).

One specimen.

10 (A). **Anthrax (Chrysanthrax) astarte**.

Anthrax astarte, Wiedem. Aussereur. zweifl. Ins. ii. p. 637¹.

♂ ♀. Abdomen with the ground-colour reddish at the sides; tomentum dense; on the sides, for nearly a third of the width, fulvous; in the middle black, from the base to the sixth segment, with a few scattered yellow scales on the hind margin of the median segments; hair nowhere long. Body elsewhere black, the sides of the face and cheeks, only, yellowish. Slender portion of the third antennal joint about as long as the conical part. Proboscis not protruding beyond the oral margin. Hair and tomentum everywhere fulvous, except the erect pile of the front, and the similar, though scattered, pile of the mesonotum, which are black. The brown coloration of the wings has a yellowish tint in places, and about the cross-veins on either side of the discal cell it is perceptibly darker; it fills out the whole of the subcostal cell and leaves the tip of the anal cell, and sometimes the outer posterior margin of the anal angle, hyaline; contact of discal and fourth posterior cells punctiform. Length 10–15 millim.

Hab. MEXICO, Dos Arroyos, Rincon, and Tierra Colorada in Guerrero, Teapa in Tabasco (*H. H. Smith*).

Seventeen specimens. The species is a typical *Chrysanthrax*, as defined by Osten Sacken. It was placed by him in the list of unidentified species (*anteà*, p. 140).

14 (A). **Anthrax leucothoa**.

Anthrax leucothoa, Wiedem. Aussereur. zweifl. Ins. ii. p. 638¹.

Hab. MEXICO¹, Acaguizotla, Chilpancingo, and Tepetlapa in Guerrero (*H. H. Smith*).

The five specimens which I identify as this species differ from *A. diana* in having the legs black, with the hind tibiæ only somewhat reddish, the hair of the pectus and front coxæ black (not yellowish), the outer part of the wings less purely hyaline, and the clouds on the outer cross-veins smaller, that on the base of the second posterior cell being only feebly indicated; moreover, all of them have (male and female) a stump of a vein at the furcation of the third vein. *A. leucothoa* was placed by Osten Sacken in the list of unidentified species (*anteà*, p. 140).

14 (B). ***Anthrax diana***, sp. n.

♀. Third antennal joint conical, the styloform portion longer than the bulbous portion. Face conical; proboscis withdrawn. Black; face and front with yellow appressed tomentum, the front with erect black pile; ground-colour of the oral margin yellow. Thorax with yellowish pile on the sides and in front; mesonotum with sparse yellowish tomentum and erect black pile. Abdomen with yellowish hair, intermixed posteriorly with black; tomentum of the same yellowish colour for the most part, the posterior portion of the segments black-tomentose; sixth and seventh segments densely covered with silvery-white pile. Legs black or dark brown, with yellow tomentum; the distal part of the anterior femora and all the tibiae for the greater part yellow; front tibiae with spinules. Wings brown on the antero-proximal portion, hyaline distally; the cross-veins on either side of the discal cell, within the brown portion, are darker-coloured, and there is a conspicuous dark brown cloud on the furcation of the third vein, and one equally large on the vein at the base of the second posterior cell; the brown coloration of the furcature is coalescent with the brown of the anterior part within the submarginal cell; in the anal cell the brown extends nearly as far as the base of the fourth posterior cell, and fills out the proximal portion of the anal angle; the dilated end of the marginal cell is wholly hyaline. Length 10–11 millim.

Hab. MEXICO, Acaguizotla in Guerrero (*H. H. Smith*).

Four specimens.

> ***Anthrax consul*** (p. 125).

To the locality given, add:—MEXICO, Acaguizotla, Chilpancingo, Tepetlapa, and Amula in Guerrero (*H. H. Smith*).

Numerous specimens. The abdomen has a conspicuous, rather narrow, whitish or yellowish band on the anterior part of the second, third, and fourth segments. The sixth and seventh segments in the female are as described by Osten Sacken; in the male they are wholly silvery-white. There is a considerable amount of variation in the degree of the encroachment of the brown colour in the axillary angle of the wings. Certain examples from Brazil, in my collection, come very close to this species, and Coquillett doubtfully identifies specimens from South Dakota with it. There are, however, so many concurrent forms that direct comparison is needed to fully determine examples from such remote localities.

16 (A). ***Anthrax fulvohirta***.

Anthrax fulvohirta, Wiedem. Aussereur. zweifl. Ins. i. p. 308¹; Coquillett, Trans. Am. Ent. Soc. xiv. p. 174².

Anthrax conifacies, Macq. Dipt. Exot., Suppl. iv. p. 112, t. 10. fig. 13³.

Hab. UNITED STATES, New Jersey², Virginia^{2 3}, Georgia¹, Kansas².—MEXICO, Dos Arroyos, Venta de Zopilote, Rio Papagaio, and Tierra Colorada in Guerrero (*H. H. Smith*).

The pile and tomentum throughout is fulvous, not yellowish, and the tomentum of the middle of the abdomen is largely intermixed with black or wholly black. The species will be distinguished from *A. astarte* by the entirely brown anal and axillary cells. The synonymy is given on Coquillett's authority².

Anthrax palliata (p. 126).

To the localities given, add:—MEXICO, Tepetlapa in Guerrero (*H. H. Smith*).

Two specimens, the specific identity of which I do not feel quite sure: they are not more than 8 or 9 millimetres in length; the face is wholly reddish-yellow; and the antennæ are reddish, with the slender termination of the cone not longer than the cone itself. The abdomen is wholly covered with light yellowish pile and tomentum (I can only distinguish a few black hairs posteriorly). The tarsi are brownish. The brown coloration of the wings is of a light shade.

Anthrax lepidota? (p. 130).

A female *Anthrax* from Venta de Zopilote, Mexico (*H. H. Smith*), seems to agree with *A. lepidota*, O. S., in all its characters, except as regards the structure of the face, if I interpret the description aright: I should call it conical; the borders meet in nearly a rectangle. The anal cell is about half filled out with brown colour, and there are no scales on the hind tibiæ.

Two other, abraded specimens, from Hacienda de la Imagen and Acapulco respectively (*H. H. Smith*), have a hyaline spot in the outer part of the second basal cell. All three examples are somewhat smaller than those described by Osten Sacken.

26 (A). **Anthrax orbitalis**, sp. n. (Tab. V. fig. 4, ♂.)

♂. Wings deep brown and hyaline; the brown coloration is of a uniform tint (without darker or lighter markings), its border extending from the tip of the first vein, with a shallow concavity, sometimes relieved by a short convexity in its middle, to very near the end of the anal cell; first posterior cell broadly open; a stump of a vein usually present on the furcation of the third vein. Body black throughout, the immediate oral margin only yellowish. Head nearly spherical, the face not prominent in profile, the proboscis short and retracted. Front clothed with black, its lower part, the face, and the posterior orbits with dense silvery tomentum. Bulbous portion of the third antennal joint very short, almost reniform, not more than one-third the length of the styliiform portion, the distal half of which is distinctly attenuated. Mesonotum and scutellum deep velvety-black; in well-preserved specimens there is some yellow tomentum in front of the scutellum; near the humeri and just back of the halteres with golden hair; pleuræ with white hair. Abdomen clothed with deep black tomentum and hair; on either side of the first segment with a conspicuous tuft of white hair; on each side of the fifth, sixth, and seventh segments thickly white- or light yellowish-pilose. Front tibiæ with minute spinules; pulvilli wanting; femora with white tomentum. Length 10 millim.

Hab. MEXICO, Chilpancingo, Rincon, Rio Papagaio, and Amula in Guerrero, Teapa in Tabasco (*H. H. Smith*), Santiago Iscuintla and San Blas in Jalisco (*Schumann*).

This species belongs in the subgenus *Anthrax* of Osten Sacken, and is nearly allied to the following, *A. curta*, Loew. The anterior branch of the third vein is not bisinuous.

26 (B). **Anthrax curta**.

Anthrax curta, Loew, Centur. viii. no. 35¹.

Hab. UNITED STATES, California¹.—MEXICO, Northern Yucatan (*Gaumer*).

BIOL. CENTR.-AMER., Dipt., June 1901.

This species differs from the preceding, *A. orbitalis*, in having a narrower front in the male, and the face and front clothed with a whitish or yellowish, sometimes brownish, tomentum. The hair of the pleuræ is for the most part black; the anal angle of the wing is more hyaline at the tip, &c. I can distinguish no spinules on the front tibiæ. A closely allied insect from Brazil, in my collection, is without the yellow on the sides of the abdomen in front.

A male from Rincon (*H. H. Smith*), which I am unable to identify, represents a distinct species which may be confounded with *A. curta*. It is apparently clothed throughout with black pile and tomentum, save a white tuft on the sides of the first abdominal segment. The deep brown coloration of the wings is not sharply limited in front and fills out most of the fourth posterior cell; the hyaline portion is whitish.

26 (c). **Anthrax nigrofimbriata**, sp. n.

Black; abdomen clothed wholly with deep black hair and tomentum, save on the posterior margin of the fifth segment, and the sixth and seventh segments for the most part, where the tomentum is chiefly white. Front rather broad above, clothed with erect black pile and fulvous tomentum; face with fulvous tomentum; in profile the face projects in nearly the same line as the front, it being slightly convex and not conical. First two joints of the antennæ reddish; third onion-shaped, with a long slender style, at least three times the length of the bulbous portion. Proboscis projecting more than the length of the face beyond the oral margin. Posterior orbits yellowish-tomentose, the immediate margin of the sides silvery. Mesonotum with fulvous pile in front and a small tuft of fulvous hairs below the humeri; sides with black hair, as also the pleuræ. Wings dark brown antero-proximally, hyaline distally, the brown extending with only slight irregularities from the tip of the first vein to the extreme end of the anal cell. Front tibiæ with distinct spinules; no pulvilli. Length 10 millim.

Hab. MEXICO, Hacienda de la Imagen in Guerrero (*H. H. Smith*).

Two specimens.

26 (D). **Anthrax pleuralis**, sp. n. (Tab. V. fig. 5, ♀.)

♀. Face retreating in profile, covered with white pile or tomentum. Proboscis short, with fleshy labella. Bulbous portion of the third antennal joint very short, broader than long, about one-third the length of the styliform portion, which is distinctly attenuated on the distal half. Front narrow above, with black pile; white-tomentose below. Occipital orbits silvery-tomentose. Mesonotum opaque velvety-black, with some yellow tomentum; in front and on the sides with light yellow hair; below the yellow hair the pleuræ are covered with depressed white pile; a tuft of yellow hair in front of the halteres and another on each side of the base of the abdomen. Abdomen clothed for the greater part, apparently, with black tomentum; sides of the second, fifth, and sixth segments with white hair. Front tibiæ smooth; front tarsi with erect pubescence. Wings dark brown and hyaline; the brown coloration, the limit of which is somewhat evanescent, especially in front, leaves only the extreme tip of the marginal cell hyaline—it extends in the submarginal cell nearly to the furcation of the third vein, crosses the discal cell beyond the middle, and covers a considerable space in the third and fourth posterior cells; anal cell and anal angle hyaline only at the tip; a small stump on the anterior furcation of the third vein, and in the third posterior cell from the vein limiting the discal cell. Length 13 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

26 (E). **Anthrax ceria**, sp. n.

♂. All the segments of the abdomen, save the first, with an anterior band of dense white tomentum, of equal width, and a little narrower than the posterior band of equally dense black tomentum; sides of the first three segments with white hair, of the remaining segments with short black hair. Wings brown and greyish-hyaline; the brown coloration fills out the costal and subcostal cells, the submarginal cell to the end of the first vein (though dilutely so behind from the origin of the second), the first basal cell to a little beyond the anterior cross-vein, and the second basal cell, except on the outer part; the cross-veins on either side of the discal cell are narrowly clouded with darker brown, and there is a small brown spot at the base of the fourth posterior cell and an almost imperceptible one on the furcation of the third; the second vein is bisinuate, and the first posterior cell is narrowed at the margin. Front tibiæ smooth; front tarsi small, the joints indistinctly separated, without erect pile, and with minute ungues. Length 9 millim.

Hab. MEXICO, La Venta in Guerrero (*H. H. Smith*).

One specimen.

26 (F). **Anthrax maria**, sp. n.

♂ ♀. Black. Front with erect black pile; front and face with appressed fulvous tomentum, the face prominent. First two joints of the antennæ red; third joint with the short bulbous portion as broad as long, the style slender and long. Proboscis projecting about 1 millim. beyond the oral margin. Mesonotum with light yellow hair in front and on the sides; pleuræ with bushy, nearly white hair; there is some bushy white hair, also, just back of the wings. Abdomen on the sides with light yellowish hair; dorsum clothed laterally with bright fulvous tomentum, intermixed with black in the middle, the black largely preponderating; tip with white tomentum, and there is some tomentum of the same colour on the sides of the third segment. Legs yellowish, with fulvous tomentum, the tarsi blackish; front tibiæ with spinules; front tarsal joints distinctly differentiated and without erect pubescence; no pulvilli. Wings brown and hyaline; the brown coloration fills out the marginal cell as far as the tip of the first vein, the first and second basal cells, the anal cell to the base of the fourth posterior cell, and a little more than half of the anal angle—it also encroaches upon the base of the first, third, and fourth posterior cells, and forms a narrow cross-band over the furcation of the third vein to and over, narrowly, the vein at the base of the second posterior cell, the first posterior cell thus having a hyaline spot in it, sometimes much reduced in size, with the fourth vein behind it narrowly clouded, and separated by a cloud on the third vein from a spot in the first submarginal cell. Length 6–8 millim.

Hab. MEXICO, Hacienda de la Imagen and Tepetlapa in Guerrero (*H. H. Smith*).

Ten specimens. One of these is much larger than the others; but I can distinguish no other differences, save that it has the legs almost wholly red.

29 (A). **Anthrax lateralis**.

Anthrax lateralis (Say), O. Sack. *antea*, p. 138 (under sp. no. 29).

To the locality given, add:—MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

ONCODOCERA (p. 141).

Oncodocera, *antea*, p. 141 (part.).

3. **Oncodocera analis**, sp. n.

♂. Eyes contiguous above; the large frontal triangle and the face black-pilose, without trace of white. Third joint of the antennæ elongate, moderately dilated at the base, the distal half slender. Thorax deep black, with black pile; mesonotum with long yellowish-white pile. Abdomen with long light yellow or white

pile, and a band of black pile posteriorly; sides with long and abundant black pile; last two segments covered with silvery-white pile. Legs black. Wings nearly as in *O. leucoprocta*, the first basal cell filled out with brown.

♀. Eyes narrowly separated at the vertex; front and face for the most part, or altogether, silvery-white-pilose. Mesonotum, except in front, with light yellow pile; upper part of the pleuræ with more bushy pile of the same colour. Abdomen with black pile; all the segments with a fringe of white pile posteriorly. Length 7-8 millim.

Hab. MEXICO, Xucumanatlan, Amula, and Chilpancingo in Guerrero (*H. H. Smith*).

Ten specimens. This species is closely allied to *O. leucoprocta*, Wiedem., but is easily distinguishable in the male by the absence of white pile on the front and face, and in the female by the pilose markings of the abdomen.

ANISOTAMIA.

Anisotamia, Macquart, Dipt. Exot., Suppl. iv. p. 115 (1850).

Oncodocera, Osten Sacken, anteà, p. 141 (part.).

The great difference in size between the known species of *Oncodocera* and *Anisotamia*, together with the closed or widely open first posterior cell, are, I believe, sufficient to justify their separation. In *Anisotamia* the closure of the anal cell is variable.

1. *Anisotamia valida*.

Anthrax valida (Wiedem.), Roeder, Wien. ent. Zeit. v. p. 264⁴.

Oncodocera valida, O. Sacken, anteà, p. 142⁵.

To the localities given, add:—MEXICO, Tuxtla, near Amula, Tierra Colorada, Chilpancingo, and Dos Arroyos in Guerrero (*H. H. Smith*), Northern Yucatan (*Gaumer*).

Seven specimens, including both sexes. The one from Yucatan has the wings almost black and otherwise differs; it is a female.

2. *Anisotamia fasciata*, sp. n. (Tab. V. fig. 6, ♀.)

♀. In structure and appearance very like *A. valida*. Black; front and face thickly covered with recumbent white hair (antennæ wanting); mesonotum in large part (or wholly?) covered with short, thick, yellow pile; pleuræ with white pile; abdomen concealed beneath thick black hair and tomentum, the antepenultimate segment wholly covered with dense, white, recumbent hair; legs and wings as in *A. valida*; anal cell open. Length 16 millim.

Hab. MEXICO, San Blas in Jalisco (*Schumann*).

One specimen.

EPACMUS (p. 142).

Epacmus modestus (p. 142).

To the localities given, add:—MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

A single female specimen, which upon comparison with what I believe to be the

real *E. modestus* (Loew) I cannot say with certainty is of the same species. The face is for the most part shining black, the oral margin yellow. The abdomen has the first segment covered with white tomentum or hair; the second segment with a broad band of black tomentum in front, an equally broad fulvous one behind it, and the immediate hind margin whitish; the remaining segments are covered with fulvous tomentum, except on the immediate hind margin, where it is whitish.

APHŒBANTUS (p. 143).

Aphœbantus conurus (p. 148).

To the localities given, add:—MEXICO, Hacienda de la Imagen, Tepetlapa, and Chilpancingo in Guerrero (*H. H. Smith*).

Seven specimens, including male and female. The males agree well with the types in the Kansas University collection, save that the bristles on the hind margin of the abdominal segments are for the most part white. The females accord in nearly every detail with *A. cervinus*, Loew, from Texas; the face, however, is prominent, not as much so as in the species of *Epacmus*, but more so than most of those of *Aphœbantus*. Coquillett, in his Tables of the North-American forms, has wrongly identified the last-mentioned insect, which has the hind margin of the scutellum shining, as expressly stated by Loew.

If I have correctly identified *A. cervinus*, the genus *Epacmus* cannot be distinguished from *Aphœbantus* by the structure of the face; and as to the presence or absence of pulvilli, I agree with Coquillett that it is a character of doubtful value.

BOMBYLIUS (p. 150).

3. **Bombylius io**, sp. n. (Tab. V. fig. 7, ♂.)

- ♀. Black. Front and face clothed with golden-yellow pile, the vertex sometimes with a few black hairs. Antennæ longer than the distance from vertex to oral margin; first two joints yellow, with yellow hair; third joint slender, broadest at the base, longer than the first two joints together, the style small. Proboscis about as long as the thorax. Thorax and abdomen clothed with abundant, moderately long, bright yellow hair, without admixture of darker hair; some black hairs on the venter posteriorly. Legs light yellow; distal tarsal joints brown. Wings hyaline, yellowish at the base.
- ♂. Like the female, except that there is no black hair on the venter; eyes broadly contiguous; the first two joints of the antennæ usually brownish or brown. Length 8–12 millim.

Hab. MEXICO, Dos Arroyos and Acaguizotla in Guerrero (*H. H. Smith*).

Eight specimens. In one of them the femora are brownish, in others they are light yellow.

4. **Bombylius clio**, sp. n.

- ♀. Like *B. io*, but with the first two joints of the antennæ black and clothed with black hair; the hairs on the face usually black; the posterior part of the mesonotum and the abdomen with scattered, long, black hairs; the wings more infuscated at the base.

♂. Hair of the frontal triangle and the face for the most part black; basal third or fourth of the wings dark brown. Length 7-12 millim.

Hab. MEXICO, Acaguizotla, Hacienda de la Imagen, Tierra Colorada, and Rincon in Guerrero (*H. H. Smith*).

Numerous specimens. This species is very variable in size. It will be best distinguished from the foregoing, *B. io*, by the colour of the basal joints of the antennæ and their hair, black in the latter, yellow in the former.

5. *Bombylius coquilletti*, n. n.

Thlipsogaster ater, Coquillett, Trans. Am. Ent. Soc. xxi. p. 108 (March 1895)¹.

Bombylius coquilletti, Will. Psyche, viii. p. 331².

Hab. UNITED STATES, Louisiana¹.—MEXICO, Dos Arroyos in Guerrero (*H. H. Smith*).

A single male specimen from Guerrero, which seems to agree with Coquillett's description. This species does not belong to *Thlipsogaster*, as I have shown (*l. c.*).

6. *Bombylius albopenicillatus*.

Bombylius albopenicillatus, Bigot, Ann. Soc. Ent. Fr. 1892, p. 363 (♂)¹.

♀. Deep black, opaque. Front with appressed orange-coloured tomentum, and scattered, long, black hairs; face with long black hair, intermixed with orange hairs; on either side of the base of the antennæ with a spot of appressed silvery-white pile. Antennæ black; first joint with black hair above; third joint longer than the first two together, slenderly fusiform in shape; style short. Palpi black. Occiput with abundant yellow hair above; lateral orbits silvery-white-pilose. Mesonotum with orange tomentum, and with six or eight silvery-white tomentose spots. Pleuræ thinly greyish-pollinose and with light yellow hair. Scutellum with orange tomentum and long black hairs. Abdomen thinly covered with orange tomentum, and sparse, long, black hair; on the sides of the second and third segments with bushy black hair; the sides of the fourth, fifth, and sixth segments, and also those of the first in front, with light yellow or silvery hair; there is also some appressed silvery tomentum on each side of the first segment behind, and a small spot in the middle of each following segment posteriorly. Legs yellow; the tip of the femora, the distal part of the tibiæ, and the tarsi brownish; hind femora with a row of long bristles on the outer side. Wings tinged with brownish, more distinctly so at the base and in the costal and subcostal cells; anal cell open; first posterior cell closed in the margin. Length 6-7 millim.

♂. Frontal triangle small; hair of the antennæ and face more bushy and longer; usually without yellow hair on the face. Front part of the mesonotum with long bushy and abundant yellow pile. Abdomen more thickly black-pilose, the sides of the fourth, fifth, and sixth segments with longer and bushy white hair; the yellow tomentum and silvery spots everywhere wanting. Wings darker brown at the base.

Hab. MEXICO¹, Rincon and Acaguizotla in Guerrero (*H. H. Smith*).

Two females and ten males. This and the following species are closely allied structurally to *B. coquilletti*, and may require a new genus for their reception.

7. *Bombylius dolorosus*, sp. n. (Tab. V. fig. 8, ♂.)

♀. Closely allied to *B. albopenicillatus*, Bigot. The tomentum of the front and mesonotum is of a deeper rufous colour, the pile on the occiput is rufous (not orange-yellow), and there is no yellow pile on the face or abdomen. The hair is deep black throughout, except on the occiput. The white tomentum of the mesonotum is less in extent or evanescent; on the abdomen there is a small spot on each side of the

first segment and one in the middle of the posterior segments, as also on the sides of the fifth, sixth, and seventh segments. The legs are darker-coloured, the femora black. The wings darker.

♂. Differs from the male of *B. albopenicillatus* in having the hair of the head entirely black, the yellow pile on the anterior part of the mesonotum darker-coloured, and partly black in front, and the yellow pile on the abdomen entirely absent. The white spots on the mesonotum are wanting; those of the abdomen are very minute, and on the sides of the posterior segments much shorter and less abundant. Length 6-8 millim.

Hab. MEXICO, Dos Arroyos, Venta de Zopilote, and Tierra Colorada in Guerrero (*H. H. Smith*).

Ten specimens.

SPARNOPOLIUS (p. 154).

No Central-American species were definitely referred to this genus by Osten Sacken in the earlier part of this work.

1. *Sparnopolius diversus*, sp. n.

♂. Head black; vertical triangle with a tuft of black hair; frontal triangle small, silvery; face bare, the hair of the lower margin of the cheeks black, rather abundant. Antennæ black; first joint swollen, more than three times the length of the second, both clothed with bushy black hair; third joint about the length of the first, slender, the basal half a little dilated; style small, consisting of a short cylindrical first joint and a bristle of about the same length. Proboscis about as long as the thorax. Thorax and abdomen opaque black, clothed with light yellow pile, bushy on the anterior part of the mesonotum and on the sides of the abdomen; terminal segments of the latter clothed with long and abundant black hair; posterior part of the mesonotum and the middle of the abdomen with long black hair. Legs black; femora with yellowish tomentum and long bristly hairs. Wings hyaline; marginal cell dilated at the extremity; first basal cell a little longer than the second. Length 6 millim.

Hab. MEXICO, Hacienda de la Imagen in Guerrero (*H. H. Smith*).

A single specimen. The species will be at once distinguished by the black hair at the tip of the abdomen.

2. *Sparnopolius fulvus*.

? *Bombylius fulvus*, Wiedem. Aussereur. zweifl. Ins. i. p. 347¹; Loew, Neue Beitr. iii. p. 43². (For other synonymy see Osten Sacken's Catalogue.)

Hab. NORTH AMERICA¹.—MEXICO, Hacienda de la Imagen in Guerrero (*H. H. Smith*).

A single female, taken at the same time and place with the male of the foregoing species. It agrees in structure precisely with that specimen, as well as with Wiedemann's description of *Bombylius fulvus*. On comparing it with individuals of the insect usually considered to be *S. fulvus*, I find that the third joint of the antennæ is a little shorter, and more dilated at its basal end, and that the pile is fulvous; at the tip of the abdomen some black hairs are visible. Is it the real *B. fulvus* of Wiedemann, described from the female, or that sex of the preceding species?

LORDOTUS (p. 154).

Lordotus gibbus (p. 154).

There are a number of forms generally referred to *L. gibbus* in collections about whose specific identity I do not feel sure. The following are the variations that the specimens now before me present:—

- a. Costal and first basal cells of the wings yellowish; first two joints of the antennæ, and the femora wholly, yellow; mesonotum with distinct tomentose stripes; abdomen opaque, with a median row of triangular yellow-tomentose spots, the extreme tip white-pilose, with some blackish hairs on the fourth segment.—*Hab.* MEXICO, Tepetlapa, Chilpancingo, and Venta de Zopilote (*H. H. Smith*). Three specimens.
- b. Like *a*, but with the first joint of the antennæ and the base of the femora black.—*Hab.* MEXICO, near the city (*Schumann*). One specimen.
- c. Antennæ wholly black; femora black, except the tip; mesonotal and abdominal stripes white-tomentose, the abdomen shining, with a complete black-pilose band before the tip.—*Hab.* UNITED STATES, New Mexico. One specimen.

Neither Loew nor Jaennicke mention the tomentose stripes on the mesonotum. *L. pulcherrima*, Will., has no stripes, the abdomen is uniformly yellow-pilose and tomentose, and the first two joints of the antennæ and the femora are yellow. There can be no doubt of its distinctness from the foregoing, but I am not sure but that it may be the real *L. gibbus*.

L. zona, Coq., must closely resemble the form from New Mexico.

PHTHIRIA (p. 155).

Cyclorhynchus, Macquart, Dipt. Exot. ii. 1, p. 114 (1840).

Pacilognathus, Jaennicke, Abh. Senckenb. Ges. vi. p. 350 (1867).

There is not a little variation in the neuration and in the structure of the head among the species heretofore referred to this genus, which may afford grounds for generic division. *Acreotrichus*, Macquart, has been accepted by both Schiner and Coquillett, but the only tangible character that I can find for distinguishing it from some of the species now located in *Phthiria* is the greater dilatation of the upper part of the third antennal joint, and even this is not very marked. In the following Table I include all the known Central-American forms. From the great dissimilarity of the colour-markings in the two sexes, so common in this genus, it is usually very difficult to associate them:—

1. Deep black throughout; hair of the head black, that of the face long
 (males) 2.
 More or less yellow or yellowish species (females) 3.
2. Hair of the thorax black. (Length 3-4 millim.) *similis*, Coq.
 Hair of the thorax yellow { *dolorosa*, sp. n.
 { *consors*, O. S.
3. Wings spotted, the tip strongly infuscate 4.
 Wings not spotted 5.

4. Face broad on the sides, produced *thlipsomyzoides*, Jaenn.
 Face of the usual structure *alterans*, sp. n.
5. Mesonotum almost uniformly opaque yellowish-brown; discal cell unusually large; furcation of third vein beyond the base of the second posterior cell; wings hyaline. (Length 3 millim.) . . . *albida*, Wiedem.
 Mesonotum distinctly striped, with yellow lateral margins 6.
6. Abdomen with black and yellow bands 7.
 Abdomen not banded 8.
7. Legs for the most part yellow *cingulata*, Loew.
 Legs for the most part black *consors*, O. S.
8. Mesonotum with opaque black stripes; wings hyaline. (Length 3 millim.) *pulchella*, sp. n.
 Mesonotum with brownish stripes; wings brownish *sororia*, sp. n.

Phthiria consors (p. 155).

To the locality given, add:—UNITED STATES, New Mexico, Magdalene Mts. (*Snow, in Kans. Univ. Coll.*).

A number of specimens from the above locality agree with the description. They are of especial interest, because they include the male, hitherto unknown. These are deep black throughout (the sides of the venter only being yellow); the hair of the head is black, and that of the thorax light yellow; the wings are not brownish, as in *P. dolorosa*.

2. **Phthiria similis**.

? *Phthiria similis*, Coquillett, Trans. Am. Ent. Soc. xii. p. 103¹.

Hab. UNITED STATES, Southern California¹.—MEXICO, Amula in Guerrero (*H. H. Smith*).

Two males from Guerrero, differing from Coquillett's description¹ in having the proboscis a little longer, the third joint of the antennæ of equal width throughout, and the pile of the abdomen yellowish, not whitish. Possibly this is the male of either *P. cingulata*, Loew, or of the following.

3. **Phthiria pulchella**, sp. n.

♀. Head yellow; front with a median black stripe; sides of the face above with a blackish spot, not very distinct. Antennæ, proboscis, and palpi black. Mesonotum for the most part opaque velvety-black, the sides narrowly, and the posterior part broadly, yellow; in the middle with two slender yellow stripes, pollinose anteriorly. Pleuræ light yellow, the mesopleuræ and pectus largely black. Abdomen uniformly yellow or reddish-yellow. Legs, including the coxæ, yellow; distal part of the front femora blackish; all the tibiæ for the greater part, and the tarsi wholly or for the greater part, blackish or black. Wings nearly hyaline. Length 3 millim.

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*).

One specimen. It is possible, though not at all probable, that this may be the female of what I have considered to be *P. similis*; if so, the specimens thus referred cannot belong to that species.

4. *Phthiria dolorosa*, sp. n.

♂. Very like the species here identified as *P. similis*, Coq., differing chiefly in the larger size and the whitish colour of the pile of the thorax. Subopaque black throughout, the halteres only yellowish; the tip of the femora and the tibiæ red. Hair of the head black, rather abundant on the sides of the face and on the cheeks. Third joint of the antennæ rather more than twice the length of the first two joints together, tapering distally. Palpi about one-third the length of the proboscis, which is more than twice the length of the head. Mesonotum and scutellum with long, erect, light yellow hair. Abdomen with light yellow hair at the base above and along the sides. Wings more or less strongly tinged with brownish. Length 5–6 millim.

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*).

Six specimens. This species differs from *P. diversa*, Coq., and *P. fuscipes*, Big., in the colour of the hair of the head and in the brownish wings; and from *P. consors*, O. S., in the larger size, brownish wings, and red tibiæ.

5. *Phthiria albida*.

Phthiria albida, Wiedem. Aussereur. zweifl. Ins. i. p. 356¹; Macq. Dipt. Exot. i. 1, p. 115².

♀. Front broad, light ochraceous-yellow; on either side below a whitish spot, connected by a brownish transverse spot; face yellow, very narrow on the sides. First two joints of the antennæ short, of nearly equal length, yellow; third joint yellow, blackish distally. Occiput for the most part yellow. Proboscis black, about twice the length of the head. Palpi black, projecting but little beyond the oral margin. Mesonotum opaque yellowish-brown, somewhat whitish on the sides, and yellow posteriorly. Scutellum yellow, the tip ochraceous. Abdomen opaque whitish, the segments each with an opaque black band, becoming narrower posteriorly, the terminal ones without them. Legs light yellow; distal joints of all the tarsi black. Wings nearly hyaline; discal cell unusually large, the veins closing it exteriorly nearly in the same line; furcation of the third vein beyond the base of the second posterior cell. Length 3 millim.

Hab. SOUTHERN UNITED STATES (*Kans. Univ. Coll.*).—MEXICO, Medellin near Vera Cruz (*H. H. Smith*).—BRAZIL^{1 2}.

One specimen. The peculiar neuration agrees with that of a male in the Kansas University Collection. Wiedemann's description¹ was also taken from an example of that sex.

6. *Phthiria cingulata*.

? *Phthiria cingulata*, Loew, Linn. Entom. i. p. 383¹.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*), Oaxaca¹.

One specimen, which I refer somewhat doubtfully to Loew's species. It differs from *P. consors*, O. S., chiefly in the colour of the legs, which are obscurely yellow, the tibiæ more or less infuscated, the tarsi in large part blackish. The second vein is not distinctly curved at the end. *P. cingulata* was noticed, but not identified, by Osten Sacken in the earlier part of this work (*anteà*, p. 156).

7. *Phthiria sororia*, sp. n.

♀. Head yellow; ocellar tubercle and the beginning of a stripe below it brown. Antennæ black, the first joint yellow, and of nearly the same length as the second. Palpi shorter than the head, black; proboscis about three times the length of the head. Thorax yellow; mesonotum with three broad, nearly confluent, ochraceous or brownish stripes; pleuræ with two or three small spots of the same colour. Abdomen yellowish-red, sometimes variegated with brownish. Legs yellow; tibiæ darker, the tarsi blackish toward the tip. Wings tinged with yellowish on the basal portion, brownish distally; no adventitious vein in the discal cell. The pile everywhere yellow. Length 6 millim.

Hab. MEXICO, Chilpancingo and Amula in Guerrero (*H. H. Smith*).

Fifteen specimens. The fact that these are females, while all those of *P. dolorosa* are males, together with the infuscation of the wings in both, may indicate that they belong to one species. There were none collected together, however, and the extraordinary difference in coloration would seem to make it highly improbable that such could be the case.

8. *Phthiria thlipsomyzoides*.

? *Pæcilognathus thlipsomyzoides*, Jaenn. Abh. Senckenb. Ges. vi. p. 351¹.

Hab. MEXICO¹, Amula in Guerrero (*H. H. Smith*).

A single female. This specimen differs not a little from Jaennicke's description of the male, and as there are several concurrent species here, it is possible that our insect may belong to some other male. For that reason I give a description of it:—

♀. Front ochraceous, on the sides light yellow, opaque, the ocellar tubercle and a spot in the centre black; strongly depressed in the middle longitudinally, the lower half shining and with black hair. Sides of the face very broad, shining yellow, with two large, nearly confluent black spots; oral opening nearly vertical in profile. First two joints of the antennæ yellow, the first about as long as the second, and both with black hair above; third joint rather narrow, tapering at the distal end only, black, yellow at the base. Proboscis and palpi black, the former nearly three times the length of, and the latter a little shorter than, the head. Mesonotum with three rather broad, narrowly separated stripes; posterior part reddish-yellow; sides more purely yellow. Scutellum light reddish-yellow, the margins broadly light yellow. Pleuræ for the most part light yellow. Abdomen obscurely brownish or reddish-yellow, with the segments blackish anteriorly. Legs reddish-yellow, the tarsi in large part black. Wings hyaline, the tip broadly margined with brown; costal cell yellowish, the subcostal brownish; small brown spots on the basal cross-veins, the anterior cross-vein, the furcation of the third vein, the posterior basal cross-vein, and the vein at the base of the third posterior cell. Length 10 millim.

The neuration of both wings is anomalous, in that the discal cell is confluent with the second posterior cell; there is also a stump of a vein on the second longitudinal vein opposite the anterior cross-vein. *P. thlipsomyzoides* was not identified by Osten Sacken in the earlier part of this work (*anteà*, p. 156).

9. *Phthiria alterans*, sp. n.

♀. Very like *P. thlipsomyzoides*, but with the sides of the face much narrower. Front opaque brownish and yellow on the upper part; below the transverse groove shining light yellow, with a large brown spot in the middle; face shining yellow, with two dark brown spots; oral opening nearly vertical. First two

joints of the antennæ light yellow (the third wanting). Proboscis black, about twice the length of the head; palpi very slender and short. Cheeks with some black hairs below. Occiput light yellow, black in the middle. Mesonotum light yellow on the sides, with three broad brownish-red vittæ, separated by two slender opaque light yellow stripes. Pleuræ light yellow, with reddish spots. Scutellum light yellow, the disk for the most part reddish. Abdomen brownish-red, each segment with the posterior part yellow or yellowish. Halteres with a brown knob. Legs yellow, the tarsi blackish at the tip. Wings hyaline, the anterior part, and the distal border broadly, infuscated; all the cross-veins with brown clouds, as also on the origin of the second vein and the anterior branch of the third; a long stump of a vein in the discal cell from the vein at the base of the third posterior cell. Length 9 millim.

Hab. MEXICO, Sierra de las Aguas Escondidas in Guerrero 9000 feet (*H. H. Smith*).

A single specimen. *P. scolopax*, O. S., examples of which I have seen from Southern New Mexico, is an allied species: it is smaller, the proboscis much longer, the front narrower below, &c. *P. punctipennis*, Walk., is also very much smaller.

GERON (p. 156).

No species was definitely referred by Osten Sacken to this genus in the earlier part of this work.

1. *Geron rufipes*.

Geron rufipes, Macq. Dipt. Exot., Suppl. i. p. 119¹.

Hab. MEXICO, Chilpancingo, Tepetlapa, and Amula in Guerrero (*H. H. Smith*), Jalisco (*Schumann*), Yucatan ¹ (*Gaumer*).

Numerous specimens.

2. *Geron trochilides*, sp. n.

♂. Frontal triangle and face greyish-yellow-pollinose, black in some reflections. Antennæ black; third joint more than twice the length of the first two joints together, dilated distally, with an excision on the upper anterior angle, in which is placed a minute style. Proboscis as long as the head and thorax together, black. Palpi rudimentary. Mesonotum densely yellowish-grey-pollinose, with a pair of median slender stripes and a series of three spots on each side, the one behind the suture dilated outwardly in front, all opaque black; pile for the most part blackish, erect, rather abundant. Pleuræ yellowish-grey-pollinose; knob of the halteres yellow. Scutellum shining black, grey on the margins, with black pile. Abdomen opaque greyish-yellow, with long dusky yellowish pile. Legs yellow, the tip of the femora and tibiæ, and all the tarsi, black or blackish. Wings brownish, more distinctly so at the base; ultimate and penultimate sections of the third vein of equal length; anterior branch of the third vein terminating a little before the tip of the wing; anterior cross-vein situated before the middle of the discal cell. Length 5 millim.

Hab. MEXICO, Acaguizotla in Guerrero (*H. H. Smith*).

One specimen.

SYSTROPUS (p. 157).

Table of Species examined in the supplementary collections received from Mexico.

- | | |
|-------------------------------------|---------------------------|
| 1. Legs black throughout | <i>dolorosus</i> , sp. n. |
| Four anterior legs yellow | 2. |

2. Hind metatarsi black *quadripunctatus*, sp. n.
 Hind metatarsi, except the tip, light yellow 3.
3. Mesonotum dark red *pulcher*, sp. n.
 Mesonotum black, with light yellow markings 4.
4. Thorax, except the yellow margins of the mesonotum, wholly black . *similis*, sp. n.
 Pleuræ with yellow and red markings *rogersi*, O. Sack.

Systropus rogersi (?) (p. 158).

To the locality given, add :—MEXICO, Amula in Guerrero (*H. H. Smith*).

A single female specimen from Guerrero perhaps belongs to this species. The head and thorax agree pretty well in colour with the description, save that the whole posterior underpart of the latter, from the base of the abdomen to the hind coxæ, is red. The abdomen is brown above, not black, and reddish-yellow on the underside. The hind femora are yellow, with the upperside on the basal half brown.

7. **Systropus dolorosus**, sp. n.

♂ ♀. Frontal triangle and sides of the face silvery. Antennæ black; second and third joints taken together as long as the first, the third nearly twice the length of the second. Thorax black; a transverse spot on the humeri, one in front of the root of the wings, one on the post-alar callus, and one above the front coxæ, light yellow. Abdomen reddish-yellow, the base and distal segments black. Legs black or deep brown, the knees narrowly reddish. Wings brownish. Length 14–16 millim.

Hab. MEXICO, Jalisco (*Schumann*), Temax in Yucatan (*Gaumer*).

Four specimens. The two from Yucatan have the yellow spots of the dorsum of the thorax smaller or obsolete, and the dorsum of the abdomen black or brown throughout; they are also larger than the others. This species can hardly be the same as *S. angulatus*, Karsch, as the anterior branch of the third vein is not angulated, and no mention is made of the pleural spot. The presence of the yellow spot on the pleuræ will distinguish *S. dolorosus* from *S. infuscatus* and *S. imbecillus*, Karsch.

8. **Systropus quadripunctatus**, sp. n.

♀. Frontal triangle, save the uppermost portion, and the sides of the face, light yellow. Antennæ black, the basal portion of the first joint yellowish; first joint only a little longer than the second and third joints together, the third about one and two-thirds the length of the second. Thorax black; mesonotum with a hoary geminate stripe in the middle; the sides from in front of the root of the wings, extending inwardly, anteriorly, and downwards to the front coxæ, and a small spot on the post-alar callus, light yellow; the whole posterior inferior part, from the base of the abdomen to the hind coxæ, and including the hypopleuræ, also light yellow, and with four small black spots arranged in pairs. Abdomen red, the first three or four segments black above, the distal segments brown. The four anterior legs are light yellow; hind femora brown, yellow below distally; hind tibiæ blackish; hind tarsi black. Wings tinged with brownish. Length 13–15 millim.

Hab. MEXICO, Northern Yucatan (*Gaumer*).

9. *Systropus pulcher*, sp. n.

♀. Face pale yellow; frontal triangle reddish or brownish-yellow. Proboscis black; palpi reddish-yellow. Antennæ black, the third joint about one and a half times the length of the second. Thorax dark red, with an oval black spot immediately above the root of the wings and a small black spot or strigula on each side of the scutellum; mesonotum with two narrow brown stripes. Abdomen with the first segment of the same colour as the mesonotum; the remainder black above, the narrow portion light yellow on the underside. Four anterior legs yellow, their coxæ brown; hind femora red or brownish-red, with the distal portion lighter-coloured; hind tibiæ black, the base on the inner side more or less red; hind metatarsi light yellow, except the immediate tip, the remaining joints black. Wings tinged with brownish. Length 17-18 millim.

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*).

10. *Systropus similis*, sp. n.

♂ ♀. Face pale yellow; frontal triangle silvery; palpi yellow; antennæ and proboscis black, the third joint of the former a little longer than the second. Thorax black; mesonotum with a hoary stripe in the middle, the lateral margins to the root of the wings light yellow, this colour extending a little inwards at the humeri. First segment of the abdomen black; the remaining segments red, with the upperside and the distal end brownish; knob of the halteres mostly black. Four anterior legs light yellow; hind femora brown, with the distal end broadly yellow; immediate base of the hind tibiæ yellowish; hind metatarsi light yellow, its tip and the remaining joints black, like the tibiæ. Length 15-18 millim.

Hab. MEXICO, Sierra de las Aguas Escondidas in Guerrero 9000 feet (*H. H. Smith*).

Two specimens. This species is nearest allied to *S. rufiventris*, O. S.

LEPIDOPHORA (p. 160).

Lepidophora vetusta (p. 160).

To the localities given, add:—MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

A single specimen, apparently conspecific with those mentioned by Osten Sacken (*l. c.*). It has the expanded end of the marginal cell hyaline. Three other examples before me, from Brazil, have the apex of the wings clouded with brown as in the insects referred to *L. vetusta* in the earlier part of this work; they are also a little smaller. I cannot distinguish the forms otherwise specifically.

TOXOPHORA (p. 161).

Toxophora amphitea (p. 161).

To the localities given, add:—MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

2. *Toxophora varipennis*, sp. n.

♀. Black, shining. Structure of the head as in *T. amphitea*. Antennæ black, with black tomentum. Hair of the occiput nearly white. Mesonotum with sparse black and iridescent tomentum; sides of the mesonotum and upper part of the pleuræ with yellowish and white hair; bristles black; pleuræ whitish-pollinose. Abdomen with abundant yellow tomentum on the fifth, sixth, and seventh segments, each with two denuded spots; on the anterior segments the tomentum is black (but the surface of the single specimen is apparently abraded); on the venter the tomentum is silvery-white. Legs with silvery-white and yellowish tomentum. Wings deep brown, hyaline and subhyaline; the hyaline space forms an arcuate

band, beginning at the first vein at the tip of the auxiliary vein and passing across the marginal, submarginal, and first posterior cells, and nearly connected with a spot in the discal cell, and across the base of the third posterior cell; beyond this hyaline band there is a narrow, irregular, brown, arcuate band, beginning at the second vein, passing over the first section of the anterior branch of the third vein, the middle of the first posterior cell, the subangulated posterior cross-vein, and reaching the tip of the anal cell; the narrow outer margin of the wing and the anal and axillary cells are subhyaline. Length 7 millim.

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*).

One specimen.

ECLIMUS (p. 161).

2. *Eclimus fascipennis*, sp. n. (Tab. V. fig. 9, ♀.)

♀. Front opaque black, with long black pile and short, closely-set, bright golden pile; on the lower third or more and the face densely white-pollinose; cheeks and the oral margin shining black. Antennæ black; third joint longer than the first, broad at the base, pointed distally, and with a minute style at the tip. Proboscis as long as the head and thorax together, black. Palpi about one-fourth the length of the proboscis, black; the second joint about two-thirds the length of the first, with an attenuated tip, as though a small third joint were present. Occiput with golden pile and long yellowish hair; opaque grey below, opaque black above. Mesonotum opaque black, with the lateral margins and a median stripe, expanded posteriorly, of close-lying golden pile; everywhere with long, sparse, dusky pile. Pleuræ densely white-pollinose, with white hair and a little golden pile. Scutellum covered with golden tomentum. Knob of the halteres black. Abdomen opaque black; the first four segments with golden tomentum, the distal segments with white pile, intermixed with longer and coarser black hair, which forms a fringe at the tip; venter whitish, with white hair. Legs wholly black. Wings nearly hyaline, with two narrow, partly confluent, brown bands beyond the middle, connected in the marginal cell, and with a small spot at the anterior basal cross-vein and another at the origin of the third vein; costal margin at the tip narrowly clouded. Length 9-11 millim.

Hab. MEXICO, Tepetlapa and Chilpancingo in Guerrero (*H. H. Smith*).

Seven specimens.

3. *Eclimus quadratus*, sp. n.

♀. Front black, opaque on the upper portion, with recumbent white pile and longer black hair; on the lower portion, to the upper part of the face, thickly white-dusted; oral margin, more broadly so than in *E. fascipennis*, and the cheeks, shining black. Antennæ and proboscis in colour and structure like those of the preceding species; second joint of the palpi relatively shorter. Mesonotum opaque black, the lateral margins and a median line with recumbent white pile, less abundant than in *E. fascipennis*. Pleuræ brown, with white hair. Abdomen opaque black; first four segments with sparse golden pile, the fifth with white pile, the other segments with longer, more abundant, and wholly black hair. Femora and tibiæ red or brownish-red, the tip of the latter and the tarsi blackish. Wings hyaline, with a broad, quadrate, brown spot, lighter-coloured in the interior of the cells; a large spot in the proximal half of the first basal cell, and a small cloud on the anterior basal cross-vein, also brown; costal and subcostal cells yellow or brown. Length 10 millim.

Hab. MEXICO, Rincon in Guerrero (*H. H. Smith*).

SPHENOIDOPTERA, gen. nov.

♀. Head broader than the thorax; front broad, with a median longitudinal groove; face short, its profile continued in the line of the lower part of the front, the sides narrow, the oral margin at about an angle of forty-five degrees with the occiput. Proboscis extending about as far outward as the tip of the

antennæ; palpi slender, single-jointed. Antennæ about as long as the distance from their base to the ocelli, which are situated at the vertex; first joint stout, about three times as long as the second; second joint about as long as broad; third of nearly the same length as the first and but little broader, not tapering, with short black hair and a minute style. Thorax with black bristles before the root of the wing, on the posterior part of the mesonotum, and on the margin of the scutellum; nearly bare of pile. Abdomen elongate, cylindrical, with nearly parallel sides, not broader than the thorax, composed of seven segments, bare of pile, except on the sides of the first segment; with bristles on the hind margin of the segments. Wings narrow, markedly wedge-shaped at the base, the alulæ wholly wanting; anal and axillary cell narrow; origin of the second vein before the base of the discal cell; marginal cell dilated at the extremity, the second vein joining the costa at nearly a right angle; two submarginal cells, four posterior cells; all the cells open. All the tibiæ with bristles; pulvilli well-developed.

In the shape of the wings and the venation, this genus somewhat resembles *Scinax*, and in the elongate bristly body, *Thlipsomyza*. It is perhaps best placed near *Eclimus*.

1. **Sphenoidoptera varipennis**, sp. n. (Tab. V. fig. 10, ♀.)

♀. Black, the distal part of the tibiæ and the basal joints of the tarsi reddish. Front opaque, and with long black hairs; face shining. Mesonotum opaque, with white tomentum. Pleuræ whitish-pollinose; mesopleuræ with a longitudinal row of short white hairs, above which there are scattered longer black hairs, the portion below them being bare. Abdomen moderately shining; first segment with a tuft of white hair on either side; remaining segments with black and white tomentum; hairs at the tip black. Wings hyaline and brown; the costal border is brown as far as the tip of the first vein, including the marginal cell; from the extremity a brown band extends back to the fourth posterior cell over the cross-veins; proximally, another projection extends to the anal cell over the base of the fourth posterior cell, between which and the basal brown colour there is a narrow hyaline band reaching to the first vein and to the axillary cell, the latter being hyaline; a brown spot over the base of the second posterior cell, the furcation of the third vein, the tip of the second and anterior branch of the third veins, and a minute one on a small stump of the second vein in the dilated part of the marginal cell. Length 6 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

Two specimens.

AMPHICOSMUS.

Amphicosmus, Coquillett, Western American Scientist, vii. p. 220 (1891).

1. **Amphicosmus cincturus**, sp. n. (Tab. V. figg. 11, 11 a, ♂.)

♂. Eyes narrowly separated above, behind the ocelli, which are situated far forward; the narrow front forms a rounded ridge. The front above and the frontal triangle black, greyish-dusted, the triangle with erect, short, black hair. Face protruding conically forward, the conical portion shining black, the sides whitish-pubescent. Proboscis protruding as far forward as the tip of the antennæ. Antennæ short; first two joints thickened, of equal length; third joint slender, a little longer than the first two together, pointed; all the joints black. Mentum yellowish. Thorax deep black, shining, the mesonotum with erect, soft, whitish pile. Abdomen black, shining, bare, contracted at the distal end of the second segment, thence cylindrical, with the distal portion a little thickened; second and third segments with the narrow hind margin yellow. Legs black, wholly without bristles; the femora with soft, short, white pile. Wings nearly hyaline, the veins at the base yellow; distal end of the marginal cell dilated; three submarginal cells present. Pulvilli present. Length 12 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

One specimen.

THEREVIDÆ (p. 162).

PSILOCEPHALA.

Psilocephala, Zetterstedt, Ins. Lapp. p. 525 (1840).

1. *Psilocephala univittata*.

Psilocephala univittata, Bellardi, Saggio etc. ii. p. 90¹.

Hab. MEXICO, Xucumanatlan, Amula, and Omilteme, all in Guerrero, 6000 to 8000 feet (*H. H. Smith*), Puebla¹.

Three females and five males. Bellardi described the female. The males agree so closely with Wiedemann's description of *P. notata* that I do not feel sure that the present species is really distinct. Coquillett, in his Table of the North-American forms, distinguishes *P. notata* as having the silvery dust on the lower part of the front meeting above the antennæ, which is hardly the case with these Mexican specimens. The legs are black, with the hind tibiæ yellow.

2. *Psilocephala festina*.

Psilocephala festina, Coq. Canad. Entom. xxiii. p. 225¹.

Hab. UNITED STATES, Florida¹.—MEXICO, Dos Arroyos in Guerrero, Vera Cruz (*H. H. Smith*).

Four female specimens, which agree with Coquillett's description, save that the abdomen is almost wholly deep black and the tibiæ are reddish (not yellowish). A single male, from Tabasco, differs from the others in having the black stripes of the mesonotum narrower and less distinct, and the posterior margin of the abdominal segments yellowish; the whole abdomen, moreover, is silvery-pubescent.

CYRTIDÆ (p. 163).

PHILOPOTA.

Philopota, Wiedemann, Aussereur. zweifl. Ins. ii. p. 17 (1830).

This genus was not represented in the collections reported upon by Osten Sacken in the earlier part of this work.

1. *Philopota lugubris*, sp. n. (Tab. V. figg. 12, 12 a, ♂.)

Deep black, with yellow markings. Frontal triangle silvery-white-pubescent. Antennæ black. Labium short, black, the proboscis otherwise light yellow. Prothorax above yellow, its median line brown. Mesonotum and scutellum brassy-black, finely punctulate, moderately shining; on either side of the mesonotum in front a yellow spot connected with the yellow of the pronotum; post-alar callosities yellow. Mesopleuræ silvery-pubescent. Abdomen black, silvery-pubescent; first four segments with an interrupted yellow band on the posterior part, that on the second forming two large subcrescentic spots, the others narrower; on the fifth segment a narrow yellow hind border; all these segments with the

posterior angle broadly yellow. Femora black; their tip, the tip of the tibiæ, and the basal joints of the tarsi, yellow; tibiæ and tarsi otherwise reddish or brownish. Wings tinged with yellowish. Length 6-7 millim.

Hab. MEXICO, Xucumanatlan and Amula in Guerrero 6000 to 7000 feet (*H. H. Smith*).

Four specimens. In one of them the yellow on the margin of the fourth and fifth abdominal segments is wanting. Although the markings are very similar to those of *P. truquii* and *P. conica*, the present species cannot be identified with the former on account of its black colour, nor with the latter by reason of yet more pronounced differences.

2. *Philopota dolorosa*, sp. n.

Very much like *P. lugubris*; but the frontal triangle is larger, reaching midway to the ocelli; the abdomen is wholly without yellow, save the very narrow lateral margins of the segments; the mesothorax also lacks the large yellow spots, and there is only a small reddish spot on each side of the posterior margin of the pronotum. The legs are black, with the knees and basal joints of the tarsi reddish. Length 6-7 millim.

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*).

One specimen. I cannot believe that the strongly marked differences between this and the preceding species are merely varietal, though such is possibly the case. I am unable to determine the sex: it appears to be the same in our examples in both forms.

ASILIDÆ (p. 167).

LEPTOGASTER (p. 167).

Three Mexican species of this genus were briefly noticed by Osten Sacken in the earlier part of this work, but none of them were known to, or identified by, him. The supplementary collections since received contain representatives of eight others, which may be tabulated thus:—

- | | |
|---|-----------------------------|
| 1. A row of well-developed bristles on the upper part of the occiput | 2. |
| No upper occipital bristles present | 5. |
| 2. Empodia nearly as long as the ungues; mesonotum for the most part
shining black | <i>triungulata</i> , sp. n. |
| Empodia very much shorter than the ungues | 3. |
| 3. Mesonotum shining reddish-yellow for the most part | <i>rubida</i> , Wiedem. |
| Mesonotum wholly opaque | 4. |
| 4. Third antennal joint black | <i>crocea</i> , sp. n. |
| Third antennal joint yellow | <i>concinata</i> , sp. n. |
| 5. Empodia present | 6. |
| Empodia wanting | 7. |

6. Mesonotum shining for the most part, with a black stripe and two confluent spots of the same colour *intima*, sp. n.
 Mesonotum wholly opaque, for the most part brown *dorsalis*, sp. n.
7. Hypopygium very large; style of antennæ thickened and shorter than the third joint *macropygialis*, sp. n.
 Hypopygium small; style bristle-like and longer than the third joint *micropygialis*, sp. n.

1. **Leptogaster triungulata**, sp. n. (Tab. V. figg. 13, 13 a, ♂.)

♂ ♀. Antennæ inserted about midway between the upper angle of the eyes and the oral margin; black, the second joint somewhat reddish at the tip; third joint elongate-ovate; style slender, longer than the third joint, a little thickened distally and ending in a minute bristle. Front and face thickly grey-pollinose. Occiput densely grey-pollinose, with a row of well-developed bristles below the vertex. Thorax densely grey-pollinose; the mesonotum, except the lateral margins and behind, shining deep reddish-black. Abdomen red or orange-yellow, the second segment at its base above, or along the middle for its whole length, and the sixth and following segments, black; sometimes the abdomen throughout is obscurely blackish; hypopygium small. Legs deep piceous, the tarsi black; basal portion of all the tibiæ yellow, the hind metatarsi in part reddish or yellowish; hind femora slender, moderately thickened distally; empodia very much developed, only a little shorter than the claws. Wings nearly hyaline; fourth posterior cell petiolate; the furcation of the third vein takes place beyond the distal end of the discal cell; proximal end of the second posterior cell about midway between the anterior cross-vein and the proximal end of the third posterior cell. Length 15-16 millim.

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*).

Five specimens. Allied to *L. audouini*, Macq.

2. **Leptogaster rubida**.

? *Leptogaster rubidus*, Wiedem. Aussereur. zweifl. Ins. ii. p. 533¹.

? *Leptogaster testaceus*, Loew, Centur. ii. no. 10².

♀. Antennæ inserted midway between the upper angle of the eyes and the oral margin; yellow, the third joint slightly brownish; style slender, nearly as long as the antenna. Front and face narrow, clothed with brownish-yellow, at the oral margin whitish-yellow, dust. Palpi rudimentary; proboscis reddish-yellow. Bristles of the occiput small and yellow, confined to the sides and not reaching across on the upper part. Thorax light yellow, clothed with whitish dust; mesonotum broadly shining, amber-yellow, the posterior part and the lateral margins deeper yellow, and covered with whitish dust. Abdomen slender; light yellow, the distal segments wholly and the others in part brownish. Legs yellow, the tip of the hind femora, the distal part of the hind tibiæ, and the tip of all the tarsal joints, brownish; hind femora slender, moderately thickened distally; empodia not reaching to the middle of the claws. Wings hyaline, very narrowly brownish along the apical margin; furcation of the third vein beyond the distal end of the discal cell; base of the second posterior cell only a little more proximal than that of the third; fourth posterior cell long-petiolate. Length 15 millim.

Hab. ? UNITED STATES, New York².—MEXICO, Northern Yucatan (*Gaumer*).—SOUTH AMERICA¹.

One specimen. I am not sure that this species is the same as that described by Loew. It appears to have the second submarginal cell longer, as well as the petiole of the fourth posterior cell. Wiedemann's description¹ also is too indefinite for the certain determination of the insect.

3. *Leptogaster crocea*, sp. n.

♂ ♀. Antennæ inserted distinctly above the middle of the distance between the upper angles of the eyes and the lower margin of the face; reddish-yellow, the third joint black or blackish; style short and rather thick, not two-thirds the length of the third joint. Occiput and front opaque yellow, the occiput with a row of well-developed bristles above on each side of the vertical groove; face silvery-white; front broad above, the distance between the upper angles of the eyes nearly or quite equal to the length of the antennæ without the style. Palpi and proboscis black. Thorax opaque ochraceous-yellow; mesonotum with three rather broad black stripes (appearing dull brown through the yellowish dust); ground-colour of the lower part of the pleuræ black. Abdomen only moderately slender; brownish-red, the distal segments black or blackish, opaque, the venter yellowish. Legs yellow or reddish-yellow, the distal joints of all the tarsi brownish-yellow; hind femora considerably thickened distally; empodia reaching to about the middle of the claws. Wings yellowish-hyaline; furcation of the third vein opposite the base of the second posterior cell, which is only a little more proximal than that of the third; fourth posterior cell short-petiolate. Hypopygium small. Length 15 millim.

Hab. MEXICO, Acaguizotla and Omilteme in Guerrero (*H. H. Smith*).

Nine specimens. The furcation of the third vein may vary to a slight extent.

4. *Leptogaster concinnata*, sp. n.

♂. Closely allied to *L. crocea*, but unquestionably distinct. The third joint of the antennæ is reddish-yellow (not black); the bristles of the upper occipital orbits are yellower; the mesonotum is blackish, showing less distinct stripes; and the hind femora are more slender proximally (in *L. crocea* the thickening begins more gradually near the middle, while in the present species the thickening is restricted to the distal end, the femora appearing more strikingly club-shaped). Length 16 millim.

Hab. MEXICO, Omilteme and Sierra de las Aguas Escondidas in Guerrero 8000 to 9500 feet (*H. H. Smith*).

Three specimens. The peduncle of the second submarginal cell is not one-third of the length of the cell, while in *L. crocea* it is about one-half. This character will distinguish the species from *L. favillaceus*, Loew. From *L. brevicornis*, Loew, to which it is more closely allied, the present insect will be distinguished by the length of the style of the antennæ (this being shorter than the third joint), and by the second posterior cell not reaching more than one-third of the distance to the cross-vein in the discal cell.

5. *Leptogaster intima*, sp. n.

♂ ♀. Distance from the upper ocelli to the root of the antennæ about equal to that from the latter to the oral margin. Antennæ dark brown, the second joint yellow; third joint scarcely longer than the first two together; style slender, about as long as the antenna. Front and face thickly light grey-pollinose. Proboscis reddish-yellow. Occiput thickly light yellow-pollinose; no bristles on the upper part. Thorax light yellow; the sides of the mesonotum and its posterior part and the pleuræ white-pollinose; mesonotum shining reddish-yellow, with a median stripe and a contiguous spot on each side shining black, the median stripe continued more narrowly beneath the white dust posteriorly; pleuræ with black spots beneath the pollen inferiorly. Abdomen opaque, nearly black; sides of all the segments and the immediate base of the anterior ones reddish-yellow; hypopygium small. Legs yellow; tips of all the femora and of the tibiæ, and the tarsal joints, dark brown; hind femora with a brownish ring beyond the middle, very slender on the proximal two-thirds, moderately thickened distally; the empodia reaching fully to the middle of the claws. Wings hyaline, greyish at the apex; the first vein is broadly separated

from the costa to its tip; furcation of the third vein beyond the distal end of the discal cell; fourth posterior cell petiolate. Length 15 millim.

Hab. MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Fifteen specimens. The abdomen is sometimes almost wholly brown, at other times yellowish. The ring of the hind femora is not always distinct: in some examples the femora would be best described as brownish-yellow in colour, with a broad præapical yellow ring. The species is related to *L. badia*, Loew, differing from it in having the fourth posterior cell short-petiolate, the rings of the femora indistinct, &c.

6. *Leptogaster dorsalis*, sp. n.

♀. Very much like *L. macropygialis*, but with the third antennal joint more oval, the style thicker and only about as long as the third joint, the mesonotal margins more broadly grey, leaving three, subconfluent, brown stripes; the abdomen appears to have broader grey hind-margins; the thickening of the hind femora is more pronounced, the dark markings less distinct; and the tarsi have distinct, but short, empodia. The anterior cross-vein is a little more distal in position. Length 8-9 millim.

Hab. MEXICO, Xucumanatlan and Omilteme in Guerrero, 7000 to 8000 feet (*H. H. Smith*).

Four specimens. The middle tibiæ have a slender blackish line on the front side. The species is yet more closely allied to *L. varipes*, Loew, from which it differs in having the second joint of the antennæ yellow, the fourth posterior cell quite sessile, &c.

7. *Leptogaster macropygialis*, sp. n. (Tab. V. fig. 14, ♂.)

♂ ♀. Distance from the upper ocelli to the root of the antennæ about one-half that from the antennæ to the oral margin. Antennæ yellow, the third joint, except its immediate base, brown; the latter rather long, narrow, and tapering; style shorter than the third joint. Front brownish-yellow-pollinose; the very narrow face whitish-yellow-pollinose. Proboscis black. Occiput without bristles. Thorax light yellow, the pleuræ and the immediate margins of the mesonotum silvery-pollinose; mesonotum elsewhere opaque dark brown. Abdomen opaque, nearly black, slender; first segment yellow, the posterior margin of the others whitish-pollinose; hypopygium of the male very large and complicated, the lateral inferior forceps with long bristles, and there is a large, globular, shining black swelling below. Legs light yellow; the tips of all the femora and tibiæ, a broad ring on the middle of the four posterior femora and tibiæ, and a less distinct one on the anterior femora and tibiæ, brown; tarsal joints brownish at the tip; hind femora much thickened on the distal half; empodia wanting. Wings hyaline; furcation of the third vein opposite the distal end of the discal cell; veins at the basal end of the second and third posterior cells of nearly equal length; anterior cross-vein situated nearly opposite the proximal end of the fourth posterior cell, which borders narrowly on the second basal cell. Length 11 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Four specimens. This species will be at once distinguished from *L. varipes*, Loew (*?=pictipes*, Loew), to which it is closely allied, by the absence of the empodia.

8. *Leptogaster micropygialis*, sp. n.

♂ ♀. Front short, the distance from the upper ocelli to the root of the antennæ distinctly less than half that from the latter to the oral margin. Front brownish-yellow; face silvery-white. Proboscis black.

Occiput thickly whitish-pollinose; no bristles on the upper part. Antennæ reddish-yellow; style bristle-like, distinctly longer than the third joint. Lateral margins and the posterior part of the mesonotum and the pleuræ wholly white-pollinose; mesonotum otherwise dark opaque brown, as though marked with three confluent stripes. Abdomen very slender, deep brown or black, not shining, the lateral and posterior margins of the segments more or less reddish; hypopygium small. Legs yellow or reddish-yellow; the extreme tip of all the femora, the apex of the hind tibiæ, two spots on the hind femora, and an incomplete ring on the proximal part of the hind tibiæ, brown; tip of hind tarsal joints brown or brownish; empodia wanting; hind femora moderately thickened on the distal part. Wings hyaline; fourth posterior cell narrowly contiguous at the base with the second basal cell; furcation of the third vein about opposite the distal end of the discal cell; anterior cross-vein a little beyond the proximal end of the fourth posterior cell. Length 9–12 millim.

Hab. MEXICO, Dos Arroyos, Tierra Colorada, Acaguizotla, and La Venta in Guerrero (*H. H. Smith*).

Eighteen specimens. This species bears a considerable resemblance to the preceding, but the great difference in the size of the hypopygium, among other particulars, will easily distinguish them.

DICRANUS.

Dicranus, Loew, Bemerk. über Fam. Asil. p. 13 (1851).

Macronyx, Bigot, Ann. Soc. Ent. Fr. 1857, p. 549.

1. *Dicranus jaliscoensis*, sp. n. (Tab. V. fig. 15, ♂.)

♂ ♀. Front and face light yellow, with a whitish-yellow-pollinose covering; mystax yellowish-white. Antennæ yellow; the third joint red, with some black hairs on its upperside. Beard shorter and less abundant than in *D. rutilus*, Wiedem., yellowish-white or white. Mesonotum yellowish-brown, the humeri and the lateral margins ochraceous-yellow; on the inner side of each humerus, broadly in front, but narrowly behind, and reaching to about the middle of the mesonotum, there is a dark brown stripe, between which there is a smoother geminate stripe; bristles black. Scutellum yellow. Pleuræ thickly yellowish-grey-pollinose. Abdomen brownish-red, opaque, the posterior segments blackish, the anterior ones red (in some specimens it is dark brown throughout, in others dark red); lateral margins of all the segments thickly grey-pollinose. Legs yellow, sometimes wholly so, but usually with the hind femora or all the femora along the upperside, and the hind tibiæ or all the tibiæ along the outer side, black; distal hind tarsal joints more or less blackish at their tips. Wings hyaline; all the cells opening on the distal part of the wing, and the interior of the discal and the fourth posterior cells, with grey clouds. Length 27 millim.

Hab. MEXICO, San Blas, Santiago Iscuintla and Guadalajara in Jalisco (*Schumann*).

Five specimens. The three species of this genus hitherto known are all from the Argentine Republic or Brazil. I have compared the Mexican examples with others of *D. rutilus* from Brazil, and find that they agree closely in their structural characters. From both this and *D. longiungulatus* the present insect differs in the colour and vestiture of the third antennal joint, and in the absence of yellow-haired cross-bands on the abdomen. From *D. tucma*, Lynch, with which *D. jaliscoensis* agrees best, it will be at once distinguished by the opaque colour of the abdomen: the face, too, is not golden-yellow.

OSPRIOCERUS (p. 168).

Ospriocerus — ? (p. 168).

To the locality given, add :—MEXICO, Jaral in Guanajuato (*Schumann*).

A single specimen, agreeing with others from Northern Sonora mentioned by Osten Sacken, except that they have the venter wholly black.

3. **Ospriocerus diversus**, sp. n. (Tab. V. fig. 16, ♀.)

♀. Antennæ black, third joint more than twice the length of the first two together, excised on the distal two-fifths, and with a minute thickened style at the tip. Front brownish-yellow; face white-pubescent; cheeks, immediately below the eyes, shining black; bristles of the face black. Mesonotum opaque, brownish-grey, with three dark brown stripes, the middle one divided by a lighter-coloured line, the lateral ones composed of two elongated spots; bristles white. Abdomen a little longer than the wings, black; the distal segments shining, the anterior ones thinly yellowish-pollinose; a part of the second segment, the third, fourth, and fifth segments, and a spot on the sixth, red. Legs yellowish-red; the upperside of the four anterior femora, the hind femora for the greater part, and the inner distal side of the hind tibiæ, black; bristles black and light yellow, the hair white. Wings strongly tinged with yellowish or brownish, lighter-coloured on the basal posterior part; fourth posterior cell closed in the margin or narrowly open. Length 18-19 millim

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

Two specimens. This insect has the lower portion of the face slightly convex, not straight or gently concave as in the preceding species. It differs from the typical *Osprioceri* in the more slender abdomen (which wants the characteristic brick-red coloration) and the minute style. I cannot believe that the absence or presence of a small style is sufficient to separate *Stenopogon* from *Ospriocerus*: a better distinctive character is the excision of the distal part of the third antennal joint on the under-side. Another example from Chilpancingo, apparently belonging to a different species, has the abdomen black throughout, the legs black, except the upper part of the four anterior femora and the basal portion of the front tibiæ, the wings hyaline, except for the very narrow brown clouds along the veins, and the markings of the mesonotum somewhat different.

SCLEROPOGON.

Scleropogon, Loew, Centur. vii. no. 45 (1866).

1. **Scleropogon truquii**.

Dasypogon truquii, Bellardi, Saggio etc. i. p. 76, t. 1. fig. 10¹.

Hab. MEXICO¹, Tepetlapa and Venta de Zopilote in Guerrero (*H. H. Smith*).

Ten specimens, varying in length from 16-25 millim. I do not feel quite sure of the determination, inasmuch as the Guerrero examples want the fuscous spot in the middle of the wings in front, and they have the abdomen for the most part opaque ochraceous, with the distal segments more or less reddish. None of them have an additional posterior cell, the presence of which, however, is hardly a specific character.

The third joint of the antennæ is one-fourth longer than the first two joints together; the style is about equal in length to the second joint. *S. truquii* was noticed by Osten Sacken under the genus *Stenopogon* (*antea*, p. 169).

2. *Scleropogon lugubris*, sp. n.

♀. Antennæ black, the two basal joints in part reddish; third joint a little longer than the first two together; style nearly half as long as the third joint. Front dark ochraceous, with black bristles; the stout bristles back of the vertex also black. Face yellowish-pollinose above, white below; bristles wholly white; hair or bristles of the occiput, except those above, white. Mesonotum with two narrow opaque black stripes in the middle, narrowly separated by a brown line, and dilated sagittally at the front end; on either side the greyish colouring two large brown spots are visible, forming a sort of stripe, broad behind; bristles for the most part black, those on the sides and behind, and on the margin of the scutellum, white. Pleuræ greyish-yellow-pollinose. Abdomen black, subopaque, the distal segments somewhat shining; covered, more thickly on the anterior part, with greyish dust; on the sides of the segments, scarcely visible from above, there is a large, dark brown, opaque spot. Legs black, with white hair and black and white bristles; the upperside of the front femora and the inner side of the front tibiæ and tarsi red: this red colour is probably more or less variable in extent. Wings cinereous-hyaline, the broad distal margin in front and behind tinged with blackish; first and fourth posterior cells closed. Length 18 millim.

Hab. MEXICO, Dos Arroyos in Guerrero (*H. H. Smith*).

One female. A second, male, specimen (from Tepetlapa) seems to agree in all respects, except in size (length 11 millim.) and in the more distinctly marked lateral stripes of the mesonotum.

DIZONIAS (p. 169).

2. *Dizonias phœnicurus*.

Dizonias phœnicurus, Loew, Centur. vii. no. 53¹.

Dizonias — ?, O. Sacken, *antea*, p. 170 (♂)².

Hab. MEXICO², Guadalajara and San Blas in Jalisco (*Schumann*), Tamaulipas¹.

Four males. In one specimen the first two segments of the abdomen are black, the remainder red; in two others the third segment has a large black triangle, one of these having the second segment also in part red. It is evident therefore that the coloration is in a measure variable. In two of the examples the second and third segments have rather feebly marked spots of whitish dust on the sides; in the others no spots are visible.

3. *Dizonias lucasi*.

Dasyopogon lucasi, Bellardi, Saggio etc. ii. p. 81, t. 1. fig. 7¹.

Hab. MEXICO¹, Jalisco, San Blas, and Guadalajara in Jalisco (*Schumann*).

Five males. This species, noticed by Osten Sacken under sp. no. 2 (*antea*, p. 170), is nearly related to *D. phœnicurus*, but is easily distinguished by the white hair and bristles of the head and thorax. The colour and markings of the abdomen seem to vary in the same way.

Dizonias, spp.?

Seven females, collected by Schumann in Jalisco at the same localities and at the same times with the males of *D. phænicurus* and *D. lucasi*, I refer to three distinct species, two of which, without doubt, are the foregoing, and the third, possibly, *D. tristis*, Walk. The very dissimilar coloration of the two sexes of the species of this genus, and the uniformity of the structural characters, render it almost, if not quite, impossible to collocate them. Observations in the field will be necessary for this purpose. As the females of *Dizonias* appear to be unknown, descriptions of those now before me are appended.

Species A.

Black; bristles of the face black, with white ones intermixed, those of the thorax black; bristles and hair of the occiput white. Abdomen wholly black, shining; first segment with a small spot on the sides behind, and the second, third, fourth, and fifth segments each with a spot on the anterior angles (the two spots nearly touching in the middle on the second segment, the following ones becoming more and more widely separated): they are formed of greyish-yellow dust, and are connected broadly on the venter. Wings brownish-yellow, the distal third or fourth brown.—Jalisco. Two specimens.

Species B.

Antennæ wholly red. Face red, blackish above, clothed with orange-red hair. Mesonotum yellowish-red, like the antennæ, with a narrow median stripe and a small spot on either side behind, black; bristles yellow; pleuræ shining black. Scutellum black. Abdomen red; the first segment, a spot on the second, and the narrow posterior margin of the second, third, and fourth segments, black; second, third, fourth, and fifth segments each with a yellowish-pollinose spot on either side in front. Legs wholly reddish-yellow. Wings uniformly dark brown.—San Blas. One specimen.

Whether the remaining examples pertain to one or more distinct species I cannot say with any degree of assurance. They differ from the last as follows:—

- a. Third joint of the antennæ black, except the proximal end. Black borders of the abdominal segments broader. Four anterior femora black at the base.—Jalisco. One specimen.
- b. Antennæ black. Black stripes and spots of the mesonotum larger. Abdomen slender, with four golden, subinterrupted cross-bands. All the femora black along the upperside. Wings yellow, with the tip broadly brown.—Guadalajara. One specimen.
- c. Like *b*, but with the mesonotal markings similar to those of B. Hind femora wholly black, and the others black along the upperside. Wings uniformly brown. (Third antennal joint wanting.)—Santiago Iscuintla. One specimen.
- d. Third antennal joint black. Mesonotal markings almost obsolete. Abdomen very stout and robust, yellowish-red, with the first segment and the narrow hind margin of the second and third segments black. Legs wholly yellowish-red, the four anterior femora with a little of the blackish colour above. Wings uniformly brownish-yellow.—Jalisco. One specimen.

These variations seem extraordinary if the insects all belong to one species. I have another female of a *Dizonias* from Brazil that belongs to the same group, though evidently distinct from any of the foregoing; it has the hair of the face black, the pollinose markings of the thorax are different, and the whole distal part of the abdomen is black.

HOLOPOGON.

Holopogon, Loew, Linn. Ent. ii. p. 473 (1847).

1. ***Holopogon pulcher***, sp. n. (Tab. V. fig. 18, ♂.)

♂. Front opaque yellow; on the sides with long black hairs; bristles of the ocellar tubercle long and hair-like. Face opaque, nearly white, the black ground-colour showing through slightly in some reflections; hair light yellow; some black bristles above. Antennæ black, slender, the second joint swollen distally; third joint a little longer than the first two together; style slender, more than one-half the length of the third joint. Mesonotum yellowish-pollinose on the sides, but almost wholly opaque black, the dark coloration apparently formed by three confluent stripes; hair long and black, the black bristles hair-like; scutellum subshining, black, with long, black, hair-like bristles on its margin. Pleuræ grey-pollinose. Abdomen rather narrow and elongate, gently tapering from the base; opaque greenish-yellow; each segment with a large, opaque, triangular black spot, the apex of which reaches nearly to the hind margin; hair short, erect, everywhere black; hypopygium shining black, with black hair. Femora shining black; four anterior tibiæ and the first four joints of their tarsi red; hind tibiæ distally, and the hind tarsi largely, black, the basal portion of all red; bristles long and slender, black. Wings clouded with brownish, darker on the distal part in front. Axillary cell narrow; alulæ rudimentary. Length 8 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

Three specimens.

2. ***Holopogon violaceus***, sp. n. (Tab. V. fig. 17, ♀.)

♀. Head, wings, and legs as in *H. pulcher*, the pubescence of the face a little less abundant and yellower, the hind tibiæ and tarsi redder. Mesonotum greyish on the sides, yellowish-pollinose toward the middle, with a geminate brown median stripe, and two subconfluent spots on each side, the latter forming a stripe. Pleuræ grey, with a shining vertical spot in the middle. Abdomen somewhat oval (not so narrow as in *H. pulcher*), shining black, with brilliant violaceous reflections; all the segments with a triangular, yellowish-grey-pollinose spot on each hind angle; the hair short, erect, and black, save on the sides of the anterior segments, where it is longer and white. Length 8 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

One specimen.

3. ***Holopogon dejectus***, sp. n.

♀. Front and face broader than in *H. violaceus*, covered with greyish-yellow dust, somewhat variable on the face, the lower part of the front blackish; hairs of the ocellar tubercle small and whitish; black hairs of the sides of the face and front short. First two joints of the antennæ of nearly equal length, subtriangular in shape; third joint one-third or one-half longer than the first two together, narrowly fusiform in shape; style not divaricate, about half as long as the joint. Mesonotum greyish-pollinose on the sides (discoloured in the middle in the single specimen received); bristles distinct, black; scutellum with two bristles on its margin. Pleuræ thinly and uniformly greyish-pollinose. Abdomen elongate-oval, shining black, glabrous; the first five segments each with a small, triangular, yellowish-grey-pollinose spot on the hind angles. Legs rather slender, black, the immediate base of the tibiæ only yellowish; bristles black. Wings uniformly clouded with brownish. Length 7-8 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

One specimen.

HETEROPOGON.

Heteropogon, Loew, Linn. Ent. iv. p. 488 (1849).

Anisopogon, Loew, Berl. ent. Zeitschr. 1874, p. 377.

1. *Heteropogon rejectus*, sp. n.

♀. Black. Front opaque brown. Face gently convex, clothed with white bristles and hairs, sparsely intermixed with black. Style of antennæ about one-half the length of the third joint. Mesonotum with a median, deep brown stripe, separated from the subvittate spots of the same colour on each side by a narrow whitish stripe, all opaque. Scutellum opaque brown; near the margin shining blue-black. Abdomen bare; the posterior angles and lateral margins of the segments, more broadly so posteriorly, reddish-yellow (the yellow may extend across the hind margin of the posterior segments narrowly). Femora black, their tip and the tibiæ wholly red; the tarsi a little darker red. Wings nearly hyaline, with small brown clouds on the cross-veins and the furcation of the third vein. Length 10 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

A single female. This species is allied to *H. lautus*, Loew, but will be at once distinguished by the absence of pollinose cross-bands on the abdomen and the yellow margins of the segments. The immediate base of the wings is brownish.

TOWNSENDIA.

Townsendia, Williston, Kans. Univ. Quart. iv. p. 107 (1895).

Head broad, much wider 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. Face 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 so long as the head, inserted near the middle of the head as seen in profile; first joint shorter than the second, the second about as broad as long; third joint longer than the first two together, gently tapering from near its base; style slender, divaricate, about half the length of the joint. 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 joints of all the tarsi a little incrassate; no spur on the front tibiæ. Wings long, narrow toward the base; axillary cell narrow, without anal angle; alulæ wholly wanting; discal cell long and narrow; penultimate section of the fourth vein a little shorter than the ultimate; the third vein from the discal cell, that separating the third and fourth posterior cells, absent, and therefore but *four posterior cells present*; marginal cell open.

This genus is remarkable on account of the small size of the typical species, the broadness of the front, the narrowness of the wings at the base, the absence of the alulæ, and the presence of but four posterior cells. In one of the two specimens from which this description is drawn there is a very slight angulation of the vein at the posterior part of the discal cell where the missing vein should have its origin, but even this is wholly wanting in the other example; I cannot believe that this character should be regarded as very important, as it is not at all improbable that species may be discovered in which the neuration is normal. The very broad front, the receding face, and the narrowness of the base of the wings are, I believe, the most essential characters of the genus, which is named in honour of Professor C. H. T. Townsend, well known for his dipterological writings.

1. *Townsendia minuta*. (Tab. V. fig. 19, ♂.)

Townsendia minuta, Willist. Kansas Univ. Quart. iv. p. 107¹.

♂. Black; front and face thickly white-pollinose; mystax white. Antennæ black. Mesonotum opaque

yellowish-white, with a broad median stripe and a spot on each side brown. Pleuræ thinly whitish-pollinose. Abdomen shining black, the first segment whitish-pollinose, the pile along the sides of the anterior segments whitish. Legs yellowish-red, the front and middle femora above, the hind femora, except the base and tip, and the tarsi for the most part, black. Wings greyish-hyaline. Length $3\frac{1}{2}$ millim.

Hab. UNITED STATES, New Mexico (*coll. Univ. of Kansas*).—MEXICO¹, Teapa in Tabasco (*H. H. Smith*).

Two specimens. This species is the smallest member of the family known to me.

PSILOCURUS.

Psilocurus, Loew, Berl. ent. Zeitschr. xviii. p. 371 (1874).

Orthoneuromyia, Williston, Kans. Univ. Quart. ii. p. 67 (1893).

1. *Psilocurus caudatus*, sp. n. (Tab. V. fig. 20, ♂.)

♂ ♀. Black. Front brownish-yellow-pollinose, with a shining spot in the middle. Face moderately gibbose on the lower half, the convex portion covered with yellow hair; clothed throughout with yellow dust and pubescence. Occiput with a transverse row of black bristles above. Antennæ black, the third joint shorter than the first two together; ovate, with a minute style. Ground-colour of the mesonotum in some reflections wholly concealed beneath the appressed yellow pubescence or short pile. Pleuræ grey-pollinose; with a median, vertical, oval black spot. Scutellum clothed with yellow pubescence, its border with two stout, erect, black bristles. Abdomen, when seen from the side, concealed beneath pubescence like that of the mesonotum, appearing, however, variable, the pubescence in a direct view only slightly modifying the shining, somewhat metallic, black colour; posterior angles of all the segments with a triangular spot of opaque, greyish-yellow dust; near the middle of the lateral border of each segment are two erect yellowish bristles; sixth segment in both sexes with its posterior border fringed with long black bristles, which are longer and more abundant in the male. Legs throughout with appressed yellow pubescence, varying in appearance in different reflections; all the metatarsi emarginate below. Wings greyish-hyaline, the veins closing the outer end of the discal and fourth posterior cells sometimes continuous, but usually separated by a short segment of a vein, and sometimes not quite parallel. Length 9 millim.

Hab. MEXICO, Chilpancingo, Amula, and Tepetlapa in Guerrero (*H. H. Smith*).

Six males and eight females. This species, while apparently very closely allied structurally to *P. nudiusculus*, Loew, the type of the genus, differs very materially in the coloration, especially in the female. *P. modestus*, Willist., from Idaho, has the antennæ longer and two additional bristles on the scutellum. S.A.D.

HOLCOCEPHALA (p. 171).

2. *Holcocephala nitida*.

Dasypogon nitidus, Wiedem. Aussereur. zweifl. Ins. ii. p. 643¹; Walk. List &c. vi. p. 503².

Discocephala nitida, Walk. List &c. vi. p. 496³; Bellardi, Saggio etc. ii. p. 82⁴.

Discocephala minuta, Bellardi, loc. cit. p. 83⁵.

Hab. MEXICO^{1 2 3}, Fortin near Vera Cruz, Teapa in Tabasco (*H. H. Smith*), Tuxpango near Orizaba⁴, Jalapa⁵.

Twenty-five specimens. Notwithstanding Bellardi's observations, I believe that the

above synonymy is correct. The species is more especially characterized by the V-shaped stripes on the face, seen better in an oblique light. It is very variable in size.

H. nitida was placed by Osten Sacken amongst the unidentified Mexican members of the genus (*anteà*, p. 171).

DAMALIS.

Damalis, Fabricius, Syst. Antl. p. 147 (1805).

Chalcidimorpha, Westwood, Ann. Soc. Ent. Fr. iv. p. 684 (1835).

The genus *Damalis* includes about twenty-five described species, from Africa, East Indies, China, Philippine Islands, &c. Judging from the characters mentioned by Wiedemann and Loew, the insect now added seems also to belong to it. I give, however, the structural peculiarities of the Mexican species somewhat in detail.

1. *Damalis occidentalis*, sp. n. (Tab. V. fig. 21, ♂.)

♂ ♀. Head broad, flat, nearly twice as wide as high. Front narrow, not more than one-seventh of the width of the head, its sides straight and very slightly convergent above. Eyes twice as remote beneath as at the vertex, the facets on the upper part larger. Face longitudinally convex, not at all visible in profile; on either side with a deep groove, as in the species of Leptidæ, leaving the middle part strongly convex transversely. Antennæ short; first two joints of nearly equal length, about as long as broad; third joint flattened, nearly circular in outline, with a terminal slender arista. Thorax strongly convex above longitudinally, the mesonotum in profile nearly semicircular. Abdomen not more than twice the length of the thorax, depressed, oval; male organs porrect, wholly exerted, composed of a short, thickened, middle piece and a stout forcep on each side below, enclosing other, less visible parts; ovipositor short, spherical. Legs stout; hind femora a little thickened distally, with some spinous bristles below distally in the male; hind tibiæ straight; hind metatarsi incrassate. Body wholly without bristles, save as noted, and small short ones on the tarsal joints. Anal cell of the wings closed; fourth posterior cell closed or narrowly open; first posterior cell open; two submarginal cells.

Front yellowish-brown, opaque. Antennæ brown. Face yellowish-white, with sparse white hairs and a thin white mystax. Occiput nearly white, with abundant white hair. Mesonotum wholly opaque, reddish-yellow, with three broad black stripes; the lateral margins whitish, the ground-colour of the humeri and post-alar callosities red. Scutellum opaque white, with long white hair. Pile of the mesonotum erect, abundant, moderately long, black; that of the pleuræ longer and whitish. Abdomen opaque brown, the posterior margin of the first segment more broadly so laterally; a spot on the sides of the second segment, an arcuate band on the front part of the third segment (leaving a slender semioval spot of the ground-colour), and the fourth and fifth segments, except the hind margin, silvery-grey, opaque. Legs piceous-red, the hind pair lighter; pile dark brown or black, except on the underside of the hind femora, where it is white. Wings brown, darker in front proximally. Halteres large, light yellow. Length 7-8, of the wings 8-9 millim.

Hab. MEXICO, Tepetlapa in Guerrero (*H. H. Smith*), Santiago Iscuintla in Jalisco (*Schumann*).

One male and two females. The fourth posterior cell in the male is closed in the margin; in one female it is only narrowly, and in the other widely, open. This character is evidently variable and cannot be used specifically. Walker has doubtfully referred a species from Brazil to this genus, *D. (?) divisa* (List &c. vii. p. 762).

TRICLIS.

Triclis, Loew, Bemerk. über der Fam. Asil. p. 17 (1851).

1. *Triclis argentifacies*, sp. n. (Tab. V. fig. 22, ♂.)

♂. Black. Antennæ black, the third joint dark red; first joint with black bristles below, about twice the length of the second; the third rather longer than the first two together, the style minute. Front yellowish-grey-pollinose, with black hair on the sides. Face most prominent at the oral margin, covered with close-lying silvery-white hair, which is long and thatch-like on the lower portion, concealing in part the black bristles of the oral margin. Occiput grey, with white hair below. Mesonotum opaque brown, with close-lying short hair, which is brown in the middle and whitish on the sides; a broad median stripe and two large spots on each side, not distinctly differentiated, darker brown. Pleuræ thickly white-pollinose; in the middle with a shining, vertical black spot. Scutellum with short yellowish-white hair above; no bristles on the margin. Abdomen brownish-black, very finely roughened, due to abundant microscopic hairs; hair on the sides longer, white; all the segments with a narrow white hind margin, which becomes broader towards the sides. Legs black; underside of all the femora and the base of the tibiæ red, clothed with close-lying, short, white hair; on the inner side of the front and hind tibiæ and tarsi velvety-yellow. Wings nearly hyaline; first and fourth posterior cells closed at some distance from the margin of the wing. Length 8-9 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

Six specimens.

BLEPHAREPIUM.

Blepharepium, Rondani, Studi Ent. i. p. 89 (1848).

Planetolestes, Lynch, anteà, p. 171.

1. *Blepharepium coarctatum*.

Laphria coarctata, Perty, Del. Anim. art. Brasil, p. 181, t. 36. fig. 4¹.

Blepharepium coarctatum, Lynch, An. Soc. Cient. Arg. viii. p. 145²; v. d. Wulp, Tijdschr. voor Ent. xxv. p. 88³.

Planetolestes secabilis (Walk.), O. Sack. anteà, p. 171⁴.

To the localities given, add:—MEXICO, Tepetlapa in Guerrero, Medellin in Vera Cruz, Teapa in Tabasco (*H. H. Smith*), Atoyac in Vera Cruz (*H. H. Smith, Schumann*), Santiago Iscuintla in Jalisco (*Schumann*).—BRAZIL¹; ARGENTINA^{2 3}.

Osten Sacken adopts the generic name *Planetolestes*, instead of *Blepharepium*, for this species; but there can be no reasonable doubt that it is the one to which Rondani gave the name *Blepharepium*. If every genus has to be correctly and fully diagnosed before it can be accepted, I am afraid there would be no end of confusion.

DEROMYIA.

Deromyia, Philippi, Verh. zool.-bot. Ges. Wien, xv. p. 705 (1865).

Diogmites, Loew, anteà, p. 173.

There are numerous representatives of this genus in the collection under examination,

but their identification presents unusual difficulties. I have recognized two or three of them only.

The rights of priority of the name *Deromyia* over *Diogmites* I have discussed elsewhere. Notwithstanding Osten Sacken's objections, I still insist that it must take precedence. *Deromyia* was described earlier than *Diogmites*, of that I think there is no question; its type clearly pertains to the same genus, and the original description by Philippi was better than that of *Diogmites* by Loew. *Deromyia gracilis*, Rond., has a closed fourth posterior cell, and it cannot possibly be separated from the species of *Diogmites*: this must be considered the type of the genus. Osten Sacken says: "Should even the generic identity be proved, *Deromyia* may remain as a subgenus" of *Diogmites*, which was described later, less completely, and without figure!

1. *Deromyia sallæi*.

Diogmites sallæi (Bellardi), O. Sack. anteà, p. 174, t. 3. fig. 8¹.

To the localities given, add:—MEXICO, Tierra Colorada, Chilpancingo, Rio Papagaio, Venta de Zopilote, Dos Arroyos and Tepetlapa in Guerrero, Atoyac in Vera Cruz, Teapa in Tabasco (*H. H. Smith*), Santiago Iscuintla, San Blas, and Guadalajara in Jalisco, Navarrete, Tepic (*Schumann*), N. Yucatan (*Gaumer*).

Thirty-five specimens, differing considerably in size.

7. *Deromyia jalapensis*.

? *Diogmites jalapensis* (Bellardi), O. Sack. anteà, p. 177.

To the locality given, add:—MEXICO, Atoyac in Vera Cruz (*H. H. Smith*), San Lorenzo, Cuesta de Misantla (*M. Trujillo*), N. Yucatan (*Gaumer*).

Seven specimens, one of which is from Jalapa, whence the type was obtained.

7 (A). *Deromyia* — ?

? *Diogmites jalapensis* (Bellardi), O. Sack. anteà, p. 177.

Hab. MEXICO, Amula and Omilteme in Guerrero 6000 to 8000 feet (*H. H. Smith*).

Thirty-five specimens. They may belong to *D. jalapensis*, as identified by Osten Sacken, but they are all larger, the palpi and the anterior end of the median velvety stripe of the mesonotum are black, and the hind femora are without black. Otherwise they agree well with *D. rubescens*, the size being the same.

9. *Deromyia* — ?

♂ ♀. A well-marked species, which I am not able to certainly identify with any previously described. The abdomen is deep brown, with broad conspicuous posterior bands. The markings of the mesonotum are

brown, not black; the median stripe is narrow, the spots small. The markings are better indicated than in *D. sallæi*, but not nearly so well as in the preceding. The palpi are black. Length 20–22 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

Five specimens.

SAROPOGON (p. 179).

2. *Saropogon pulcherrima*, sp. n. (Tab. VI. fig. 3, ♂.)

♂ ♀. Front black, with purple and blue reflections and black hair. Antennæ black; third joint longer than the first two together, not dilated. Face flat on the upper part, concave, a little prominent below, the oral margin projecting; thickly clothed with light yellow tomentum and, on the margin, with a thin row of light yellow hair. Occiput deep black, with short black hair; orbits narrowly silvery. Mesonotum wholly, and uniformly, deep velvety-black. Scutellum like the mesonotum, with a shining purple margin. Pleuræ shining below, opaque above. Halteres black. Abdomen brilliant steel-blue throughout, without markings, the sides nearly parallel. Legs light reddish-yellow; the immediate base of the femora, the tip of the tibiæ, and the tarsi, deep black; hind femora stout, but not incrassate. The body throughout is nearly bare, with the exception of sparse black pile about the head and anterior coxæ. Wings brown, darker along the costa. Length 10 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

Four specimens. The third joint of the antennæ is sometimes in large part red.

TARACTICUS.

Taracticus, Loew, Centur. ii. no. 240 (1872).

1. *Taracticus similis*, sp. n.

♂ ♀. Antennæ about as long as the width of the head, black; first joint a little longer than the second; the third nearly three times the length of the first two joints together, near its distal end with an emargination on the upperside, at the proximal end of which there is a short spine; beyond this spine the joint is narrower. The prominent ocellar tubercle shining black; the front, elsewhere, and the face covered with dense light yellow dust, wholly concealing the black ground-colour; mystax light yellow, not very abundant. Mesonotum with two median stripes, separated by a slender line, and, on each side, with two large rounded spots, partly confluent at the suture, and narrowly separated from the median stripes: in most of the specimens the markings are opaque black, but in one they are deep brown; the other parts thickly covered with light yellow dust. Pleuræ densely pollinose; on the upper part yellowish, below white. Scutellum flat, lightly wrinkled, but little shining, the margin yellow-pollinose. Abdomen shining, somewhat metallic, black, punctulate, its colour slightly modified, except on the smooth posterior margin of each segment, by shorter, sparse, yellow hairs; all the segments on the hind angles with a light yellowish opaque spot, reaching narrowly to the front margin at the sides and for a short distance inward along the hind margin. Legs yellowish-red; front femora along the upper margin, the middle and posterior femora usually for a less extent along the upper border, and the distal joints of the tarsi for a variable extent, black; sometimes the front tibiæ along the upper margin and the middle tibiæ in part are also black; structure of the hind legs as in *T. octopunctatus*, Say. Wings tinged with yellowish; venation as in *T. octopunctatus*. Length 10–12 millim.

Hab. MEXICO, Omilteme and Sierra de las Aguas Escondidas in Guerrero 8000–9000 feet (*H. H. Smith*).

Fifteen specimens. The extent of the black of the legs is variable. The species is closely allied to *T. octopunctatus*, Say, but differs in the structure of the antennæ and in the markings of the mesonotum.

2. **Taracticus nigrimystaceus**, sp. n. (Tab. V. fig. 23, ♀.)

♂ ♀. Black. Antennæ black; third joint nearly three times the length of the first two together, with a small bristle on the upper margin near the distal third. Face and front covered with yellowish-white tomentum or dust; face distinctly convex on the lower part, projecting in profile, and clothed with long black hairs to near the middle, somewhat intermixed with white ones on the sides. Occiput white-dusted on the sides and clothed with white hair. Mesonotum covered with light brownish-yellow dust, leaving two median, narrowly separated, stripes and two rounded, subcontiguous spots on each side dark brown; there are two bristles near the outer end of the suture and one on each post-alar callus; otherwise, the mesonotum is clothed with very sparse, long, slender hairs. Abdomen elongate, with the sides nearly parallel, the median segments not twice as long as broad; shining, metallic black, punctulate, covered with short, sparse, black hairs, except on the smooth, narrow, hind margin of the segments; all the segments with a small, transverse, yellowish-white, opaque spot on each lateral hind margin. Legs black, the knees very narrowly reddish; bristles and the short pile of the inner side of the tibiæ and tarsi yellow; underside of the hind femora with the usual long bristles. Wings tinged with yellowish, slightly infuscated distally. Length 10–13 millim.

Hab. MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Two specimens.

3. **Taracticus nigripes**, sp. (var. ?) n.

♂ ♀. Very much like *T. similis*, but with the legs wholly black, except very narrowly at the knees. Length 8–11 millim.

Hab. MEXICO, Xucumanatlan, Omilteme, and Chilpancingo in Guerrero (*H. H. Smith*).

Numerous specimens. The abdomen is much more elongated and narrow in the male than in the female. The colour of the face is yellowish in some examples, in others white, and that of the mesonotum appears to vary. Two specimens from Chilpancingo have the wings quite dark anteriorly, but I cannot separate them otherwise; another, from Amula, is very much smaller, measuring only 4 millimetres in length.

4. **Taracticus vitripennis**.

Ceraturgus vitripennis, Bellardi, Saggio etc. ii. p. 60¹.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*), Cuautla¹.

A single male specimen from Chilpancingo undoubtedly belongs to this species, though Bellardi omitted important characters in his description, and wholly overlooked the anterior tibial spur, which, though small, is apparent. The peculiar structure of the antennæ, as described by him, will render the species easily recognizable. It must be closely allied to *T. nigripes*, Macq.

In the earlier part of this work *T. vitripennis* (Bellardi) was placed by Osten Sacken amongst the unidentified species of *Ceraturgus* (*antea*, p. 167).

COPHURA (p. 181).

Blax, Loew, Centur. x. no. 24 (1872) (nomen præocc.).

Blacodes, Loew, Berl. ent. Zeitschr. 1874, p. 377 (nomen præocc.).

Loewiella, Williston, Manual North-Amer. Dipt. p. 57 (1896) (nomen præocc.).

In his remarks on *Cophura*, Osten Sacken says that "the description of the antennæ and of the 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 a slender elongate style—"stylo terminali lineari, acuto, articulis 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 defined them, are brought out in my remarks on *Nicocles scitulus*, Willist., and *Aphamartania fur*, Willist.: apparently Osten Sacken overlooked the descriptions and figures of these species. *Blacodes cristatus*, Coq., moreover, has the style "slender, slightly over half as long as the third joint." 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*, Willist., Washington; *C. fur*, Willist., Arizona; *C. cri tata*, Coq., *C. truncus*, Coq., and *C. clausa*, Coq., California; and *C. pulchella*, Willist., *C. humilis*, Willist., and *C. sodalis*, O. S., Mexico. *Taracticus brevicornis*, Willist., also agrees in all respects, save that the abdomen is lightly punctulate.

Cophura sodalis (p. 181).

To the locality given, add:—MEXICO, Guadalajara in Jalisco (*Schumann*).

Two females, apparently belonging to this species, though the legs and wings seem to be darker coloured; the parts described as brown by Osten Sacken are black, and the wings are deep brown, uniform in colour in one specimen, with paler spots in the other.

2. *Cophura pulchella*, sp. n. (Tab. V. fig. 24, ♀.)

♂ ♀. Antennæ black; first joint scarcely longer than the second; third joint not twice the length of the first two together; style divaricate, about as long as the second joint. Front and face thickly covered with light yellowish-white dust or tomentum; hairs of the mystax nearly white. Mesonotum densely light yellowish-pollinose, in the middle with a broad opaque brown stripe, obsoletely divided and dilated anteriorly; on either side are two rounded spots of the same colour; scutellum and pleuræ wholly opaque light yellowish-grey; metanotum shining black; the mesonotum furnished for the most part with moderately short, sparse, light-coloured bristles, and there are some weak bristles on the margin of the scutellum. Abdomen shining black, with a strong blue reflection; all the segments opaque light grey

at the sides, this colour extending inwards on their posterior part and reaching nearly across the terminal ones. Legs wholly deep black, with light-coloured hair and bristles; hind tibiæ somewhat thickened. Wings tinged with brown; fourth posterior cell only a little, or not at all, contracted at the margin; anal cell open. Length 7-8 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

Seven specimens. This species is allied to *C. (? Nicocles) scitula*, Willist., and *C. (Aphamartania) fur*, Willist., but will be at once distinguished by the brownish wings.

3. *Cophura humilis*, sp. n.

♂. Black. Face densely white-pollinose, when seen from the side; hair white. First two joints of the antennæ of nearly equal length; third longer than the first two together; style slender, shorter than the second joint. Sides of the occiput white-pollinose. Mesonotum opaque; median stripes obscure; on the sides and behind with golden tomentum. Abdomen brownish-black, a little shining, the narrow hind margins of the segments somewhat reddish. Legs black; knees and basal portion of all the tibiæ yellow; tarsi in large part yellowish; hind tibiæ not clavate; hind metatarsi moderately thickened. Wings deep brown on the basal two-fifths or more, nearly hyaline distally.

♀. Abdomen deep red or brownish-red; wings less extensively hyaline at the tip. Length 8 millim.

Hab. MEXICO, Tepetlapa in Guerrero (*H. H. Smith*).

Two specimens, the female being greasy. The description of *Dasypogon humilis*, Bell., applies pretty well to this species, but there is no spur on the front tibiæ (?).

PSEUDORUS (p. 183).

Pseudorus bicolor (p. 183).

To the localities given, add:—MEXICO, Acapulco and Amula in Guerrero (*H. H. Smith*), Santiago Iscuintla in Jalisco, Atoyac in Vera Cruz (*Schumann*), Omealca (*M. Trujillo*).

Thirteen specimens. The thorax is shining black, the wings uniformly deep brown. In structure this species agrees well with *P. piceus*, Walk., examples of which I have examined from Brazil; both have the marginal cell closed and but two submarginal cells.

ATOMOSIA (p. 183).

Atomosia mucida (p. 184).

To the locality given, add:—MEXICO, N. Yucatan (*Gaumer*).

A male specimen. This species is a true *Atomosia*, notwithstanding the unusual length of the antennæ. The front is narrow above; the first posterior cell is narrowed; and the hind tibiæ are brown at the tip.

3. *Atomosia macquarti*.

Atomosia macquarti, Bellardi, Saggio etc. ii. p. 20¹.

Hab. MEXICO¹, Amula in Guerrero, Atoyac in Vera Cruz, Teapa in Tabasco (*H. H. Smith*), N. Yucatan (*Gaumer*).

Numerous specimens, perhaps belonging to this species. None of them have the first posterior cell quite closed. The dust of the face is white, that of the mesonotum only rarely yellowish. The male hind tarsi are rather densely clothed with silvery-white hairs. In some examples the tibiae are largely yellow; such agree pretty well with the description of *A. tibialis*, Macq. *A. macquarti* was not identified by Osten Sacken.

4. *Atomosia anonyma*, sp. n.

♀. Antennae elongate, the first joint about three times the length of the second, the two together two-thirds the length of the third. Face with white hair and dust. Mesonotum and abdomen shining, somewhat metallic black. Legs yellow; distal half of the hind femora, the hind tibiae, except the base, and the hind tarsi, except the base of the metatarsi and the distal joints of the other tarsi, black; sometimes the four anterior tarsi for the most part, or the distal joints only of the hind tarsi, are black. Wings hyaline; first posterior cell closed. Length 8 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

Six specimens. There are many descriptions of South-American species that will nearly apply to this one, but none sufficiently well to remove doubt.

ATONIA.

Atonia, Williston, Psyche, 1889, p. 257.

1. *Atonia brevistylata*, sp. n. (Tab. VI. fig. 1, ♀.)

♀. Black, shining. Front, face, and occiput clothed with whitish-grey dust, with a silvery reflection below. Beard and thin pile of the face silky-white; mystax not abundant, white. Antennae black; first two joints of equal length, short, with black bristles; third joint scarcely twice the length of the first two together, the lower border convex, the upper nearly straight, truncate at the tip; style small, short, conical, divaricate. Mesonotum with sparse, rather long, silvery pubescence, and sparse, erect, short, black hair. Pleurae densely white-pollinose; a shining black spot on the mesopleurae; trichostical bristles white. Tegulae yellow. Abdomen black, shining, finely punctulate, the pubescence or short pile on the posterior angles and borders of the segments white. Legs black; all the tibiae and tarsi with long, chiefly black, bristles and white hairs, which on the middle tibiae are regularly arranged; hind tibiae on the inner side with short white pile. Wings nearly hyaline; second posterior cell coarctate, the first widened in the margin. Length 6 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

A single specimen. This insect is very closely allied to the type of the genus, *A. miki*, Will., from San Domingo (Trans. Am. Ent. Soc. xiii. p. 290), and it is possible that it may be the other sex of that species. The middle tibiae do not have the peculiar dilatation described, but that would not be expected in the female. The Mexican insect chiefly differs from the Antillean form in the length of the antennal style and the shape of the third joint.

CEROTAINIA.

Cerotainia, Schiner, Verh. zool.-bot. Ges. Wien, xvi. pp. 662, 673 (1866); Reise d. Novara, Dipt. p. 170 (1868).

This genus and its allies are often misunderstood. For their definition the reader is referred to a paper by the writer in 'Psyche,' 1889, p. 255.

1. *Cerotainia* — ?

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*).

Three specimens. Two of them are teneral; the other must resemble *C. argyropus*, Schiner, closely, and possibly belongs to that species.

APHESTIA.

Aphestia, Schiner, Verh. zool.-bot. Ges. Wien, xvi. p. 673 (1866).

1. *Aphestia mexicana*, sp. n. (Tab. VI. fig. 2, ♀.)

♀. Black, moderately shining. Antennæ black, the first two joints somewhat reddish. Front and face densely greyish-white-pollinose; head throughout with white hair and soft bristles. Mesonotum with rather abundant, appressed, light golden pubescence. Pleuræ thickly grey-pollinose. Scutellum with bristles. Abdomen punctulate, with light golden pubescence, less apparent than on the mesonotum; hind margins of the segments, when seen from behind, white. Legs for the greater part light yellow; the femora for the most part, and the tips of all the tibiæ, brown or black; tarsi black. Wings nearly hyaline; first posterior cell narrowed. Length 10 millim.

Hab. MEXICO, Amula in Guerrero, Atoyac in Vera Cruz (*H. H. Smith*).

Two specimens, one of them teneral. This species must closely resemble *A. brasiliensis* and *A. calcarata*, Schiner, especially the latter, but will be at once distinguished by the more abundant yellow pubescence of the mesonotum. The front is narrowed above, as in *Atomosia*, with the sides emarginate. The face is narrow, and arched in profile.

Aphestia is a valid genus, and the Mexican insect seems to agree closely in its structural characters with the type.

LAPHRIA (p. 185).

3. *Laphria cœrulea*, sp. n.

♂. Black; the mesonotum, abdomen, and legs brilliant metallic-blue. Face on the sides with tufts of bright golden recumbent hair. Facial gibbosity abruptly prominent, black, with long black bristles. Antennæ black; third joint a little broader distally, about one and a half times the length of the first two joints together. Proboscis about as long as the vertical diameter of the head, obtuse at the tip. Sides of the occiput below densely white-pollinose and white-pilose. The metallic-purple and blue colour of the mesonotum is largely concealed beneath very short black hair. Pleuræ thickly white-pollinose. Abdomen

elongate, narrowed beyond the base; shining metallic-green and blue, but the colour modified, as on the mesonotum; first and second segments covered with close-lying yellow pile, a small patch of which is also visible on the hind angles of the third segment. Legs deep resplendent blue, the tarsi deep black; hind femora much thickened; inner side of the front and middle tibiæ and the underside of the femora with long and abundant bushy black hair; front coxæ and the underside of the middle tibiæ with similar hair, but white in colour; hind tibiæ on the inner side with abundant, but shorter, black hair. Wings deep brown, uniform in colour. Length 19–20 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*Schumann*).

One specimen. The long bushy pile of the legs is probably a sexual character. Is this a *Maira*?

4. *Laphria marginalis*, sp. n.

♀. Black; the sides of the third, fourth, and fifth, and the whole of the sixth and remaining segments red. Front and face thinly greyish-pollinose; facial gibbosity small, with sparse black bristles; sides of the face with a tuft of white hair. Antennæ black; third joint a little widened distally, about one and a half times the length of the first two joints together. Beard white. Mesonotum shining blue-black, clothed thinly with short, yellow, sparse, more erect, black hair. Pleuræ grey-pollinose. Abdomen black, with blue reflections; the sides and tip red, as described above. Legs thinly white-pilose; hind femora moderately thickened distally. Wings brownish, more hyaline toward the base and in the interior of the outer cells; first posterior cell slightly coarctate. Length 10 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*Schumann*).

One specimen.

LAMPRIA (p. 186).

Lampria aurifex (p. 187).

To the localities given, add:—MEXICO, Atoyac in Vera Cruz (*Schumann*), Teapa in Tabasco (*H. H. Smith*).

NUSA.

Nusa, Walker, Ins. Saund., Dipt. p. 108 (1853).

Andrenosoma, Rondani, Dipt. Ital., Prodr. i. p. 160 (1856).

1. *Nusa rubida*, sp. n.

♂ ♀. Front and face thickly yellowish-white-pollinose, with white hair, and on the moderately prominent, shining black, facial gibbosity with long black bristles. Antennæ black; third joint red, a little longer than the first two joints together, slender on the proximal portion, dilated distally. Beard abundant, white. Thorax lilac-red, covered with white pollen, leaving bare on the mesonotum a broad, geminate, median stripe, and two large, partially confluent spots on each side. Scutellum shining red on its margin, and with black bristles; mesonotum with sparse, short, black and white bristles, and without pile. Abdomen dark red, shining, the terminal segments and the hypopygium of the male lighter-coloured, the sides with white hair, the dorsum covered with short black hairs; near the middle of the lateral margin of each segment with a black bristle, the first segment with two. Legs black, the tibiæ for the most part dark red; hair of the femora and tibiæ long, rather abundant, white; hind femora only

moderately thickened. Wings lightly infuscated distally; first posterior cell closed before the margin. Length 15 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*Schumann*).

Two specimens. This species appears to be allied to *Nusa (Laphria) formidolosa*, Walk., but, judging from the description, it is less densely pilose, lighter coloured, and much smaller.

2. *Nusa sexpunctata*, sp. n. (Tab. VI. fig. 4, ♂.)

♂. Black. Front and face thickly white- or brownish-white-pollinose, the latter with a shining black spot in the middle. Third antennal joint considerably dilated, not longer than the first two joints together. The rather prominent facial gibbosity is clothed in the middle with long black, on the sides with white, bristles. Occiput greyish-pollinose, and with white hair. Thorax greyish-pollinose (the pollen modifying the ground-colour to some extent); hair of the mesonotum sparse, black, that of the pleuræ white; the broad median stripe and the lateral spots of the mesonotum indistinctly indicated. Abdomen shining black, the posterior part of the fifth and the following segments shining red; a small white-pollinose spot near each posterior angle of the second, third, and fourth segments. Legs with long, soft, white hair; all the femora thickened, the hind pair especially so. Wings tinged with brownish; a brownish spot sometimes present near the middle; first and fourth posterior cells closed at some distance before the margin of the wing. Length 8-9 millim.

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*).

Two specimens. This species must be allied to *Lampria cinerea*, Bell., but can hardly be the same, from the fact that the latter is figured as having the first posterior cell wide open, and the extent of red on the abdomen is less. Moreover, the size is very much greater.

MALLOPHORA (p. 189).

1. *Mallophora freycineti*.

Asilus infernalis, Wiedem. Aussereur. zweifl. Ins. i. p. 475¹. — *minor*

Mallophora freycineti, Macq. Dipt. Exot. i. 2, p. 85²; Suppl. i. p. 77³.

Mallophora infernalis (Bellardi), O. Sack. antea, p. 189⁴.

To the localities given add:—MEXICO, Rio Papagio and Acapulco in Guerrero (*H. H. Smith*).—COLOMBIA^{2 3}; BRAZIL¹.

Two specimens from Guerrero, one of which agrees with an example from Brazil that I identify as *M. freycineti*; the other has yellow pile on the scutellum. My male from Brazil has some white hairs on the hind tarsi; the female of the Mexican insect has some white hair on the same tarsi, differing in this respect from *M. craverii*.

2 (A). *Mallophora æaca*, sp. n.

♂. Allied to *M. freycineti*, *M. pluto*, &c. Large, robust, black, with black and yellow hair. Hair of the upper part of the occiput, of the front, the bristles of the face above the oral margin, and a short tuft below the eyes on the occipital orbits, some hair on the front part of the mesonotum, the scutellum

(densely), a band across the second and third abdominal segments, and the extreme tip of the abdomen, all sulphur-yellow; back of the broad yellow band of the abdomen, and reaching nearly to the tip, the hair is rufous, intermixed with black. Elsewhere the body, including the palpi and venter, is clothed with black hair, which is long and dense on the hind tibiæ. Wings brown. First two joints of the antennæ reddish. Length 20 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

One specimen.

Mallophora fautrix (p. 191).

To the locality given, add:—MEXICO, Tepic, Jalisco (*Schumann*), Atoyac in Vera Cruz (*H. H. Smith*), N. Yucatan (*Gaumer*).

Numerous specimens. Most of them agree well with the description, but others show marked differences, which in isolated examples might indicate distinct species. Some of the Yucatan insects have the hair of the scutellum largely, and others almost wholly, black; in several of them, as well as others in which the scutellum is yellow-haired, the hair of the hind tibiæ and femora is in part, or almost wholly, white.

6. **Mallophora craverii**.

Mallophora craverii, Bellardi, Saggio etc. ii. p. 22¹.

Hab. MEXICO, Atoyac in Vera Cruz, Teapa in Tabasco (*H. H. Smith*), Oaxaca¹.

Two specimens. This species was not identified by Osten Sacken.

7. **Mallophora trapezoidalis**.

Promachus trapezoidalis, Bellardi, Saggio etc. ii. p. 28, t. 2. f. 4¹.

Hab. MEXICO¹, Atoyac in Vera Cruz (*Schumann*, *H. H. Smith*).

Twenty-four specimens, varying from 14–20 millim. in length. This species is distinctly *Promachus*-like in facies, but it has the claws obtuse, as in *Mallophora*, and the abdomen scarcely longer than the wings. It is apparently allied to *M. scopifera*, Wiedem. *M. trapezoidalis* is included by Osten Sacken amongst the unidentified species of *Promachus* (*anteà*, p. 197).

8. **Mallophora trichostica**, sp. n.

- ♀. Hair of the beard (which is long and abundant), of the occiput above, and of the palpi and oral margin, yellowish-white; bristles of the face black, somewhat intermixed with white above. Hair of the scutellum black and white. The long and abundant trichostical hairs, a small tuft below them, and some hairs on the front and middle coxæ, white. First two segments of the abdomen with black, the remaining segments, both above and below, with yellowish-white hair. Legs black, with black hair. Thorax dark brown. Wings brown. First two joints of the antennæ dark red. Length 25 millim.
- ♂. Very few of the bristles of the face white, and none on the upper part of the occiput. The white trichostical hair less abundant, and absent on the front and middle coxæ. Hair of the abdomen white

on the posterior part of all the segments; the first, third, fourth, and fifth broadly black in front, the sixth wholly black-haired.

Hab. MEXICO, Atoyac in Vera Cruz (*Schumann*).

Two examples, male and female, apparently referable to the same species. I give a name to this insect with some hesitation, since, as Osten Sacken has already remarked (*anteà*, p. 189), the identification of species in this genus from among the many descriptions is a very difficult, or almost impossible, task. Extensive collections and patient study will be needed to determine the limits of variation and the sexual differences.

9. *Mallophora breviventris*.

? *Mallophora breviventris*, Macq. Dipt. Exot., Suppl. iv. p. 77, t. 7. f. 1¹.

Hab. MEXICO, Rio Papagaio in Guerrero (*H. H. Smith*).—BRAZIL¹.

Nine specimens, including both sexes. The males have the scutellum partly covered with yellow pile, no vestige of which is visible in the female. The identity of the Mexican species with that described by Macquart is of course more or less doubtful. It must resemble *M. beelzebul*, Schiner, but is distinctly smaller. Length 15 millim.

PROMACHUS (p. 192).

Promachus cinctus (p. 193).

To the localities given, add:—MEXICO, San Lorenzo, near Cordova (*M. Trujillo*).

A single female specimen. It has the bristles of the face wholly white, and the hair at the base of the abdomen also white, not yellowish.

Promachus forfex (p. 194).

Promachus quadratus, Bellardi, Saggio etc. ii. p. 27, t. 2. f. 3¹ (nec Wiedem.).

Promachus forfex, O. Sack. *anteà*, p. 194².

To the locality given, add:—MEXICO¹, Atoyac in Vera Cruz (*Schumann*).

A single male specimen. The bristles of the face are yellow, save at the upper part. I have no doubt of the synonymy, of which O. Sacken did not feel certain, *P. quadratus* being included by him amongst the unidentified species at the end of the genus (*anteà*, p. 197).

Promachus anceps (p. 194).

To the localities given, add:—MEXICO, Atoyac in Vera Cruz (*Schumann*).

One female specimen, agreeing well with the description.

BIOL. CENTR.-AMER., Dipt., *September* 1901.

8. *Promachus truquii*.

Promachus truquii, Bellardi, Saggio etc. ii. p. 30, t. 2. f. 6¹.

Hab. MEXICO¹, Amula in Guerrero (*H. H. Smith*), Atoyac in Vera Cruz (*Schumann*).

The face has no black bristles, and the hair of the sides of the base of the abdomen is sparse and short. The species was not identified by Osten Sacken.

ERAX (p. 197).

Efferia, Coquillett, Canad. Entom. xxv. p. 175 (1893).

Table of the Males of the Species represented in the Supplementary Collections now under examination.

- | | |
|--|--------------------------------|
| 1. Three submarginal cells present | <i>anomalus</i> , Bell. |
| Two submarginal cells as usual | 2. |
| 2. Mesonotum compressed, and with a mane-like crest | 3. |
| Mesonotum not compressed, and without mane-like crest | 5. |
| 3. Hair of the head white; second to fourth abdominal segments with a distinct posterior band; sixth and seventh segments silvery | <i>prolificus</i> , O. S. |
| Hair of the head yellowish | 4. |
| 4. Fifth to seventh abdominal segments silvery | <i>carinatus</i> , Bell. |
| Fourth to seventh abdominal segments silvery | <i>concinatus</i> , sp. n. |
| 5. The furcation of the third vein occurring before the base of the posterior cell | 6. |
| The furcation of the third vein occurring opposite or beyond the base of the second posterior cell | 7. |
| 6. Abdomen largely silvery-white, with white hair directed outwards; front femora and tibiae conspicuously yellow-haired; hypopygium large | <i>splendens</i> , sp. n. |
| Abdomen with two pairs of white spots and a posterior white ring; hypopygium small | <i>maculatus</i> , Macq. |
| 7. Sixth abdominal segment, except the posterior margin, black | <i>dolichogaster</i> , sp. n. |
| Sixth abdominal segment silvery-white, with or without a black spot | 8. |
| 8. Sixth and seventh segments without black spots | <i>cinerascens</i> , Bell. |
| Sixth segment, at least, with a black spot | 9. |
| 9. Tibiae wholly black | <i>disjunctus</i> , sp. n. |
| Tibiae more or less red or yellow | 10. |
| 10. Sixth and seventh abdominal segments each with a large triangular black spot | <i>quadrinaculatus</i> , Bell. |
| Sixth segment wholly silvery, or with a slender black streak | 11. |
| 11. Hind tibiae dilated on the distal two-fifths | <i>sagax</i> , sp. n. |
| Hind tibiae normal | 12. |
| 12. Femora with long black hair | <i>pavidus</i> , sp. n. |
| Femora with yellow hair | <i>bimaculatus</i> , Bell. |

Erax anomalus (p. 199).

Efferia anomalis, Coquillett, Canad. Entom. xxv. p. 175¹.

To the localities given, add:—MEXICO, Tepetlapa in Guerrero (*H. H. Smith*).

A single specimen. Mr. Coquillett¹ has proposed the generic name of *Efferia* for this and other species of *Erax* having three submarginal cells, but, as I have shown (Entom. News, v. p. 137), the genus is not tenable, since it must include a number of heterogeneous forms having this character in common; if it is regarded as valid, the name *Eichoichemus*, Bigot, has priority.

Erax maculatus (p. 200).

To the localities given, add:—MEXICO, Guerrero &c. (*H. H. Smith*).

Erax cinerascens (p. 202).

To the localities given, add:—MEXICO, Guerrero &c. (*H. H. Smith*).

Thirty-five specimens of this very widely distributed insect are contained in the Mexican collection before me.

Erax prolificus (p. 202).

To the locality given, add:—MEXICO, Venta de Zopilote in Guerrero (*H. H. Smith*).

Ten specimens, agreeing with Osten Sacken's description. There is, however, some long white hair on the first three abdominal segments, not mentioned by him.

♂ (A). **Erax concinnatus**, sp. n.

♂. Closely allied to *E. prolificus*, but with the hair of the face, occiput, beard, posterior part of the mesonotum, and scutellum quite yellow (not white), and the second and third abdominal segments without a grey-pollinose band posteriorly. The tips of the tibiæ, and the tarsi for the most part, are black.

♀. Like the male, but with the abdomen black, with the lateral margins of the segments 2-6 broadly grey, the grey coloration expanding narrowly across their posterior margin. Ovipositor and wings as in *E. prolificus*. Length 20 millim.

Hab. MEXICO, Acaguizotla and Rincon in Guerrero (*H. H. Smith*).

Ten specimens.

♂ (B). **Erax carinatus**.

? *Erax carinatus*, Bellardi, Saggio etc. ii. p. 36, t. 2. f. 9¹.

Hab. MEXICO¹, Acaguizotla and Rincon in Guerrero (*H. H. Smith*).

Fifteen specimens. These insects agree with Bellardi's description, except as

regards the abdomen, which has the fifth, sixth, and seventh segments wholly silvery-pollinose, instead of the sixth alone. So far as I am aware, there is no known species of *Erax* with the sixth segment silvery and the seventh not, and I suspect that Bellardi made some mistake about it. If, however, his description is correct, the present insect must certainly be distinct. It is nearly related to *E. prolificus*, but will be distinguished by the yellow (not white) hair of the head and thorax, and by the first three abdominal segments not having a posterior cross-band.

A number of other specimens from Rincon differ only in having the fourth abdominal segment and a part of the third silvery-white, and all the segments with distinct white hair combed outwards. They approach the species No. 9 mentioned by Osten Sacken (*anteà*, p. 204), but have the hair of the abdomen evidently shorter and less abundant, and that of the head yellow. Various females from Acaguizotla, which undoubtedly belong to one or the other of the foregoing species, may be distinguished from the same sex of *E. prolificus* by the yellow hair of the head and thorax. *E. carinatus* was placed by Osten Sacken amongst the unidentified forms at the end of the genus (*anteà*, p. 206).

12. *Erax sagax*, sp. n.

♂. Face yellowish-grey-pollinose, bare above and on the sides; on the gibbosity with white hair, interspersed with black bristles, a row of the latter extending along the oral margin; the gibbosity arises sharply and prominently a little above the middle of the face. Antennæ black, the first two joints with short black hair, the third joint scarcely so long as the first. Front narrowed above, with black hair and bristles. Beard abundant, nearly white; bristles of the palpi black. Thorax strongly convex behind, clothed with short black hair and black bristles; in colour brownish-black, with brown pollen, the median stripe indistinctly divided. Scutellum with black hair and bristles. Pleuræ brown-pollinose, with black hair. Abdomen elongate, black, but little shining; second to fifth segments greyish-pollinose on the sides, the pollen extending inwards on the posterior angles, but not meeting in the middle; sixth segment silvery-white-pollinose (a minute black spot in the middle only); seventh segment silvery in front and on the sides, broadly black behind; hypopygium large, black, with black hair, which is bushy below. Legs with long hair on the four anterior femora and tibiæ, for the most part black; the hair on the hind femora shorter, black, that on the hind tibiæ long and white; hind tibiæ on their inner side and their metatarsi with short orange-yellow pile; in structure the hind tibiæ are rather slender on the basal two-thirds, then dilated and distinctly angulated on the outer side. Wings brownish; the furcation of the third vein occurs beyond the distal end of the discal cell, the anterior cross-vein situated near the distal fourth; costal vein distinctly thickened and curved outward on the distal part; a stump of a vein in the anterior branch of the third vein. Legs black, the tibiæ (except their tip) deep red. Length, without hypopygium, 24 millim.

Hab. MEXICO, Santiago Iscuintla in Jalisco (*Schumann*).

One specimen. This species is closely allied to *E. tagax*, Will., from Arizona, but differs in the colour of the hair of the front, antennæ, and pleuræ, the darker tint of the thorax and its pollen, the black posterior part of the seventh abdominal segment, and the wholly black femora. I have compared it with the type of *E. tagax*.

13. **Erax splendens**, sp. n. (Tab. VI. fig. 5, ♂.)

♂. Face yellow on the sides; gibbosity covered with long, bushy, light yellow hair, scarcely different in colour from the beard. Palpi with yellow hair. Upper part of the occiput and front, and the first two joints of the antennæ, with black hair and bristles. Thorax deep brownish-black, the mesonotal stripes feebly differentiated; hair on the posterior part of the mesonotum and on the scutellum black. Abdomen deep black; first three segments with black hair; fourth, fifth, and sixth segments silvery-white, the lateral margins brown, the white hair directed outwards; hypopygium of moderate size, with bushy black hair below. Legs black, the femora greenish; the femora and tibiæ with long hair on the underside, that of the four posterior femora black, that of the front femora longer and for the most part yellow; hair of the tibiæ in part black; four anterior tarsi with long yellow hair on the posterior side; hair of the front coxæ bushy and yellow. Wings tinged with brownish; furcation of third vein a little distance beyond the anterior cross-vein, the branch with a long stump; costa not appreciably expanded. Length 25 millim.

Hab. MEXICO, San Blas in Jalisco (*Schumann*).

One specimen. The front and hind tibiæ and metatarsi have short, abundant, golden-yellow pile on the inner side.

14. **Erax quadrimaculatus**.

Erax quadrimaculatus, Bellardi, Saggio etc. ii. p. 44, t. 2. f. 13¹.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*), Playa Vicente¹, Cordova.

Two males and four females from Atoyac. This species will be recognized by its large size, and by the sixth and seventh abdominal segments of the male having a large triangular black spot in the silvery-white portions. The hind femora and tibiæ in the same sex have rather long light yellow hair. The female has a large silvery-white spot on each side of the fifth segment. (See the next species.) *E. quadrimaculatus* and *E. bimaculatus* were not identified by Osten Sacken.

15. **Erax bimaculatus**.

Erax bimaculatus, Bellardi, Saggio etc. ii. p. 45, t. 2. f. 11¹.

Hab. MEXICO¹, San Blas and Santiago Iscuintla in Jalisco (*Schumann*).

Two males and four females. This species is so closely allied to the preceding that Osten Sacken, after comparing the types, suspected that they were identical. This, however, is not the case. The males may be readily separated by the sixth and seventh abdominal segments having only a little black streak, or being wholly unicolorous; the hind femora and tibiæ, too, have much shorter hair on the underside. The females are much more difficult to distinguish, but they may be separated by the colour of the hair, which in both sexes is of a decidedly yellowish tinge, while in *E. quadrimaculatus* it is almost pure white. That Bellardi described the beard in *E. quadrimaculatus* as "pallide flava" and in *E. bimaculatus* as "flava" makes it very probable that he did not have the female of *E. quadrimaculatus* before him when he wrote the description of *E. bimaculatus*.

16. ***Erax disjunctus***, sp. n.

♂. Front and face thickly covered with yellow pollen. Face moderately protuberant below, clothed with black and light yellow bristles. Beard white; bristles of the upper part of the occiput black. Palpi with black bristles. Thorax covered with brownish-yellow pollen; mesonotum with two broad, indistinctly separated, opaque black stripes. Scutellum with black bristles on its margin; the black hairs on its upper surface short and sparse. Abdomen opaque black; first, second, and third segments each with two silvery-white spots on the posterior margin; lateral margins of the second, third, fourth, and fifth brownish-yellow; sixth and seventh segments silvery-white, the former with a black spot in the middle; hypopygium short and stout, dark red, without black hair above. Legs black; hair very short, black on the femora, reddish on the front and hind tibiae. Wings yellowish, brownish at the immediate tip; furcation of the third vein opposite the base of the second posterior cell, without stump; costa not dilated. Length (without the forceps) 13 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

One specimen.

17. ***Erax pavidus***, sp. n.

♂. Front and face covered with brownish-yellow pollen, which is not very dense. Face strongly protuberant below, covered, for the most part, with black hair, which is abundant, and only slightly intermixed with light yellow on the lower part. Front with long black hair. Beard light yellow; hair and bristles of the upper part of the occiput black. Palpi with black hair and bristles. Mesonotum covered with brownish-yellow pollen, leaving two, feebly separated, black stripes in the middle and two partially confluent spots of the same colour on each side. The long black hair is sparse, except in the middle and behind. Scutellum with black hair and bristles. Abdomen deep opaque black, with long, not abundant hair, which is black on the first segment, both above and below, white on the sides of the second and third segments, and on the undersides of all the segments, except the first; second and third segments on each side with a narrow silvery-white spot posteriorly; sixth and seventh segments silvery-white, the sixth with a narrow black stripe in the middle; hypopygium large, black, with long black hair on the underside. Legs: femora greenish-black, with long and abundant hair, especially on the front part, for the most part black in colour; tibiae reddish-yellow, their tip, and also the tarsi, deep black; hair of the tibiae long, black and yellow. Wings light brownish, at the base more nearly hyaline; costa expanded distally; furcation of the third vein beyond the proximal end of the second posterior cell, with a short stump. Length (without the hypopygium) 19 millim.

Hab. MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

One specimen.

18. ***Erax dolichogaster***, sp. n. (Tab. VI. fig. 6, ♂.)

♂. Front and face covered with brownish-grey pollen. Face strongly protuberant below, covered with black bristles, somewhat intermixed with yellow hairs. Palpi with black bristles. Beard nearly white. Mesonotum yellowish-grey, with a median, geminate black stripe and two oval, subconfluent, black spots on each side; hair not very long, black. Scutellum with white hairs above and black bristles on its margin. Abdomen black, a little shining, with white hairs on the basal segments above and below; rather slender, the fifth segment cylindrical; lateral margins of all the segments grey-pollinose; posterior margin of the sixth segment narrowly in the middle, and the whole of the seventh, silvery-pollinose; hypopygium rather slender, with black hair. Legs black; hair on the underside of the four anterior femora moderately long, white. Wings brownish distally; costa dilated; furcation of the third vein beyond the proximal end of the second posterior cell, with a stump. Length (without the hypopygium) 17 millim.

Hab. MEXICO, Atoyac in Vera Cruz, Teapa in Tabasco (*H. H. Smith*).

PROCTACANTHUS (p. 206).

2. *Proctacanthus craverii*.

Proctacanthus craverii, Bellardi, Saggio etc. ii. p. 50¹.

Hab. MEXICO, environs of the city of Mexico (*Craveri*¹), Guadalajara in Jalisco (*Schumann*).

Three specimens from Jalisco. They seem to be identical with the species from Sonora mentioned by Osten Sacken (in his general remarks on the Mexican members of the genus) as being larger than *P. craverii*.

ECCRITOSIA (p. 207).

Eccritosia amphinome (p. 207).

Proctacanthus zamon, Townsend, Proc. Calif. Acad. Sci. (2) iv. p. 600¹.

To the localities given, add:—NORTH AMERICA, San José del Cabo, Lower California¹.
—MEXICO, Guadalajara in Jalisco (*Höge*).

A single specimen from Jalisco, which I have compared with Townsend's type.

ASILUS (p. 208).

I have included the following species in the genus *Asilus* in its wide sense, since I find it very difficult to collocate all of them in the various divisions proposed by Loew. His groups, or at least the greater part of them, cannot be regarded as of more than subgeneric value.

Table of the Species contained in the Supplementary Mexican Collections examined.

1. Scutellum with two bristles ; legs more or less yellow	2.
Scutellum with four or more bristles ; legs wholly black	8.
2. Femora wholly yellow	3.
Femora in part or wholly black	4.
3. Antennæ yellow	<i>xanthocerus</i> , sp. n.
Antennæ black	<i>melanocerus</i> , sp. n.
4. Face scarcely at all concave on the upper part ; abdomen distinctly banded.	<i>truquii</i> , Rond.
Face with a prominent gibbosity, distinctly concave on the upper part .	5.
5. Wings conspicuously spotted	<i>tenebrosus</i> , sp. n.
Wings clouded or hyaline	6.
6. Hind femora slender ; face above scarcely wider than the length of the first antennal joint	<i>dolichomerus</i> , sp. n.
Hind femora stout ; face broader above	7.
7. Third joint of the antennæ elongate, as usual, fully as long as the arista.	<i>alterus</i> , sp. n.
Third joint of the antennæ short, hardly more than one-half the length of the arista ; the facial gibbosity reaching nearly to the base of the antennæ	<i>lestes</i> , sp. n.

8. Sixth and seventh segments of the female abdomen forming part of the shining black ovipositor; fan-like row of bristles in front of the halteres light yellow *nigrocaudatus*, sp. n.
Sixth and seventh segments of the female abdomen like those preceding. 9.
9. Front femora with black hair, long and abundant *capillatus*, sp. n.
Front femora with white hair, shorter and less abundant; hind femora slender *anonymus*, sp. n.

3. *Asilus* (s. str.) *tenebrosus*, sp. n.

♂ ♀. Front brownish-yellow- or ochraceous-pollinose, blackish in the middle, with black bristles. Antennæ black, the second joint largely reddish; third joint a little longer than the first two together; style slightly shorter than the third joint. Face pollinose, like the front, the very prominent gibbosity largely bare; bristles of the gibbosity abundant, black, those of the immediate oral margin often white. Beard white; bristly hairs of the palpi black; bristles of the upper part of the occiput black and fulvous. Thorax with reddish-ochraceous pollen; mesonotum in the middle with a broad, coffee-brown stripe and two spots on each side of the same colour, all more sericeous and lighter when viewed obliquely; bristles of the posterior part of the mesonotum black, those of the fan-like row in front of the halteres yellowish, as are also the two on the margin of the scutellum. Abdomen opaque yellowish-ochraceous, more or less sericeous, according to the light in which it is viewed; bristles of a yellowish colour; the moderate-sized hypopygium of the male reddish; ovipositor shining black. Legs yellowish-red; the femora on their front part black, the tarsi deeper red and blackish. Wings yellowish-hyaline; the distal part, from the base of the second submarginal cell, the interior of the third, fourth, and fifth posterior cells, and the outer part of the anal cell, brown; veins along the middle in front brownish. Length 16–18 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Two specimens, male and female, which I describe as typical. Two others from the same locality, one of each sex, are of a browner colour, and have the markings of the wings paler; they are also smaller. Two more, male and female, from Omilteme, are of the size of the last, but are lighter coloured than the types, with the black of the legs less extensive and the markings of the wings mere brownish clouds. I believe that they all belong to the same species.

4. *Asilus* (*Heligmoneura*) *truquii*.

Asilus (*Mochtherus*) *truquii*, Bellardi, Saggio etc. ii. p. 52¹.

Asilus (*Philonicus*) *tæniatus*, Bellardi, loc. cit. p. 55².

Neomochtherus plebeius, O. Sack. anteà, p. 209³.

Hab. MEXICO^{1 2}, Northern Sonora (*Morrison*³), Chilpancingo and Tixtla near Amula in Guerrero (*H. H. Smith*), Guadalajara, Jalisco (*Schumann*).

Twelve specimens. The amount of black on the legs is very variable, agreeing with the several descriptions referred to above, without other differences. The black bristles on the lower part of the face in the more melanotic specimens are numerous; in others they are wholly wanting. I have no doubt but that all these examples belong to one species. *A. truquii* and *A. tæniatus* were included by Osten Sacken in his list of unidentified Mexican species (*anteà*, p. 210).

5. **Asilus (Heligmoneura) xanthocerus**, sp. n.

♂ ♀. Head nearly white throughout, with the bristles and hair also white. Antennæ light yellow; third joint short, not longer than the first, the arista more than twice as long. Gibbosity of the face slight, confined to less than the lower half. Thorax opaque, light yellowish-white, with the pleuræ whiter; the black bristles of the mesonotum extend a little in front of the middle; the usual median stripe is dark brown in front, but becomes evanescent behind, leaving two slender lines; the lateral spots are feebly indicated. Scutellum with two bristles on its margin. Abdomen reddish-yellow, its shining appearance only slightly obscured by the pollen; first two segments largely brownish; the third and following segments have each a slender, oval, black, longitudinal spot in the middle; forceps of the male and the small ovipositor shining black; lateral bristles of small size, yellow. Legs wholly light yellow. Wings hyaline, broadly clouded at the tip and narrowly behind; the proximal end of the second submarginal cell is a trifle more distant than is that of the second posterior cell. Length 16-18 millim.

Hab. MEXICO, Dos Arroyos, Rio Papagaio, Venta de Zopilote, and Tierra Colorada in Guerrero (*H. H. Smith*).

Twenty-five specimens.

6. **Asilus (Heligmoneura) melanocerus**, sp. n.

♂ ♀. Front narrow above; yellowish- and greyish-pollinose. Face narrow above, a little wider below, moderately protuberant; densely yellowish-grey-pollinose; mystax white, a few black bristles on the upper part of the convexity. Antennæ black; third joint as long as the first two joints together, and one-half longer than the style. Mesonotum greyish-yellow-pollinose, with the usual brown stripes, the middle one geminate, the lateral ones in the form of elongate-oval spots; the bristles not reaching in front of the middle, black. Scutellum with two strong black bristles on its margin. Pleuræ grey-pollinose. Abdomen, viewed obliquely, opaque yellow; viewed vertically, subshining black, except the hind margins of the segments; bristles before the hind margins of the segments and on the sides yellow; hypopygium black, shining, not clubbed; ovipositor, beginning with the eighth segment, shining black. Legs yellowish-red or reddish-yellow, with black and yellow bristles; tarsi, and sometimes the tibiæ, blackish at the extremity; hind femora rather slender and elongate. Wings yellowish-hyaline, broadly clouded at the tip and along the posterior margin. Length 17 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Eight specimens.

7. **Asilus (Heligmoneura) dolichomerus**, sp. (var. ?) n.

♂ ♀. In all respects like *A. melanocerus*, except that the femora are wholly deep shining black. The tibiæ are often blackish at the extremity. Length 15-16 millim.

Hab. MEXICO, Omilteme, Sierra de las Aguas Escondidas, and Amula in Guerrero 6000 to 9500 feet (*H. H. Smith*).

Thirty-five specimens. The constant and striking difference in the colour of the femora would seem to indicate a specific distinction, though I can discover no other peculiarities.

8. **Asilus (Neoitamus) nigrocaudatus**, sp. n.

♂ ♀. Face and front light yellowish-grey; bristles of the front, antennæ, and convexity of the face black; bristles of the oral border white. Antennæ black; third joint about as long as the first two together; arista a little longer than the third joint. Facial gibbosity strong and abrupt. Thorax light yellowish,

the pleuræ greyish; the usual markings of the mesonotum deep brown, the median stripe geminate, the lateral ones extending acutely nearly to the scutellum. Scutellum with about six bristles on its border. Bristles in front of the halteres hair-like and light yellow. Abdomen rather slender in the male; opaque yellow, with light yellow hair and bristles; hypopygium of the male not large, shining black; second, third, fourth, and fifth segments of the female with a triangular brown spot in the middle of each, the sixth and seventh segments shining black, forming a part of the elongate ovipositor. Legs deep black; femora with light yellow hair and bristles. Wings hyaline, broadly clouded at the tip and along the hind margin; the second submarginal cell has its proximal end very nearly opposite that of the second posterior cell. Length 14–16 millim.

Hab. MEXICO, Omilteme and Xucumanatlan in Guerrero 7000 to 8000 feet (*H. H. Smith*).

Eight specimens.

9. *Asilus (Neoitamus) capillatus*, sp. n.

♂ ♀. Similar to *A. nigrocaudatus*. The colour of the front, face, beard, and lower portion of the mystax yellower. The third joint of the antennæ relatively a little longer. The thorax not so light-coloured; the mesonotal stripes broader and deeper coloured; the scutellum with a larger number of bristles on its margin; the bristles in front of the halteres black. The abdomen less slender; viewed from above deep brown, with a light yellow hind margin to the segments, viewed more obliquely yellowish-sericeous; the hypopygium of the male larger; the sixth and seventh segments of the female coloured like the preceding ones. Wings hyaline at the base, strongly clouded distally. All the femora, but especially the front pair, with long and abundant black hair. Length 20–21 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Six specimens. There are no bristles on the underside of the front femora. The eighth abdominal segment in the male is scarcely visible above and not very broad below.

10. *Asilus (Machimus?) anonymus*, sp. n.

♂ ♀. Head clothed wholly with black bristles, except the narrow fringe along the oral margin; beard white. Antennæ black; third joint elongate, twice the length of the arista. Front and face densely yellowish-grey-pollinose; the moderately prominent gibbosity with abundant black bristles. Mesonotum with light yellow pollen, the markings nearly black; pleuræ grey-pollinose. Scutellum with about six bristles on its margin. Abdomen deep brown, black when seen from behind, the segments with an opaque yellow hind-margin. Ovipositor and hypopygium shining black. Legs deep black; femora with whitish hair, the hind pair rather slender and elongate. Wings nearly hyaline, with a conspicuous brown cloud distally. Length 12–13 millim.

Hab. MEXICO, Omilteme and Sierra de las Aguas Escondidas in Guerrero 8000 to 9500 feet (*H. H. Smith*).

Thirty-five specimens.

11. *Asilus (Tolmerus) alterus*, sp. n.

♂ ♀. Face and front densely yellowish-grey-pollinose; face below the antennæ equal in width to the length of the third antennal joint, rather strongly and abruptly gibbose on the lower half or more. Third joint of the antennæ as long as the other two together, the style a little shorter than the third joint. Mystax rather abundant, white, the bristles in the middle above black; beard white. Thorax red, clothed with

yellowish-grey pollen ; bristles of the mesonotum not reaching before the middle, black ; median stripe deep coffee-brown, the oval, elongate, lateral spots less evident. Scutellum with two bristles. Abdomen nearly opaque, brownish-yellow, without bristles before the hind margins of the segments ; hypopygium of the male deep reddish, not clubbed. Legs deep red ; front and middle femora above, and the distal joints of the tarsi, with black hair, elsewhere covered with thick-lying, short, white hair ; femora broadly black in front ; tarsi blackish towards their extremity ; hind tibiae on their outer side blackish ; all the femora rather stout, the front ones without bristles below. Wings tinged with brownish, the clouds at the distal extremity and posteriorly inconspicuous. Length 15-16 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Six specimens. The abdomen, seen obliquely, appears to have lighter-coloured bands on the posterior part of the segments ; there is a narrow blackish stripe along the middle.

12. *Asilus* (subgen. ?) *lestes*, sp. n.

♀. Vertex deeply excavated. Facial gibbosity moderately prominent, but reaching two-thirds of the distance to the root of the antennæ ; mystax white, with black bristles on the upper part of the convexity. Face and front opaque, nearly white. Beard and occipital bristles white. Antennæ black ; third joint short-oval, about as long as the first, and one-half the length of the slender arista. Thorax opaque white, the mesonotum a little yellowish ; the usual markings brown. Scutellum with two bristles on its margin. Abdomen uniformly opaque grey, with a small brownish spot on the middle of each segment. Legs reddish-yellow ; the femora, except at the base and tip, shining black ; tips of the tibiae and the distal joints of the tarsi blackish ; femora stout, the front ones with a few bristles below. Wings hyaline, wholly without clouds at the tip and posterior part ; proximal end of second submarginal cell more distal than that of the second posterior cell. Length 10 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

Two specimens. The first segment of the ovipositor is elongate, with nearly parallel sides ; the second segment is short and broad.

OMMATIUS (p. 210).

Ommatius peregrinus (p. 210).

To the locality given, add :—MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

A single female specimen. The hind femora are black along the underside, the ring on the hind tibiae is indistinct, and the colour of the face is apparently less golden than in the Panama type. Nevertheless, from the great variability that seems to be characteristic of the species of this genus, I think that the Mexican insect is identical with that described by Osten Sacken.

2. *Ommatius* — ?

Hab. MEXICO, Amula, Omilteme, and Tepetlapa in Guerrero, Teapa in Tabasco (*H. H. Smith*), Atoyac in Vera Cruz (*H. H. Smith, Schumann*), N. Yucatan (*Gaumer*).

Twelve specimens. The costa of the wings is enlarged in the male. The base of the femora and tibiæ is yellow to a variable extent.

3. *Ommatius pilosulus*.

Emphysomera pilosula, Bigot, Ann. Soc. Ent. Fr. 1875, p. 243¹.

Emphysomera bicolor, Bigot, loc. cit. p. 244².

Hab. MEXICO^{1 2}, Acapulco, Amula, and Xucumanatlan in Guerrero (*H. H. Smith*), Santiago Iscuintla in Jalisco (*Schumann*).

Two males and nine females. I have little doubt of the correctness of the above synonymy, notwithstanding very grave differences in Bigot's descriptions. The third joint of the antennæ is brown in both sexes and only about as long as the first. The metanotum is opaque, yellowish on the sides. The abdomen is red or brownish-red and varies not a little in the extent of the black markings; there is no white on the first segment; the second segment is black in front and often has, as have all the rest, a partial or entire black stripe in the middle. The hind femora are more thickened than usual, but are not at all club-shaped; they frequently have a blackish spot on the outer side beyond the middle. This species must be allied to *O. peregrinus*, O. Sacken, who did not identify Bigot's insects.

4. *Ommatius parvus*.

Ommatius pumilus, Bellardi, Saggio etc. ii. p. 59¹ (nec Macq.?).

Ommatius parvus, Bigot, Ann. Soc. Ent. Fr. 1875, p. 247².

Hab. MEXICO², Chilpancingo, Tepetlapa, Amula, and Savana Grande in Guerrero (*H. H. Smith*), Temax in Northern Yucatan (*Gaumer*), Cuautla¹.

Fifty-two specimens. The costa of the male is very slightly thickened and there are some wrinkles in the cells behind it. This species is apparently the same as that described by Bellardi¹: *O. pumilus*, Macq., has the tibiæ wholly black.

NOTE.—The manuscript of the foregoing pages (pp. 217–332) was for the most part written in the autumn of 1896, and completed in 1899. I have been unable, in the revision of these pages, to carefully study all the literature which has since appeared on these families of insects. I trust, however, that nothing of importance has been overlooked.—S. W. W.

DOLICHOPODIDÆ * (p. 213).

DOLICHOPUS (p. 213).

3. **Dolichopus bifractus.**

Dolichopus bifractus, Loew, Mon. N. Am. Dipt. ii. p. 53¹.

Hab. NORTH AMERICA, United States¹.—MEXICO, Cuernavaca (*H. H. Smith*).

One female of this widely-spread and common N.-American species was found at Cuernavaca by Mr. Smith. The third joint of the antennæ is almost black, a peculiarity I have not noticed in any other specimen, though it is often a little infuscated.

Dolichopus myosota (p. 213).

To the locality given, add:—NORTH AMERICA, Idaho.

This species was described from specimens from Northern Sonora. It is common in the foot-hills of the Rocky Mountains in North Idaho, and probably occurs all through the intervening country. I have not seen a Mexican example.

POLYMEDON.

Polymedon, Osten Sacken, Western Diptera, p. 317 (1877); Aldrich, Trans. Ent. Soc. Lond. 1896, p. 318.

This genus is nearly related to *Tachytrechus*, but differs in the more uniform course of the last section of the fourth vein, and more especially in the structure of the face of the male, which extends like a silver ribbon below the level of the eyes. Three new species are represented in the present collection, and two were described in the above-cited papers. They fall into two series: one, including *P. argentatus*, *P. triangularis*, and *P. superbus*, not differing in a striking manner from *Tachytrechus*; the other, including *P. flabellifer* and *P. nimius*, characterized, additionally, by an enormous development of the tegular cilia and the first section of the costa in the male sex.

Table of the Species known to me †.

1. Femora black	2.
Femora yellow	3.
2. Antennæ reddish on the underside	[<i>flabellifer</i> , O. S.]
Antennæ wholly black	<i>argentatus</i> , sp. n.

* By Prof. J. M. ALDRICH, of the University of Idaho.

† In addition to the above-mentioned species, another, *P. castus*, has lately been described by Wheeler in the 'Proceedings of the California Academy of Sciences' [3rd ser. vol. ii. p. 6 (1901)]. It is based on a single female from Arizona, and appears to be closely related to *P. nimius*, from which it differs in having the third joint of the antenna wholly black, which will readily distinguish the two species.

Rec. 1901

3. Male with enormously developed costa *nimius*, sp. n.
 Male with scarcely enlarged costa 4.
 4. Lamellæ of hypopygium small, triangular *triangularis*, sp. n.
 Lamellæ of hypopygium larger, quadrangular [*superbus*, Ald.]

[1. **Polymedon flabellifer.**

Polymedon flabellifer, O. Sack. Western Diptera, p. 317¹.

Hab. NORTH AMERICA, San Francisco¹, Idaho.

This species occurs in the neighbourhood of San Francisco, on rocks, in swift streams. I collected specimens in a similar place at Juliaetta, Idaho, on September 15th, 1898. *P. flabellifer* must be regarded as the highest member of the known series, since it has dropped the deformity of the middle tarsi, characteristic of the males of all the other species, and has developed an ornamental silver stripe down the dorsum of the thorax, involving the complete suppression of the acrostichal bristles. Viewed from before, this stripe seems almost continuous with the silver of the face and front, though less deep. These peculiarities, of course, occur only in the male.

A very easily recognized species.]

2. **Polymedon argentatus**, sp. n. (Tab. VI. fig. 7, wing of ♂.)

♂. Black, with a slight greenish reflection; the tibiæ, tips of coxæ and femora, and the halteres, yellow. Face rather wide, gently bent above the middle, pure silver in its whole length, projecting below the level of the eyes a little less than its own width; antennæ of ordinary size and structure, wholly black; front silvery, except the ocellar tubercle; orbital cilia white, except a few of the uppermost. Thorax dark green, but little metallic; on the sides, in a certain light, with a silvery reflection from the humerus to the root of the wing; pleuræ black, with a faint white dust when viewed from before. Tegulæ yellowish, the margin infuscated; the cilia black, at the ends whitish. Abdomen blackish-green, on the sides with a little white dust behind the incisures; hypopygium black, lightly dusted, moderate in size, the triangular lamellæ sordid whitish near the base, black on the margin. Base of front and middle tarsi slightly yellowish; middle tarsi with a bend between the second and third joints, but without any great modification of structure; hind tibiæ a little infuscated at the tip; hind metatarsi shorter than the following joint. Wings with a considerable and uniform infuscation; the costa a little enlarged in its first section, more so at the junction of the first vein, from there gradually tapering to the normal size, which is attained over halfway to the second vein; fourth vein with a very gentle curvature.

Length 5 millim.

Hab. MEXICO, Cuernavaca in Morelos (*H. H. Smith*).

One male.

3. **Polymedon nimius**, sp. n. (Tab. VI. figg. 8, 8 a-c, ♂*; 9, ♀.)

A large, elongate, slender species; the legs and antennæ almost entirely yellow.

♂. Face wholly silvery, spatulate, extending below the level of the eyes about twice its own width; antennæ rather slender, yellow, the upper edge and the tip of the third joint black; orbital cilia white, except a few of the upper ones. Dorsum of thorax dark metallic green, with an indistinct violet median stripe; pleuræ

* Incorrectly marked ♀ on the Plate.

greenish-black, with thin white pollen. Tegulæ large and thick, yellow, with brown tip, which bears a very large and striking cluster of long reddish-brown cilia: these cilia show a tendency to stick together and form a horn-like projection, as was remarked by Osten Sacken in describing *P. flabellifer*, and it is not improbable that the cluster can be opened and closed by the insect in life. Abdomen green, the posterior margin of the segments shining black, at the sides behind the incisures with some white pollen; hypopygium large, pedunculate; the lamellæ brown, paler at the base, with two prolongations, the dorsal of which is small, the other long, slender, with a few long fine hairs on either side. Fore coxæ pale yellow, middle and hind ones yellow, but infuscated on the outer side; femora yellow, the hind knees brownish; tibiæ yellow, the fore ones tipped with brown; tarsi slender, black, with half or more of the first joint yellow; the middle tarsi bend sideways between the second and third joints, which are hollowed on the approximating sides, thus forming a grasping-organ (this can hardly serve any other purpose than to hold the female); hind metatarsi shortened. Wings extremely long and narrow, moderately and evenly infuscated; costa with a very thick enlargement almost completely filling the space before the first vein, this coming to a sudden end before the tip of the first vein; fourth vein with a gentle curve beyond the cross-vein, thence almost straight to the end of its course, which is just before the apex of the wing.

♀. Face white or greyish-white, ending in a sharp point somewhat below the eyes. Cilia of the tegulæ of ordinary size, black or faintly brownish. Wings wider, though but little shorter than in the male.

Length 5.5, of the wing 7 millim.

Hab. MEXICO, Omilteme and Sierra de las Aguas Escondidas in Guerrero 7000–8000 feet (*H. H. Smith*).

Thirteen males and twelve females. Since the description was written, I have captured specimens of this species at Hagerman, Idaho, U.S.A., about waterfalls.

4. *Polymedon triangularis*, sp. n.

♂. Metallic green, somewhat dusted; legs, including the fore coxæ, yellow; antennæ, except the tip, also yellow. Face silvery, rather narrow, projecting below the eyes more than its own greatest width; antennæ of moderate size, yellow, the tip of the third joint infuscated; front silvery-dusted, the green ground-colour showing through a little when viewed from in front; orbital cilia white, except a few directly above. Thorax and abdomen green, on the sides dusted somewhat with white; halteres and tegulæ yellow, the cilia of the latter indistinctly brown in colour. Hypopygium stout, black; the lamellæ small, triangular, cut off square at the apex, on the dorsal side with a rounded emargination, yellow in colour but with a black distal border. Middle and hind coxæ quite black, except at the tip and on the inner side; first joint of fore and middle tarsi pale, except at the tip; middle tarsi with a crook between the second and third joints, the last part of the tarsus at this point seeming to bend sideways to form a grasping-organ, as in *P. nimius*, only not so strongly developed. Wings infuscated along the veins; costa scarcely in the least enlarged; fourth vein very gently curved, ending considerably before the apex.

Length 5.2 millim.

Hab. MEXICO, Cuernavaca in Morelos (*H. H. Smith*).

One male.

[5. *Polymedon superbus*.

Polymedon superbus, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 318, t. 11. fig. 103, t. 12. figg. 113, 118, 119¹.

Hab. ANTILLES, St. Vincent¹.

This West-Indian species may be briefly referred to here. It differs from *P. triangularis* in a few characters only; but these are, in part, of the most permanent and

decisive kind: the lamellæ of the hypopygium are large, dark brown, almost square, with but two or three long hairs on the outer side; the front has much less silver dust; the thorax is of a purer green, and the abdomen runs more to violet; the lateral crook to the middle tarsi is much less pronounced, though perceptible.]

HERCOSTOMUS.

Hercostomus, Loew, Neue Beitr. v. p. 9 (1857).

1. *Hercostomus flavipes*, sp. n. (Tab. VI. fig. 17, wing of ♂.)

♂. Face rather wide, covered with white dust; antennæ short, black, the basal joints reddish below, the third large, with a point on the upper angle. Front dull green. Cilia of the inferior orbit white. Thorax and abdomen moderately bright green, on the sides with whitish dust. Tegulæ and halteres yellow, the former with black cilia. Hypopygium bulky, dark green on the main part; the lamellæ rather small, almost circular, with well-defined blackish border, the hairs inconspicuous. Legs yellow; base of the hind coxæ and half of the middle pair infuscated; hind tarsi infuscated from the base, the middle pair from the tip of the first joint, the front pair only slightly so at the tip. Wings subhyaline; costa not thickened; fourth vein bent towards the third at the first third of the last section, thence gently converging towards it.

Length 3 millim.

Hab. MEXICO, Omilteme and Amula in Guerrero (*H. H. Smith*).

Four males; in some of them the reddish colour is more extended on the antennæ, so as to include part of the underside of the third joint.

Two females from Tabasco, which seem to belong here, differ in having the antennæ yellow, with the third joint infuscated, and the hind coxæ wholly yellow.

PELASTONEURUS.

Pelastoneurus, Loew, Neue Beitr. viii. p. 36 (1861).

It is almost impossible to define the genera *Pelastoneurus*, *Paraclius*, and *Sarcionus* by any constant differences; they may, however, be separated pretty generally by the following characters:—

Pelastoneurus has a wide face in both sexes, the lower part convex; the arista is plumose; the last section of the fourth vein is usually convex when viewed from behind. *Paraclius* has a bare or nearly bare arista; a face of varying width, but never very wide nor convex below; the last section of the fourth vein is usually concave when viewed from behind. *Sarcionus* has a very narrow face, usually only a tenth the width of the head; the arista is plumose; the last section of the fourth vein is rather variable in form, in most cases intermediate in this respect between the two other genera, *e. g.* not very convex or concave.

Since these distinctions are in some cases difficult of application, I have thought it best to give a single combined Table of the species of all three genera that are known from Mexico:—

- | | | |
|--|-----|---|
| 1. Femora largely black | 2. | |
| Femora yellow or but little infuscated | 5. | |
| 2. First part of costa greatly thickened in male, perceptibly
in female | | <i>Paraclius albonotatus</i> , Loew. |
| Costa not noticeably thickened | 3. | |
| 3. Fore femora yellow | | <i>Paraclius femoratus</i> , sp. n. |
| Fore femora black | 4. | |
| 4. Tibiæ of male wholly black | | <i>Pelastoneurus hamatus</i> , sp. n. |
| Tibiæ of male largely yellow | | <i>Paraclius humeralis</i> , sp. n. |
| 5. Wings with numerous brown spots | | <i>Pelastoneurus punctipennis</i> , Say. |
| Wings not spotted, or with one or two spots on the veins | 6. | |
| Wings of male with a rounded apical brown spot | | <i>Pelastoneurus bigeminatus</i> , sp. n. |
| 6. Inner claw of male fore tarsus enlarged and bent backward
to form a small grasping-organ | | <i>Pelastoneurus unguiculatus</i> , Aldr. |
| Claw not specially modified | 7. | |
| 7. Cilia of inferior orbit black | 8. | |
| Cilia of inferior orbit white | 9. | |
| 8. Middle and hind coxæ yellow | | <i>Sarcionus flavicoxa</i> , sp. n. |
| Middle and hind coxæ mainly black | | <i>Pelastoneurus lugubris</i> , Loew. |
| 9. Face of male with a brown stripe in the middle; sides
greyish-white | | <i>Pelastoneurus cognatus</i> , Loew. |
| Face of male not so marked | 10. | |
| 10. Fore coxæ infuscated beyond the middle. | | <i>Pelastoneurus vagans</i> , Loew. |
| Fore coxæ not or scarcely infuscated | 11. | |
| 11. Dorsum with a distinct median stripe | | <i>Sarcionus lineatus</i> , Aldr. |
| Dorsum without stripe | 12. | |
| 12. Upper part of face brilliant green | | <i>Pelastoneurus argentiferus</i> , Aldr. |
| Upper part of face not green | | <i>Paraclius venustus</i> , sp. n. |

1. *Pelastoneurus unguiculatus*.

Pæcilobothrus unguiculatus, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 310, t. 11. fig. 101, t. 12. fig. 116¹.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).—ANTILLES, St. Vincent¹.

Eleven specimens, including both sexes. One of the most difficult species to locate generically. The face is narrow for *Pelastoneurus*, but too wide for *Pæcilobothrus*, while the plumose arista throws it out of *Paraclius*.

2. *Pelastoneurus lugubris*.

Pelastoneurus lugubris, Loew, Neue Beitr. viii. p. 38¹; Mon. N. A. Dipt. ii. p. 105².

Hab. NORTH AMERICA, Trenton Falls, New York^{1 2}.—MEXICO, Vera Cruz (*H. H. Smith*).

Five specimens.

3. *Pelastoneurus vagans*.

Pelastoneurus vagans, Loew, Neue Beitr. viii. p. 39¹; Mon. N. A. Dipt. ii. p. 107².

Hab. NORTH AMERICA, United States^{1 2}.—MEXICO, Orizaba (*H. H. Smith*).

One male. This is the most common species in the United States.

4. *Pelastoneurus argentiferus*.

Pelastoneurus argentiferus, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 313¹.

Hab. MEXICO, Chilpancingo, Vera Cruz, Medellin, Teapa, Frontera (*H. H. Smith*).—ANTILLES, St. Vincent¹.

Numerous specimens.

5. *Pelastoneurus hamatus*, sp. n. (Tab. VI. figg. 12, wing, 12 *a*, end of front tarsus, ♂.)

♂. Face wide, the concavity below the antennæ shining green, the convexity covered with golden pollen; palpi silvery; antennæ black, first joint whitish below at the tip and with two whitish spine-like prolongations—one shorter on the underside, and one longer, rather noticeable on the inner side. Front green, not very shining; cilia of lower orbit pale yellow, rather bushy. Thorax above blackish-green, moderately shining; the triangular white spot in the suture large, the black behind it not of unusual size; pleuræ blackish, with very thin grey dust, changing to yellowish on the upper half; halteres and tegulæ yellow, the latter with black hairs. Abdomen not compressed, uniform dark green in colour, the sides with small white-dusted spots; sixth segment wholly white-dusted; hypopygium stout, black, with brownish dust, not pedunculated, the lamellæ short, broad, black, with quite dense hairs along the border, and more delicate ones on the outer surface. Legs black, the knees and trochanters narrowly dark yellow; fore tarsus shorter than the tibia, its last four joints (fig. 12 *a*) of about equal length, the inner claw greatly enlarged and bent back to form a grasping-organ (it bears a striking resemblance to the fish-hook protruding from a trout-fly, but is stouter proportionately). Wings moderately infuscated, rather narrow; costa not thickened; last section of fourth vein bent at its middle, thence nearly straight, ending farther before the tip of the wing than in any other species of the genus known to me.

♀. Upper part of the face dull, yellow-dusted; antennæ as in the male; apical third of fore femora, and half of the others, dark yellow; tibiæ, except the extreme base and tip, of the same colour.

Length 5–5.6 millim.

Hab. MEXICO, Mexico city (*H. H. Smith*).

One male and two females. The arista has a shorter plumosity than in many species.

6. *Pelastoneurus bigeminatus*, sp. n. (Tab. VI. fig. 13, wing of ♂.)

♂. Face wide, protruding below, covered with dull yellow dust, which becomes greyer along the sides below; palpi prominent; mouth very large; antennæ small, yellow, third joint short, slightly brown at the tip; arista with very long hairs. Front opaque, covered with brownish-yellow dust. Cilia of the inferior orbit white. Thorax brown, but little shining, with black dots out of which the large bristles arise; the usual black stripe above and before the root of the wing entirely divided into two; the sutural groove with yellow dust (instead of the bright white dust that is common in this genus); pleuræ black, with grey dust; halteres and tegulæ yellow, the latter with black bristles. Abdomen dull green, a little shining, on the sides with patches of rather indistinct white dust; hypopygium of medium length, more slender than usual, black, the lamellæ elongate, brown, the apical angle prolonged into a hairy filament. Middle and hind coxæ black on the basal part, the tarsi infuscated towards the tip; legs otherwise yellow. Wings moderately infuscated, with a distinct round brown spot in the apex, resting against the margin before the end of the third vein, but widely separated from it behind the end of the fourth; costa not thickened; cross-vein distant about its own length from the margin.

♀. Face a little wider; wing with only a faint shadow of the apical spot.
Length 4.8 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

Numerous males and females.

7. *Pelastoneurus punctipennis*. (*P. variegatus*, Tab. VI. fig. 14, wing of ♂.)

Medeterus punctipennis, Say, Journ. Acad. Phil. vi. p. 292¹; Complete Writings, ii. p. 362².

♂. Face of medium width, the sides parallel, or a little divergent below; suture well-marked; ground-colour entirely obscured by brown dust, which changes to whitish at the lower corners; palpi long and pointed, with whitish dust; proboscis very large and massive. Front opaque brown, darker in the middle. Antennæ black, rather large, the arista with short plumosity. Cilia of inferior orbit black. Thorax opaque brown, with interrupted grey lines along the rows of inner dorsal bristles, and an interrupted median grey line, all three being more distinct near the scutellum; pleuræ black, with thin grey dust; halteres and tegulæ yellow, the latter with black hairs. Abdomen dull greyish-green, the incisures not prominently marked with bands; hypopygium small, short, black, with yellowish tip, the lamellæ small, pointed, yellow. Legs yellow, all the tarsi blackened from the extreme base, the tibiæ, however, not black at the tip; middle and hind coxæ black at the base; insertions of the tibial bristles marked by diffused brown spots. Wings uniformly infuscated, with about twenty scattered roundish brown spots; these are so distributed as not to form distinct bands (see figure); last section of the fourth vein only gently bent towards the third, gradually converging to the end, which is before the tip of the wing.

Length 4.1 millim.

Hab. MEXICO^{1 2}, Orizaba (*H. H. Smith*).

Five males.

8. *Pelastoneurus cognatus*.

Pelastoneurus cognatus, Loew, Mon. N. Am. Dipt. ii. p. 109 (♀)¹.

♂. Face rather narrow, with a distinct yellowish-brown stripe in the middle, the sides greyish-white; antennæ yellow, small, third joint a little infuscated at the tip, arista with remarkably long plumosity. Front with the ground-colour obscured by brownish-yellow dust, arranged somewhat in streaks. Cilia of lower orbit white. Palpi black, with white dust. Thorax of a bronze colour, at the anterior end with the beginning of a median line, and a blackish spot on the inner side of each humerus; the velvety-black spot before the root of the wing, while not divided, has a deep indentation on the upperside, and the anterior half extends toward the middle of the dorsum; the white spot in the sutural groove is small and rounded, seated in the bottom of the groove (this is one of the best marks to distinguish the species in both sexes); the large bristles of the dorsum arise from small blackish dots; knob of halteres with a very slight infuscation; tegulæ yellow, with black cilia. Abdomen blackish-bronze, with small patches of white dust on the sides of the segments. Hypopygium of medium size, black, with grey dust, the lamellæ small, black, with small hairs (there seem to be a pair of small inner lamellæ, of piceous colour); on the upper (ventral) side of it the slender black organ usually considered to be the penis is much thicker than in related forms, and has three or four hairs at its tip. Legs yellow; middle and hind coxæ black nearly to the tips; tarsi but little infuscated; fore coxæ not infuscated. Wings greyish, with a faint cloud on the cross-vein, and another, even fainter, on the middle of the last section of the fourth vein, this section having a gradual and even curvature.

♀. Easily distinguished from the corresponding sex of the other species of the genus by the small round glittering white dot in the sutural groove, &c.

Length 3-3.8 millim.

Hab. NORTH AMERICA, Connecticut¹.—MEXICO, Vera Cruz (*H. H. Smith*).

Three males and four females from Vera Cruz; I also have a female, 4.8 millim. in length, from Connecticut, collected by Dr. Williston. The male is now described for the first time.

PARACLIUS.

Paraclius, Loew, Mon. N. Am. Dipt. ii. p. 100 (1862) (nec *Paracleius*, Bigot).

1. *Paraclius albonotatus*.

Paraclius albonotatus, Loew, Mon. N. A. Dipt. ii. p. 102¹.

Hab. NORTH AMERICA, New Orleans¹.—MEXICO, Teapa in Tabasco (*H. H. Smith*).

One female. The thickening of the costa is distinct.

2. *Paraclius femoratus*, sp. n.

♂. Face rather narrow (in shrivelled specimens appearing very narrow), white; antennæ wholly black, of medium size, the third joint rounded; arista with distinct pubescence; cilia of lower orbit dirty whitish. Thorax rather bright blue-green above, with the usual white spot in the groove before the wing, and a large opaque black mark behind it. Halteres and tegulæ yellow, the latter with black cilia. Abdomen concolorous with the thorax, with narrow black bands on the incisures; hypopygium small, brownish-black, hairy near the base, the lamellæ small, oval, yellow, faintly darker at the tip, with long yellow hairs on the margin. Fore coxæ yellow, the base slightly infuscated; middle and hind coxæ black, the apical third or half yellow; fore femora yellow, the middle ones with the apical third, the hind ones with the apical half, black. Hind tibiæ black at the tip, and the whole hind tarsi black; the other tarsi pale at the base. Wings moderately and evenly infuscated; bend of the fourth vein a little beyond the middle, almost at a right angle, but rounded, curved so as to be almost parallel with the third for some distance at the apex; costa not enlarged.

♀. Face, legs, and wings showing the same characteristics as the male.
Length 2.6 millim.

Hab. MEXICO, Vera Cruz, Teapa, Frontera (*H. H. Smith*).

Two males and six females.

3. *Paraclius humeralis*, sp. n. (Tab. VI. fig. 10, profile of abdomen of ♂.)

♂. Face narrow, white; front white; antennæ small, black, the arista only a little pubescent; cilia of orbit white to above the middle. Thorax bright blue-green, the large white spot in the sutural groove extending forward in a curve over the humerus, the black spot behind the white one large; tegulæ and halteres yellow, cilia of former black, as usual. Abdomen concolorous with the thorax, but with narrow black bands on the incisures, and some white dust in the green at the sides; hypopygium short, thick, the lamellæ very small, brownish-yellow. Legs black, the trochanters, the tibiæ (except the tips of the hind ones), and the base of the fore and middle tarsi, yellow, the fore tibiæ distinctly paler than the others. Fore tarsi as long as their tibiæ, the last four joints of equal length. Wings infuscated along the veins; costa with just a suspicion of an enlargement; last section of the fourth vein nearly forming a right angle at its middle, the tip almost exactly parallel with the third for some distance.

Length 4.3 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).

Two males, one female; the latter is headless and otherwise damaged, but it does not seem to offer any noticeable differences.

4. *Paraclius venustus*, sp. n. (Tab. VI. fig. 11, wing of ♂.)

♂. Face narrow, silvery-white; front deep green; antennæ red, third joint slightly infuscated; arista considerably pubescent; cilia of inferior orbit white. Thorax rather dark blue, whitish-dusted in front; pleuræ green, with thin white dust; halteres and tegulæ yellow, cilia of the latter black. Abdomen with a round spot of white dust on the sides of each segment; hypopygium small, dark green, with moderately large, ovate, yellow lamellæ, which are brown on the upper and anterior edges. Coxæ yellow, the middle

ones brown on the outer side; femora and tibiae pale yellow, the tarsi only slightly brownish. Wings almost hyaline, the fourth vein bent halfway between the cross-vein and the apex.

♀. Face wide, bent in the middle.

Length 2-2.7 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Numerous specimens. The antennæ in some specimens have a marked point on the third joint, which is enlarged; others scarcely show this. In some males the hairs on the last abdominal segment are noticeably large.

SARCIONUS*, gen. nov.

This genus greatly resembles *Pelastoneurus*, but differs decidedly in the structure of the face, which in the male is only one-tenth, in the female one-fifth or one-sixth, of the entire width of the head. In the male it is a little wider in the upper and lower parts, narrowest at or about the middle. The antennæ have the same structure as in *Pelastoneurus*, the arista being plumose. This character separates the genus from *Paraclius*, with which, however, its relationship is less close. In these three genera, I attach less importance to the shape of the last section of the third vein than to the characters of the head. Some species are readily separated generically by the wing-structure, but others are not. Type, *S. lineatus* (Aldrich).

1. *Sarcionus lineatus*.

Pelastoneurus lineatus, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 312¹.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).—ANTILLES, St. Vincent¹.

Two females.

2. *Sarcionus flavicoxa*, sp. n. (*Pæcilobothrus flavicoxa*, Tab. VI. figg. 15, wing, 15 a, head. ♂.)

♂. Face narrowed below the middle, on account of an area of enlarged facets in the eye on this level, at this place less than one-tenth the width of the head, its colour uniform greyish-white. Mouth small. Palpi inconspicuous, yellowish. Antennæ rather dark yellow; third joint brownish-yellow, large, arista with short plumosity. Front short, on account of the high insertion of the antennæ, whitish-dusted. Cilia of inferior orbit black. Thorax dark green, not very bright, the blackish spots in front of the wings seeming in certain lights to continue round the front of it; the white spots in the sutural groove large, but not silvery; pleuræ entirely brownish-yellow, including the hind border; halteres and tegulæ yellow, cilia of the latter black. Abdomen dull green, the incisures narrowly and faintly brownish; venter with a brown tinge; hypopygium rather large, brown, the lamellæ of the same colour, long and pointed, the tips darker, the margins with black hairs. Legs yellow, the middle and hind coxæ scarcely infuscated at the base; the middle tarsi slightly infuscated, the fore and hind ones yellow to the end. Wings yellowish, slightly widened; curve of the fourth vein just beyond the middle of the last segment, quite gradual, still with a considerable concavity behind; costa not thickened.

♀. Face about twice as wide as in the male; pleuræ blackish, the sutures brown; tarsi somewhat more infuscated.

Length 3.9 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

* From *σαρκίον*, a flaw in an emerald, in reference to the narrow silvery face between the green eyes.

One male, one female; the male somewhat immature. There is a notable shortening of the fore tarsus in this species, which is a good character: in the male its length is five-sixths, in the female only three-fifths, that of the tibia; this is very remarkable for a female. On the Plate this insect is referred to the genus *Pæcilobothrus*, an error immediately discovered as soon as I was able to see European specimens of the latter.

PHYLARCHUS, gen. nov.*

Face broad, narrowest at the points of insertion of the palpi, concave above and convex below, like that of *Pelastoneurus*. Antennæ small; first joint hairy above, ending in a delicate oblique prolongation on the inner side below; second joint of moderate size, not prolonged on the inner side of the third in a thumb-like manner, but only with a rounding outline; third joint rounded, of medium size, with short plumose arista. Palpi small, pointed. Thorax destitute of acrostichal bristles, hinder part not concave or flattened; scutellum with one pair of stout bristles and several delicate pale hairs on the edge. Abdomen rather short, not compressed, with five visible segments. Legs with comparatively few bristles, the femora all bearing some rather prominent hairs on the underside beyond the middle; hind metatarsus only a little shorter than the following joint; hind coxæ with one bristle and a hair on the outer side. Venation as figured (fig. 16): fourth vein straight in its last section; third vein converging very slightly, almost parallel; posterior cross-vein distant its own length from the margin on the fifth vein; first vein reaching only a little over one-third of the length of the wing.

Related to *Diostracus*. The characters are taken from the female only, the male not being represented in the collection before me.

1. *Phylarchus tripartitus*, sp. n. (Tab. VI. fig. 16, wing of ♀.)

♀. Face and front pure brown down the middle, with a narrow white stripe on each side, which becomes bluish above: it extends down over the bulging occiput, becoming gradually wider, so as to bring the brown collar to a point above the neck. Antennæ red, the upper edge black; arista black, short, plumose, inserted near the base. Cilia of inferior orbit black. Palpi covered with white dust. Thorax bluish-white or glaucous above, with a sharply-defined median brown stripe, occupying all the space between the dorsal bristles, or about one-third of the width; the outer edges of this brown stripe become purplish, and the same colour shows on the sides of the front near the vertex; from the humerus to the root of the wing there is a darker brown stripe, on the upper edge of which are three round black dots of considerable size; pleuræ black, covered with glaucous dust, which extends down over the coxæ. Tegulæ yellow, their cilia black; halteres yellow, the large knob black. Abdomen rather dark greenish-bronze, on the sides with patches of glaucous dust. Legs yellow, the extreme base of the fore coxæ infuscated; all the tibiæ very slightly infuscated, and the extreme tips of the hind femora narrowly blackened; tarsi infuscated from the base. Wings infuscated; veins black and rather heavy.

Length 3 millim.

Hab. MEXICO, Vera Cruz (*H. H. Smith*).

Two females.

SYNTORMON.

Syntormon, Loew, Neue Beitr. v. p. 35 (1857); Wheeler, Proc. Calif. Acad. Sci. (3) ii. p. 36 (1899).

1. *Syntormon quadratus*, sp. n. (Tab. VI. figg. 18, wing, 18 a, antenna, ♂.)

♂. Face and front black, with thin brownish dust, the former wide, but narrowing a little towards the mouth. Antennæ wholly black, the first joint strikingly elongated, swollen towards the tip, about the length of the remaining two, entirely bare; second joint of the usual form, projecting forward on the inner side of

* *φύλαρχος*, the head of a tribe.

the third for only a moderate distance; third joint large, almost square, the arista inserted at the upper apical corner, the latter about the length of the antenna, stout, blunt at the tip. Cilia of the inferior orbit whitish; the fine hairs of the lower part of the eyes strikingly long. From the mouth there extend several minute slender filaments of peculiar appearance, but I am unable to see what they represent. Thorax and abdomen greenish-black, the small hairs of the latter mostly brownish-black; bristles of the thorax strong, the acrostichal bristles in two rows. Tegulæ yellow, with black cilia; halteres brownish-yellow. Abdomen with six visible segments; hypopygium embedded, only the tips of some blackish organs visible. Legs, including the tarsi, uniformly brownish-black, the knees narrowly yellowish; fore coxæ with a greenish reflection; hind metatarsi shortened (otherwise the tarsi present no tangible peculiarities). Wings as shown in the figure (fig. 18): wide at the tip, with the second and third veins very divergent, and the third and fourth slightly so; pale yellowish in colour.

♀. Face with a distinct suture below the middle, but not projecting in a roof-like manner; colour as in the male; palpi and proboscis of usual form, dark brown. Thorax scarcely shining, with olivaceous dust. Wings lacking the peculiarities of the male.

Length 3 millim.

Hab. MEXICO, Mexico city (*H. H. Smith*).

Two males, two females.

PARASYNTORMON.

Parasyntormon, Wheeler, Proc. Calif. Acad. Sci. (3) ii. p. 41 (1899).

1. ***Parasyntormon wheeleri***, sp. n. (Tab. VI. fig. 19, antenna from inner side, ♂.)

♂. Face long, narrow, a little wider above, black, covered with brown dust, which is somewhat paler below; palpi and proboscis brown. Antennæ wholly black, at least twice the length of the head; first joint bare; second joint prolonged on the inside of the third nearly to its middle; third joint very long, somewhat oblong, with the upper apical angle drawn out into a slender point a little longer than the main part of the organ, the whole joint hairy; arista apical, about one-fifth as long as the joint. Front greenish-black, not very shining. Cilia of inferior orbit pale. Thorax dark green above, with an indistinct trace of a coppery line in the middle, and one along the inner dorsal bristles on each side; acrostichal bristles large, in a single row; scutellum with a single large pair of bristles; pleuræ dark green, with grey dust. Tegulæ yellow, with black cilia; halteres yellow. Abdomen dull bronze-green, the second and third segments with an indistinct antero-lateral yellow spot on each side; venter narrowly yellow. Hypopygium standing out prominently behind the sixth segment, blackish-bronze in colour, rounded; there are two pairs of very small organs protruding forward, the hinder ones yellowish, rather filiform, with minute hairs, the others brownish, bare, expanded and truncate at the tip. Legs yellow; all the coxæ infuscated on the basal two-thirds, the hind femora in some specimens slightly infuscated above on the apical half. Fore tarsus of very distinctive form: first joint of moderate length, slightly enlarged at the tip, bearing on the underside near the base a row of four black bristles of increasing length; second joint one-half the length of the first, swollen on the underside; third joint a little shorter, with a curved bristle on the underside at the base; the remaining joints of ordinary structure. All the coxæ with coarse black bristles at the tip. Wings subhyaline; third and fourth veins exactly parallel, the latter ending in the tip of the wing.

♀. Antennæ with the third joint comparatively short, the arista long, bent down near its point of origin; second joint extending very perceptibly over the third on the inner side.

Length 2.2 millim.

Hab. MEXICO, Mexico city (*H. H. Smith*).

Four males and two females. Named in honour of Professor Wm. M. Wheeler, who has worked out this group in the United States.

SYMPYCNUM.

Sympycnus, Loew, Neue Beitr. v. p. 42 (1857).

1. ***Sympycnus angustipennis***, sp. n. (Tab. VI. fig. 20, wing of ♂.)

♂. Face extremely narrow below, white-dusted; front purple in the middle. Antennæ brownish-yellow, rather elongate, slender; the third joint rounded, with almost basal arista. Cilia of inferior orbit white. Dorsum of thorax bluish-green, not distinctly marked with lines, but with scattered whitish dust. Scutellum of the same colour. Pleuræ bluish-green, with grey dust, the hind margin, a humeral spot, and a few faint traces elsewhere, yellow. Halteres and tegulæ yellow, the latter with yellowish cilia. Abdomen dark bronze, the venter and the sides near the base yellow; hypopygium protruding moderately behind, with a distinct pair of pale yellow appendages. Legs, including the coxæ, yellow; the middle and hind coxæ each with a blackish bristle on the outer side; tarsi but little infuscated. Pulvilli not enlarged. Middle metatarsus as long as all the following joints. Wings subhyaline, so narrow that the outline behind is almost symmetrical with that in front; fourth vein ending at the apex.

♀. Face quite wide; the purple front very conspicuous; wings considerably wider behind near the base. Length 2.1 millim.

Hab. MEXICO, Orizaba (*H. H. Smith*).

One male and one female.

2. ***Sympycnus varipes***, sp. n.

♂. Face slender, narrower below, covered with brownish dust; front of the same colour, not shining. Antennæ black, short; third joint hairy, pointed, the arista arising near the base. Cilia of the inferior orbit white. Dorsum of thorax opaque grey, with the bristles arising from brown spots and with a brown line down the middle, where there is a scattered row of large acrostichal bristles. Scutellum bright blue above, somewhat dusted around the margin. Pleuræ opaque, grey, greenish below. Halteres and tegulæ yellow; cilia of the latter of a rather neutral brownish colour. Abdomen bronze-green, the anterior part of each segment purplish-bronze above; hypopygium rounded, projecting behind, but not showing any appendages in the only specimen seen. Fore legs, including the coxæ, yellow: the last tarsal joint black; this joint is enlarged, and the pulvilli also. Middle coxæ black, except at the tip, with white hairs in front; middle legs otherwise yellow, except the last joint of the tarsi, which is black, and the tips of the remaining tarsal joints, which are slightly infuscated. Hind coxæ black, except at the tip, with one long blackish bristle on the outer side; hind femora faintly infuscated above near the tip; extreme tip of the hind tibiæ and the whole of the hind tarsi infuscated; first and second joints of hind tarsus of nearly equal length. Wings subhyaline, moderately narrowed at the base; fourth vein ending at the tip.

Length 2.6 millim.

Hab. MEXICO, Omilteme in Guerrero (*H. H. Smith*).

One male.

3. ***Sympycnus coxalis***, sp. n. (Tab. VI. fig. 21, profile, ♂.)

♂. Face and front black, thinly dusted with grey. Antennæ yellow (the third joint missing in the type), without any infuscation, short. Palpi brown. (Cilia of the inferior orbit entirely concealed in the described specimen by the collapsing of the head.) Thorax and abdomen greyish-green, not very shining; pleura similarly coloured; the hairs on the abdomen, especially near the tip, brown. Hypopygium thick, very unsymmetrical, of a brown colour, closely applied to the abdomen, so that no appendages protrude. There is a distinct notch in the ventral outline where the hypopygium begins, which is preceded by some long brown hairs. The first two segments of the venter, as well as the hind margin of the pleura and a humeral spot, are brown. Legs yellow, the base of the middle tibiæ infuscated. Fore coxæ wholly yellow, with three or four extremely long blackish bristles, not all being at the tip; fore tarsi not

infuscated, the last joint on the inner side below with three or four minute, but stout, black bristles; the inner claw bends back towards these, so as to form the beginning or rudiment of a grasping-organ, which is less fully developed than in *S. falco* and *S. similis*. Middle coxæ with a row of five stout, blunt, black bristles on the front side (a close inspection under the compound microscope indicates that these are really located on a horn- or scale-like projection from the basal part of the coxa, which extends parallel with the body of the segment). Middle and hind tarsi slightly infuscated. Middle and hind femora each with a distinct row of stout hairs below, largest on the latter. Wings subhyaline, quite short; the fourth vein ending almost immediately behind the apex.

Length 1.7 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

One male. This species, with *S. falco* and *S. similis*, should constitute a separate genus. They all agree in having a short compact form, entirely unlike that belonging to *Sympycnus*. The thick, short, and very unsymmetrical hypopygium is also different.

S. coxalis is readily separated from the other two species mentioned by its yellow antennæ.

DIAPHORUS.

Diaphorus, Meigen, Syst. Besch. iv. p. 32 (1824).

Lyroneurus, Loew, Wien. ent. Monatschr. i. 37 (1857).

1. *Diaphorus simplex*.

Lyroneurus simplex, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 333, t. 12. fig. 117¹.

Hab. MEXICO, Orizaba, Mexico city, Atoyac, Teapa (*H. H. Smith*).—ANTILLES, St. Vincent¹.

Numerous specimens. I find that the female of this species cannot be distinguished from the same sex of *D. spectabilis*, and the genus *Lyroneurus* is therefore, in my opinion, untenable.

2. *Diaphorus spectabilis*.

Diaphorus spectabilis, Loew, Neue Beitr. viii. p. 57¹; Mon. N. A. Dipt. ii. p. 162².

Diaphorus approximatus, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 321³.

Hab. NORTH AMERICA, United States^{1 2}.—MEXICO, Cuernavaca, Sierra de las Aguas Escondidas, Orizaba, Vera Cruz, Atoyac, Medellin, Teapa (*H. H. Smith*).—ANTILLES, St. Vincent³.

A large number of specimens. In this species there appears to be an occasional variation in the degree of contiguity of the eyes of the male: Loew¹ described them as "meeting upon the front to a large extent." In the St. Vincent examples the eyes, normally, are not quite contiguous, and I described the species under a new name; but I ascertained afterwards that this was also the case in the specimens inhabiting the United States. Amongst the Mexican insects before me, one male has the eyes narrowly, and another has them rather widely, separated, although in the latter there is

a perceptible approximation. They have the front white, like the face, and the fore coxæ yellow at the tip for some distance.

In still another male, from Mexico city, which probably belongs to a distinct species, the eyes are decidedly contiguous, the tibiæ and tarsi are blackish, leaving only the fore and middle knees yellow, the femora have much longer hairs, and the pulvilli of the fore feet are extremely large, with a distinct brownish cast.

3. *Diaphorus deceptivus*, sp. n.

♂. Face blackish, rather opaque, in the best-preserved specimens with a slight white pruinosity; antennæ small, entirely black, arista almost exactly apical; eyes narrowly contiguous on the face; cilia of lateral and inferior orbits white. Thorax globose, bright green above, the pleuræ blackish, with thin grey dust; halteres yellow; tegulæ infuscated, their cilia blackish, but in certain lights yellowish. Abdomen dark golden-green, with brown hairs on the sides and venter; the usual apical bristles scarcely perceptible; hypopygium very small. Legs yellow, the middle and hind coxæ infuscated for about half their length, and the fore coxæ sometimes a little infuscated at the base; hairs all appearing yellow when viewed against a dark background; tarsi but little infuscated; fore pulvilli rather large, the hind ones the smallest. Wings yellowish, the veins brownish-yellow; venation as usual.

♀. Face cinereous; front of the same colour, green in the middle; cilia of the tegulæ in some lights quite white.

Length 2·7 to 3 millim.

Hab. MEXICO, Omilteme in Guerrero, Medellin in Vera Cruz (*H. H. Smith*).

Three males and five females. The hairs of the legs would be called black if examined against a white background. The colour of the tegular cilia is peculiarly obscure and misleading. *D. deceptivus* seems to be related to *D. subsejunctus*, Loew, of the West Indies; but differs in having the front of the male obliterated by the contiguity of the eyes, the cilia of the tegulæ darker, and the posterior tarsi more infuscated. These characters seem evanescent, and cannot be regarded as fully establishing the validity of the present species. Loew's description in this case is brief, and less satisfactory than would be expected of him.

4. *Diaphorus nigrescens*, sp. n.

♂. Face, front, palpi, and antennæ opaque black; front moderately narrow with parallel sides; antennæ small, third joint especially so, arista almost exactly apical. Cilia of the inferior orbit yellowish. Thorax opaque blackish, the dorsum a little shining behind, the scutellum moderately bright green. Halteres yellow. Cilia of tegulæ black. Abdomen blackish-green, the dorsum shining; apical bristles distinct; hypopygium rather prominent for this genus, still not exerted. Legs opaque blackish, the fore ones brownish, and all the knees very narrowly yellow; pulvilli white, moderately enlarged. Wings uniformly infuscated, not very dark, the veins at the base brown rather than black. Venation normal; fourth vein ending exactly in the tip. Length 3·1 millim.

♀. Rather larger; wings larger, broader, and darker; face and front wider; legs more uniformly black. Length 4·1 millim.

Hab. MEXICO, Chilpancingo, Omilteme, and Sierra de las Aguas Escondidas in Guerrero (*H. H. Smith*).

One male and three females. Except for the larger size and the separated eyes of male, this species greatly resembles *D. opacus*, Loew.

5. **Diaphorus** — ?

Hab. MEXICO, Teapa and Medellin (*H. H. Smith*).

A single pair. Allied to *D. satrapa*, Wheeler, in having the base of the abdomen yellow. I refrain from describing the species, as I am not certain that it differs from the following.

6. **Diaphorus** — ?

Hab. MEXICO, Teapa (*H. H. Smith*).

One pair, both specimens badly broken. The wing of the male has the third vein peculiarly sinuate, a character upon which the genus *Lyroneurus*, Loew, is based. See my remarks under *D. simplex*, anteà, p. 345.

CHRYSOTUS.

Chrysotus, Meigen, Syst. Besch. iv. p. 40 (1824).

1. **Chrysotus teapanus**, sp. n.

A small, dark species, resembling *C. niger*, Aldrich, but with paler legs and more metallic dorsum.

♂. Eyes contiguous for half the length of the face; palpi blackish; antennæ black, small, the third joint in some specimens slightly prolonged, but usually short, the arista pubescent; front dark green, but little metallic; cilia of inferior orbit apparently black, except perhaps one or two near the mouth (I have not been able to see them well, on account of the head in nearly all the specimens being a little flattened back against the thorax). Dorsum of the thorax bright green, pleuræ greenish-black; halteres yellow; tegulæ brownish, the cilia varying from brown to yellow, according to the light. Abdomen somewhat more golden green than the thorax, blackish beneath, the dorsum with rather numerous black hairs. Coxæ and femora brownish-black, the tibiæ and tarsi yellow (apparently rather variable in colour). Wings greyish; venation not presenting any marked peculiarities.

♀. Face of uniform width, whitish-dusted; legs a little paler than in the male.

Length 1.4 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Seven males and three females.

2. **Chrysotus discolor**.

Chrysotus discolor, Loew, Neue Beitr. viii. p. 65¹; Mon. N. A. Dipt. ii. p. 182².

Hab. NORTH AMERICA, Middle States^{1 2}.—MEXICO, Chilpancingo and Omilteme in Guerrero, Teapa in Tabasco (*H. H. Smith*).

Seven specimens, including both sexes, agreeing perfectly with the description. It ought to be mentioned, in addition, that the bristles of the body are pale, varying from whitish to brownish. The violet abdomen of the male is the most striking character, and seems perfectly constant.

3. *Chrysotus excisus*.

Chrysotus excisus, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 325¹.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).—ANTILLES, St. Vincent¹.

One male and one female.

4. *Chrysotus picticornis*.

Chrysotus picticornis, Loew, Mon. N. A. Dipt. ii. p. 184¹; Wheeler, Psyche, 1890, p. 358²; Aldrich, Trans. Ent. Soc. Lond. 1896, p. 329³.

Hab. NORTH AMERICA, Illinois^{1 2}.—MEXICO, Atoyac, Frontera, Teapa (*H. H. Smith*).—ANTILLES, St. Vincent³.

Three specimens. A common species in the Southern United States.

5. *Chrysotus vividus*.

Chrysotus vividus, Loew, Mon. N. A. Dipt. ii. p. 178¹.

Hab. NORTH AMERICA, Illinois¹.—MEXICO, Xucumanatlan and Omilteme in Guerrero, Cuernavaca in Morelos, Atoyac and Medellin in Vera Cruz, Teapa in Tabasco (*H. H. Smith*).

Numerous specimens. The identification is open to some doubt, in view of the fact that Loew describes the cilia of the tegulæ as black, while in these Mexican insects they are of a variable brownish colour, in some examples almost white, and in a few of the females almost black. Otherwise the description applies very well. I do not possess a specimen of the species from the United States.

6. *Chrysotus* —?

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

A single female, closely related to *C. hirsutus*, Aldrich.

7. *Chrysotus* —?

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

One male, resembling *C. vividus*, Loew, but with pale tegular cilia, and the face decidedly narrowed in the middle. The group is so difficult that I refrain from describing the Teapa insect as a separate species.

EUTARSUS.

Eutarsus, Loew, Neue Beitr. v. p. 45 (1857).

1. *Eutarsus loewi*, sp. n.

♂. Face long, very narrow, covered with white dust; palpi and proboscis small, yellow; antennæ yellow, towards the tip slightly infuscated, all the joints small, first bare above, arista subapical; front short, covered with white dust; cilia of inferior orbit much folded-in (in the described specimen), but apparently yellowish-brown in colour. Thorax short, round when seen from above, bright green in the middle and posterior part, including the scutellum; fore part brown, as also a narrow portion above the wing; pleuræ, metanotum, and under-edge of the scutellum yellowish-brown. Halteres yellow, the knob infuscated; tegulæ yellow, their cilia black. Abdomen dark brown, towards the tip blackish, without metallic lustre; first three segments with a paler yellow band across each; venter yellow-brown behind; hypopygium small, sessile, the visible organs minute, brownish. Legs, including the coxæ, yellow, the hind tibiæ slightly infuscated throughout, the hind tarsi blackened, the metatarsi shortened; fore pulvilli enlarged. Wings pale brownish-yellow; first vein long, third and fourth veins parallel and rather distant in the last part of their course.

Length 3.3 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

One male.

THRYPTICUS.

Thrypticus, Gerstaecker, Stett. ent. Zeit. 1866, p. 43.

Aphantotimus, Wheeler, Psyche, 1890, p. 375.

Xanthotricha, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 339.

1. *Thrypticus fraterculus*.

Aphantotimus fraterculus, Wheeler, Psyche, 1890, p. 376¹.

Hab. NORTH AMERICA, Wisconsin¹.—MEXICO, Mexico city (*H. H. Smith*).

One male and one female.

2. *Thrypticus cupuliferus*.

Xanthotricha cupulifera, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 339, t. 11. figg. 106, 106 a¹.

Hab. MEXICO, Orizaba (*H. H. Smith*).—ANTILLES, St. Vincent¹.

A single female.

3. *Thrypticus pusillus*, sp. n.

♂. Face wide, violet in colour, without dust; front similarly coloured; antennæ blackish or dark brown, very short, the long terminal arista pubescent, brown; cilia of the inferior orbit pale; palpi yellowish. Dorsum of the thorax purple, the sides bright green, the posterior part green above, concave; bristles brownish-yellow. Halteres light yellow; tegulæ of the same colour, with pale yellow cilia. Abdomen brownish-green, not very bright, with numerous closely placed brown hairs; hypopygium dark brown, of moderate length, large in the middle and rather pointed, the lamellæ large, pointed, pale yellow; out of the inner and upper (morphologically ventral) part of the hypopygium arise a pair of yellow lance-like organs, curved at the base, and reaching about as far as the tips of the lamellæ. Legs, including the

coxæ, pale yellow, hind tarsi only very slightly infuscated at the tip; hind metatarsi shorter than the following joint, on the underside with one or two oblique rows of comb-like spinules (not perceptible except under a high power); hind coxæ with one erect bristle on the outer side. Wings hyaline, broad; the second and third veins far apart at their tips.

Length 1 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

A single male. A female, from Medellin, near Vera Cruz, differs in the following particulars: it is larger, the bristles are paler, and the minute brown ovipositor protrudes in a triangular form, this portion being reddish-brown in colour, with perceptible dentations on the edges; the purple face, front, and thoracic dorsum are as in the male. Length 1.5 millim.

A second male, from Medellin, has the thorax wholly golden-green, the antennæ acorn-coloured, and the abdomen bright green; I doubt if it belongs to the same species.

The members of this genus, on account of the extreme delicacy and softness of the integument, are probably subject to even more variation in the hues of blue, green, and violet than other Dolichopodidæ. For the purposes of classification it is very essential that they should be observed while fresh, and in large numbers. To judge from the material before me, it seems probable that *Thrypticus* is fairly rich in species.

4. *Thrypticus* (?) — ?

Hab. MEXICO, Omilteme (*H. H. Smith*).

A male and two females from Omilteme seem to belong near *Thrypticus*. The hypopygium is more compact and bulky than in that genus, the arista is distinctly dorsal, and there are no acrostichal bristles, except a few in one female, which may on that account belong to a different species, though otherwise indistinguishable.

PSILOPUS (p. 214).

The American species of *Psilopus* have received no general treatment, except from Loew, and his work was confined to North-American forms, chiefly, indeed, to those of the United States, as he had but little material from other parts. The great number of descriptions of the earlier writers has been an obstacle to any advancement in the study of the genus, since very few of these refer to characters that are really distinctive. The course I have followed, which appeared to be the only one possible, has been to examine all the old descriptions, arrange the specimens at hand, construct a Table of all recognized North, Central, and South-American species, and describe as new all those that could not be identified. The Table includes forty-seven species, all of which are known to me, except *P. pilosus*, Loew. The male of *P. basilaris* remains unidentified, but the female is readily recognizable, unlike many of the genus. In

addition to the above, about six different forms of females have been seen, which I am unable to assign a place.

The total number of Mexican species recognized by me in the collection under examination is twenty-nine, of which twenty-three are described as new.

It will be understood that they all have black cilia to the tegulæ, and four large bristles on the scutellum.

For *P. dimidiatus*, see the genus *Gnamptopsilopus*, *infra*, pp. 364, 365.

The species described by Bigot (Ann. Soc. Ent. Fr. 1890) are scarcely recognizable, and they are not included in the Table; one only of them (*Psilopodinus astequinus*, l. c. p. 290, and Bulletin, 1888, p. xxx) is from Mexico. The other unidentified Mexican forms are mentioned by Osten Sacken, *antea*, p. 214.

Table of the American Species of Psilopus known to me, based on male specimens.

1. Femora black	2.
Femora yellow	35.
2. Wings with dark markings	3.
Wings without dark markings	22.
3. Fore tarsi with a dense black fringe on the sides of the 4th and 5th joints; middle tarsi with the 2nd and 3rd joints less broadly fringed (Mex.)	<i>bifimbriatus</i> , sp. n.
Fore tarsi of different structure	4.
4. Fore tibiæ black	5.
Fore tibiæ pale, at most somewhat brownish	9.
5. Face with abundant, delicate, pale hairs (U.S.)	[<i>patibulatus</i> , Say.]
Face destitute of pale hairs	6.
6. Second joint of antennæ with numerous long bristles	7.
Second joint of antennæ with few and short bristles	8.
7. Last four joints of fore tarsus short, subequal (W. U.S.)	[<i>pilicornis</i> , Aldr.]
Last four joints of fore tarsus decreasing in length (W. U.S., Mex.)	<i>melampus</i> , Loew.
8. The brown cross-bands broadly connected on the fourth vein, leaving a round hyaline spot in the first posterior cell (Brazil)	[<i>guttula</i> , Wiedem.]
Cross-bands not connected behind; 5th joint of fore tarsus slightly compressed, with a silvery reflection on the inner side (Mex.)	<i>præstans</i> , sp. n.
9. All the tarsi wholly black	[<i>guttula</i> , Wiedem.]
Fore tarsi wholly pale; middle ones black, with a narrow silver fringe above on the last two joints (Mex., Brazil)	<i>diffusus</i> , Wiedem.
Fore and middle tarsi but little infuscated; 4th joint of latter pure white, not enlarged (Antilles, Mex., Brazil)	<i>bellulus</i> , Aldr.
Fore tarsi infuscated, except part of the first joint	10.
10. Knob of halteres infuscated	11.
Knob of halteres yellow	16.
11. Wings with only a faint cloud, before the third vein (Mex.)	<i>ciliipes</i> , sp. n.
Wings with two cross-bands, or at least the hind cross-vein infuscated.	12.

12. Middle and hind tibiae entirely black 13.
 At least the middle tibiae largely yellow 14.
13. Middle metatarsi ciliated above (Cuba) [*pilosus*, Loew.]
 Middle metatarsi not ciliated above (Mex.) *inornatus*, sp. n.
14. Middle metatarsi ciliated (Mex., Brazil) *triseriatus*, sp. n.
 Middle metatarsi not ciliated 15.
15. 3rd and 4th joints of hind tarsi subequal, a little swollen (Mex.) . . . *atricauda*, sp. n.
 These joints of normal structure (Cuba, Jamaica, Brazil) [*jucundus*, Loew.]
16. Apical third of fore coxa, with trochanter and base of femur, yellow
 (Mex.) *coxalis*, sp. n.
 Not more than the extreme apex of the fore coxa yellow 17.
17. Middle tibia with a row of small bristles on the front of the inner side,
 extending the whole length (Mex.) *genualis*, sp. n.
 Middle tibia with a row of stout bristles on the outer side, middle
 metatarsus ciliated (Mex., Brazil) *triseriatus*, sp. n.
 Middle tibia with the usual bristles only 18.
18. Last two joints of hind tarsus flattened 19.
 Last two joints of hind tarsus not flattened 20.
19. Cross-bands broad, including half the wing (Brazil) [*gracilis*, Aldr.]
 Cross-bands narrow, scarcely a fourth of the wing darkened (Mex.) . . . *depressus*, sp. n.
20. Middle tarsi entirely infuscated (Mex.) *purpuratus*, sp. n.
 Middle tarsi broadly yellow at the base 21.
21. Hypopygium minute, appendages inconspicuous (Mex., Brazil) *similis*, sp. n.
 Hypopygium large, the appendages large, flattened, black (Mex.) . . . *atrolamellatus*, sp. n.
22. Face with abundant slender hairs 23.
 Face bare 27.
23. Face with dark hairs (Mex., Brazil) *barbatus*, sp. n.
 Face with pale hairs 24.
24. First joint of the middle tarsi beset with crooked bristles 25.
 First joint of the middle tarsi without bristles 26.
25. Tip of the abdomen with a tuft of strikingly long hairs (U.S., Antilles,
 Mex., S. Am.) *caudatus*, Wiedem.
 Tip of the abdomen with only moderate hairs (U.S.) [*scobinator*, Loew.]
26. Middle tibia with a strikingly long apical spur (U.S.) [*calcaratus*, Loew.]
 Middle tibia without such spur (U.S.) [*inermis*, Loew.]
27. Arista at least two-thirds the length of the entire body 28.
 Arista much shorter 30.
28. Arista ending in a small disc, fore metatarsus without long cilia above
 (Mex.) *nobilissimus*, sp. n.
 Arista plain, fore metatarsus with a long cilia above 29.
29. Appendages of hypopygium pale, middle metatarsus also ciliated (U.S.,
 Mex.) *comatus*, Loew.
 Appendages of hypopygium blackish, middle metatarsus plain (U.S.) . . . [*crinitus*, Aldr.]

30. Thoracic dorsum covered with thin white dust, front densely silvery-pollinose (Mex.) *argentatus*, sp. n.
 Thorax and front mostly shining 31.
31. Costa with a row of erect cilia 32.
 Costa without cilia 33.
32. Second joint of the fore tarsus shorter than any of the following joints
 (U.S.) [*ciliatus*, Loew.]
 Second joint of the fore tarsus longer than any of the following joints
 (Mex.) *hirtipes*, sp. n.
33. Middle metatarsi with erect cilia above (Mex.) *ciliipes*, sp. n.
 Middle metatarsi not so ciliated 34.
34. Middle tibiæ yellow, colour of body purple (Mex.) *purpureus*, sp. n.
 Middle tibiæ yellow, colour of body green (Mex.) *forcipatus*, sp. n.
 Middle tibiæ black (U.S., W.I.) *chrysoprasius*, Walk.
35. Wings with dark markings 36.
 Wings wholly hyaline 44.
36. Antennæ yellow (Brazil, Mex.) *basilaris*, Wiedem.
 Antennæ black 37.
37. The hyaline space between the cross-bands extending forward to the
 second vein 38.
 Hyaline space not reaching beyond the third vein 40.
38. First joint of fore tarsus white at tip, the following joints black, the
 4th fringed above with black (Mex.) *interceptus*, sp. n.
 Fore tarsi plain, gradually infuscated 39.
39. Fore coxæ black (Mex.) *pennifer*, sp. n.
 Fore coxæ yellow (Mex.) *flavicoxa*, sp. n.
40. Cilia of tegulæ pale on lower half, third vein curved forward at the
 tip (Brazil) [*imperator*, Aldr.]
 Cilia of tegulæ black 41.
41. 2nd and 3rd joints of fore tarsi short, swollen, bristly (Mex.) *clavipes*, sp. n.
 Fore tarsi plain or only bristly 42.
42. Fore coxæ green (U.S.) [*viridicoxa*, Aldr.]
 Fore coxæ pale 43.
43. Middle metatarsus with a row of erect cilia on the fore side (U.S.) [*scaber*, Loew.]
 Middle metatarsus plain (U.S.) [*sipho*, Say.]
44. Face with numerous pale hairs (U.S.) [*flavipes*, Aldr.]
 Face bare 45.
45. Middle metatarsi greatly elongated, ciliated (Antilles) [*insularis*, Aldr.]
 Middle metatarsi plain, short (Mex.) *tonsus*, sp. n.

1. *Psilopus bifimbriatus*, sp. n.

- ♂. Face metallic blue, the lower half with white dust; front deeply excavated, rather narrow, at the margin of the eye on each side with conspicuous white hairs; antennæ small, black, second joint with few and small bristles, arista small; lower part of the orbit with long white hair. The front and vertex have a

very delicate pale pruinosity, scarcely affecting the metallic reflection. Thorax metallic, bright, on the pleuræ in a certain light showing some pure white pollen; cilia of tegulæ dark, halteres pure yellow. Abdomen dark green, the anterior margin of each segment black; this black band becomes wider on each succeeding segment, until in the last two it is more extensive than the green; hypopygium black, large and up-curved, with small sordid appendages tipped with black. Fore coxæ, except at the tip, green, with white dust and hair, and near the tip with two black bristles; the other coxæ blackish. Femora dark metallic green, with yellow apices. Fore tibiæ entirely brownish-black; middle tibiæ yellow; hind ones yellow at the tip, but infuscated on the basal half or more. Fore tarsi black; the first joint long, the third longer than the second, fourth and fifth joints with a dense black fringe on both sides; middle tarsus with the first joint more than twice as long as the others together, and quite distinctly white at the apex; the second and third joints equal in length, black, with a black fringe above and below, shorter than in the fore tarsi; fourth and fifth joints short, black. Hind tarsi entirely brownish-black, rather long. Wings infuscated along the costa from the base to the apex, the basal third or fourth less deeply so, the two cross-bands almost connected in some cases on the fourth vein.

Length 7-8 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Three males.

2. *Psilopus melampus*.

Psilopus melampus, Loew, Berl. ent. Zeitschr. vi. p. 215¹; Mon. N. A. Dipt. ii. p. 253².

Hab. NORTH AMERICA², Las Cruces (*Townsend*), Santa Fé, New Mexico (*Cockerell*). —MEXICO¹, Omilteme, Chilpancingo, and Xucumanatlan in Guerrero, Mexico city (*H. H. Smith*), Jalisco (*Schumann*), Orizaba (*H. H. Smith & F. D. G.*), Guanajuato and Orizaba (*Townsend*).

Loew suspected, and with reason, that Say meant this species when he referred to *P. patibulatus* as occurring in Mexico. [See Loew, Mon. N. A. Dipt. ii. p. 256, and Say, Complete Writings, ii. p. 361.]

P. melampus was included by Osten Sacken amongst the unidentified species of the genus, *anteà*, p. 214.

3. *Psilopus præstans*, sp. n.

♂. Wholly black and green; feet black. Wings with dark cross-bands. Face bright blue, from above with a white reflection, rather narrow, concave in the middle; antennæ small, with a few little hairs on the second joint only, arista short; front violet, deeply excavated, with very few and minute pale hairs on the sides; proboscis yellow. Thorax bright metallic green or blue, on the sides thinly dusted, so that, as viewed in some directions, the green is distinct; halteres rather dark yellow. Abdomen bright green or blue, with narrow black bands on the incisures, the last two segments wholly shining jet-black, with perhaps a trace of violet, the colour markedly contrasting with that of the preceding segments; bristles moderately stout, depressed; hypopygium small, black, with two conspicuously large black filaments behind. Legs wholly black, the coxæ and femora with a slight bluish reflection. Fore tarsi with the first joint equal in length to the tibia, the following joints shorter in succession, the fifth nearly as long as the fourth, a little compressed, and silvered on the inner side (this joint is so small that the ornamentation is not striking). Middle and hind tarsi rather stout, especially the third to the fifth joints. Fore coxæ with numerous pale hairs and three black bristles. Wings with the usual cross-bands, the interval

narrow, ending at the third vein, the brown coloration filling out most of the apex of the wing; basal half of the wing a little infuscated on the front part.

Length 6-6.5 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Two males.

4. *Psilopus diffusus*.

Psilopus diffusus, Wiedem. Aussereur. zweifl. Ins. ii. p. 221¹; Loew, Mon. N. A. Dipt. ii. p. 235².

Hab. MEXICO, Teapa and Frontera in Tabasco, Medellin near Vera Cruz (*H. H. Smith*).
—BRAZIL².

Wiedemann¹ originally gave "Savannah" as the locality for this species: according to Loew (*loc. cit.*), this was changed on the type-specimen, in Wiedemann's own writing, to Rio Janeiro. Loew gives a complete description from other Brazilian specimens. The species is abundantly represented in the present collection. The width of the black bands of the abdomen is variable, but often much more than indicated by Loew. The greatest discrepancy is in the length of the fore tarsi, which are fully double that of the fore tibiæ in the male, and over once and a half in the female.

5. *Psilopus bellulus*.

Psilopus bellulus, Aldrich, Trans. Ent. Soc. Lond. 1896, p. 343¹.

Hab. MEXICO, Cuernavaca in Morelos, Frontera and Teapa in Tabasco, Medellin near Vera Cruz (*H. H. Smith*).—BRAZIL; ANTILLES, St. Vincent¹.

The Mexican and South-American specimens show some differences from the type, and I at first regarded them as a distinct species. The fore and middle tarsi are much paler, almost white, and the fourth joint of the latter, not being especially distinguished by its whiteness, has on the upper surface a few silvery hairs, making a rather showy fringe. This variation in a secondary sexual character is most unusual and interesting, indicating in this form a plasticity rarely met with in the family. The bands of the wing are frequently faint, but are perceptible in all but very immature specimens.

Found in abundance by Mr. Smith in S.E. Mexico, and Dr. Williston has given me specimens of it from Brazil.

6. *Psilopus ciliipes*, sp. n. (Tab. VI. fig. 22, interm. tibia and tarsus, ♂.)

A dark species. Wings almost entirely hyaline; feet black, the fore tibiæ and base of fore tarsi yellow.

♂. Face wide, transversely impressed, with but little whitish pollen; antennæ black, second joint with long and dense hair; front wide, with a considerable amount of pale hair on the sides. Thorax dark green, the sides but thinly pollinose; halteres distinctly infuscated. Abdomen with broad black bands and moderate bristles; hypopygium very small, black, the lamellæ minute, dark brown. Fore tarsi one-third longer than the tibiæ, deeply infuscated for half their length; middle tibiæ on the front side with a

uniform row of about fourteen rather large bristles, and, in addition to these, with several other bristles, especially on the outer side near the base. Middle tarsi slightly yellowish at the base, otherwise black; on the upperside of the first and second joints is a row of fine erect cilia, gradually decreasing in length, sometimes not very easily seen on the second joint. Hind tibiae bearing on the outer side a row of stout bristles, similar to those on the middle tibiae, but larger, and on the inner side also a rather bushy series, which are conspicuously large at the base only. Wings hyaline, a little clouded before the third vein, the fork making a right angle with the fourth vein and only gently bent, of the same shape as in *P. caudatus*.

♀. Halteres and middle tibiae yellow, wings hyaline.
Length 4.1–4.6 millim.

Hab. MEXICO, Acapulco, Tierra Colorada, Medellin, Vera Cruz, Cuernavaca (*H. H. Smith*), N. Yucatan (*Gaumer*).

The female of this species is readily distinguished from that of *P. caudatus* by the absence of hairs on the face.

7. *Psilopus inornatus*, sp. n.

A rather small dark species. Wings with cross-bands; fore tibiae yellowish-brown.

♂. Face and front dark bluish-green, the former scarcely dusted, the latter with some extremely delicate pale hair; antennae small, black, the second joint with long and abundant black hair. Thorax bluish-green, pleurae scarcely at all dusted; halteres blackish. Abdomen deep blue, with broad black cross-bands and rather strong bristles; hypopygium small, black, with two short, cylindrical, black appendages, bearing somewhat numerous and stout black hairs. Legs black; femora on the underside with rather longer and stouter bristles than usual, which in some lights appear dark in colour; fore tibiae and a very little of the base of their tarsi yellowish-brown; all the tibiae and tarsi unusually destitute of hairs and bristles, the middle and hind tibiae, however, with a few small bristles; hind tarsi just perceptibly stouter in the middle than at the base. Wings with well-marked brown cross-bands, almost united on the fourth vein; apical fork with a slightly rounded right angle in the middle.

♀. Halteres yellow.
Length 4–5.2 millim.

Hab. MEXICO, Tepetlapa in Guerrero, Cuernavaca in Morelos (*H. H. Smith*).

8. *Psilopus triseriatus*, sp. n.

Wings with dark markings; femora black; tibiae yellow, the hind ones a little darker; hind tarsi blackish, flattened near the tip.

♂. Face bright green, but little dusted; front of the same colour, with only a few pale hairs at the sides; antennae short, black, second joint with a few rather long bristles; the pale hair of the inferior orbit quite conspicuous. Thorax bright blue-green, the pleurae but little dusted; halteres infuscated; but not very dark. Abdomen varying from green to blue, the last segment usually violet, the incisures each with a narrow black band; hypopygium small, black, with a pair of minute brownish-yellow appendages. Coxae and femora black; tibiae yellow, the hind ones brownish, especially near the base; fore tibiae with a scattered row of bristles on the outer side, otherwise bare; middle tibiae with a row of about nine stout bristles on the front side, and two or three small ones behind near the base; hind tibiae with numerous almost bristle-like hairs on the inner side. Fore tarsi one and a half times the length of the fore tibiae, the basal half or more of the first joint yellow, the following segments brown. Middle tarsi of similar length; first joint as long as the tibia, bearing on its front side a dense row of erect cilia, longer than the thickness of the joint: on the underside is a similar but smaller row, mixed with little stiff bristles, and on the upperside a third row, not erect, and diminishing in size beyond the middle. Hind tarsi black, at the

base only a little paler, the last three joints of about equal length, glabrous, flattened. Wings subhyaline, with the usual cross-bands, which are connected on the fourth vein in all the specimens before me.

Length 4.2-5 millim.

Hab. MEXICO, Cuernavaca in Morelos, Teapa in Tabasco (*H. H. Smith*).—BRAZIL, Rio Janeiro.

Five males from Mexico and a male from Brazil, the latter given me by Prof. Williston.

9. *Psilopus atricauda*, sp. n.

♂. Face blue, very thinly dusted, narrow on the lower half and in a certain light more distinctly pollinose; antennæ small, black, the extreme base below yellow and arising from a yellow area that is slightly visible below them, the second joint with only very few and short hairs; front deeply excavated, blue or violet, with a few small hairs. Thorax intense green, the scutellar region blue; pleuræ from above in a certain light silvery-pollinose, in most directions, however, appearing nearly bare. Tegulæ deeply infuscated; halteres brown, the stem lighter. Abdomen with broad black bands, which take in half or more of the last two segments; hypopygium black, minute, with two slender, curved, yellow appendages, which have somewhat the shape of a parenthesis. Bristles of the body nowhere of striking size and length. Coxæ and femora black; tibiæ yellow, all blackened at the extreme base, and the hind ones a little at the tip; fore tibiæ short, bearing a few small bristles in a row on the outer side; middle tibiæ without any noticeable bristles, except one or two very small ones near the base; hind tibiæ with rows of small bristles on the inner side, the outer side comparatively bare. Fore and middle tarsi elongate, slender, plain, infuscated from about the middle of the long first joint. Hind tarsi yellowish at the base, the first two joints very hairy, the next two a little swollen, black, subshining above, the last joint of similar structure, but shorter; there is a distinct concavity on the underside of the last three joints. Wings with more prominent cross-bands than usual, taking in all the apical half except the interval, which widens behind; on the basal half the space before the third vein is yellow; the first cross-band narrowly reaches the hind margin at the tip of the fifth vein.

Length 6-6.5 millim.

Hab. MEXICO, Teapa in Tabasco, Fortin in Vera Cruz (*H. H. Smith*).

Five males.

10. *Psilopus coxalis*, sp. n.

♂. Face blue, rather narrow, densely white-pollinose; antennæ very small, with minute bristles only; front pollinose on the lower part and sides, with very few pale hairs. Thorax green, with thin dust, on the sides bright white-pollinose. Tegulæ pale at the base, one or two of the uppermost cilia pale; halteres entirely yellow. Abdomen bright bluish-green, with rather narrow black bands; there are whitish hairs on the sides as far as the fifth segment; hypopygium small, black, with small, dark, incised, hairy appendages. Fore coxæ green, covered with glistening white pollen and white hair, the tip for nearly one-third the length pale yellow. Fore femora with the apical third and a narrow basal portion yellow; the hairs underneath the pale apex black. Fore tibiæ with a few small bristles on the outer or hinder side. Fore tarsi with the first joint long, infuscated and a little enlarged at the tip; second joint short, thickened, with a pad-like structure on the underside; third joint short, bent on the second; fourth joint longer, also bent on the preceding, with a row of fine short bristles underneath; fifth joint normal; all the segments beyond the first are black. (Middle legs wanting.) Hind femora black, yellow at the tip; hind tibiæ only moderately hairy, at the extreme apex infuscated; hind tarsi black (last three joints missing). Wings hyaline, with the usual two cross-bands; the space before the third vein on the basal half is yellow, and there is a distinct spot before the small cross-vein; the cross-bands are

more widely separated than usual, but connected as far back as the third vein; the tip is largely hyaline.

Length 7.2 millim.

Hab. MEXICO, Misantla (*F. D. G.*).

One male.

11. *Psilopus genualis*, sp. n.

♂. Face blue, when viewed from above white-pollinose, in a certain light faintly rosaceous; antennæ small, black, second joint with small bristles; front bluish-violet. Thorax green, thinly pruinose, the sides pure silvery-pollinose when viewed in the most favourable light, otherwise showing but little pollen. Tegulæ black, halteres yellow. (Abdomen of the only specimen seen broken off at the second segment.) Coxæ and femora black, the tips of the fore and middle femora yellow. Tibiæ, including the hind ones, pure yellow; fore tibiæ with five or six slender erect bristles on the hinder side; middle tibiæ with a close row of rather small bristles on the fore side, two or three scattered ones on the outer side, and an irregular row of small ones behind; hind tibiæ with no noticeable bristles. Fore tarsi almost twice the length of the tibiæ, infuscated from the tip of the first joint, bearing a few small bristles on the outer side of the first joint near the apex, and quite a number of smaller ones on the second joint, extending its whole length; (middle tarsi broken off); hind tarsi entirely black, of ordinary structure. Wings subhyaline, the two cross-bands broadly connected in front, abbreviated behind; a considerable hyaline space at the tip.

Length (estimated) 5.5 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

A single male.

12. *Psilopus purpuratus*, sp. n.

♂. Face purple, rather opaque, with minute whitish dust, retreating on the upper half, then with a transverse impression, and a narrow lower part that stands out at an angle, and extends far below the corners of the eyes; front broad, delicate purple in colour, not very shining, with a few small white hairs on the sides; antennæ of moderate size, third joint large, second with a few small bristles, of which the largest are above. Thorax green, with a delicate pruinosity over its entire surface; the pleuræ beautifully silvery when viewed from above in the right light, otherwise appearing scarcely at all pollinose. Halteres pale clear yellow. Abdomen bluish-green, white-pruinose, the last two segments pure deep violet; the short pile very noticeable (although the bristles are not especially large) and pale on the sides near the base and on the first two-fifths of the venter; hypopygium small, black, with two small, blackish, hairy, forked appendages. Coxæ and femora bluish-green, tips of the fore and middle femora yellow; tibiæ yellow, the hind ones gradually infuscated in their apical third or wholly infuscated; fore tarsi faintly infuscated from the base, middle and hind ones black. The fore tibiæ with several long bristles on the hinder side near the base; the middle tibiæ with a number of scattered bristles, but no very distinct row, except on the front side; the hind tibiæ with a few widely separated small bristles on the outer side, and dense hair on the inner side. Fore tarsus double the length of its tibia, the first joint as long as the tibia, with three or four bristles scattered along its outer side, the second joint with some closely placed small bristles on the same side; middle tarsus also twice as long as the tibia, plain; hind tarsus tapering, plain. Wings, including the apex, hyaline; fore margin yellowish; the usual cross-bands narrow, connected in front to the third vein; apical fork bent rather deeply into the first posterior cell.

Length 6 millim.

Hab. MEXICO, Cuernavaca in Morelos, Tepetlapa and Chilpancingo in Guerrero (*H. H. Smith*).

13. *Psilopus atrolamellatus*, sp. n.

♂. Face pure green, white-pollinose when viewed from above; antennæ black, of moderate size, bristles of second joint long, especially below, but not numerous; front bluish, with the usual few small pale hairs on the sides. Thorax green, pruinose with white, giving it a satiny reflection; the bristles of the dorsum large and uniform in size; pleuræ with a silvery reflection in one light only. Halteres pure yellow, stem darker. Abdomen green, with black cross-bands of moderate width, and coarse black hair and bristles; hypopygium shining black, the lamellæ of the same colour, large and flat, with an excavation at the tip, and short curling dark hair on the inner side. Coxæ and femora black, the tips of the fore and middle femora yellow. Tibiæ yellow, the hind ones but little infuscated at the tip; all of them hairy and with scattered bristles, but no rows that are conspicuous. Fore tarsus one and a half times as long as the tibia, infuscated from the tip of the first joint, and with a couple of bristles on the outer side of the latter; middle tibiæ of the same colour, but relatively shorter, and with some small obscure hairs on the underside of the first joint; hind tarsi blackish-brown, hairy. Wings with large cross-bands, filling out the apex, except behind, and narrowly connected on the fourth vein; the apical fork makes nearly a right angle at its origin and again at the bend.

Length 4.7 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Ten males.

14. *Psilopus similis*, sp. n.

♂. Extremely like *P. atrolamellatus*, but differing as follows:—Hypopygium minute, the appendages in the form of two very small finger-like brownish organs; fore tibiæ with two or three rather long fine bristles on the outer side; middle tibiæ with shorter bristles; all the tarsi a little paler; apex of the wing quite broadly hyaline.

Length 4.2–4.5 millim.

Hab. MEXICO, Venta de Zopilote in Guerrero, Cuernavaca in Morelos, Medellin near Vera Cruz, Teapa and Frontera in Tabasco (*H. H. Smith*), Orizaba (*H. H. Smith & F. D. G.*), N. Yucatan (*Gaumer*).—BRAZIL, Rio Janeiro (*Williston*).

The Brazilian specimens have a little more brown in the tip of the wing, as in *P. atrolamellatus*.

15. *Psilopus depressus*, sp. n.

♂. Structure the same as that of *P. similis*, except in the following particulars:—The fore trochanters are very pale yellow, and hence rather conspicuous; and the hind tarsi are flattened in the last two joints and the tip of the third, black, shining, concave below.

Hab. MEXICO, Teapa and Frontera in Tabasco (*H. H. Smith*).

Five males. There are five females, taken at Teapa and Amula, that belong to one or more of the three preceding species, but I cannot identify them, the differences between the males being so slight.

16. *Psilopus barbatus*, sp. n.

♂. Face bright green, white-pollinose on the lower half, and bearing on this part numerous long black hairs; antennæ black, second joint with a few moderately long bristles below; front bright green. Thorax of the same colour, the sides with indistinct greyish dust. Tegulæ pale, with black cilia; halteres yellow.

Abdomen green at the base, the black bands increasing in width so that the tip is nearly all black; the hair on the segments long and black, and at the tip forming a straight tuft projecting backward and downward, as in *P. caudatus*, the ends of these hairs being somewhat crimped. Hypopygium small, imbedded; the appendages are, however, prominent, curved, black organs, two in number, each with a tuft of black hair at the tip; there are two smaller inner organs, also black. Coxæ and femora bright green; hind tibiæ and tarsi black; fore and middle tibiæ and the tips of the femora yellow; fore tibiæ and tarsi plain; middle tibiæ with a long thin spine on the inner side at the tip; middle metatarsi black, with short bent bristles, as in *P. caudatus*. Wings hyaline, venation as in the species mentioned. The female is readily distinguished by the dark hair on the face.

Length 4.5 millim.

Hab. MEXICO, Amula, Xucumanatlan, and Chilpancingo in Guerrero (*H. H. Smith*).
—BRAZIL, Rio Janeiro.

This species is further distinguished from *P. caudatus* by the fact that the female has the femora and fore coxæ green, like the male. The Brazilian specimen was given to me by Prof. Williston.

17. *Psilopus caudatus*.

Psilopus caudatus, Wiedem. Aussereur. zweifl. Ins. ii. p. 224¹.

Psilopus caudatulus, Loew, Neue Beitr. viii. p. 93²; Mon. N. A. Dipt. ii. p. 271³.

Hab. NORTH AMERICA^{2,3}, New England to California¹.—MEXICO, Cuernavaca, Medellin, Atoyac, Vera Cruz, Frontera, Teapa (*H. H. Smith*).—SOUTH AMERICA to Brazil.

Numerous specimens. Loew seems to have laboured under some mistake, as he says of *P. caudatus*: "By its larger size, it seems to be different from the species known to me." Wiedemann mentions a length of 2–2¼ lines, Loew .15 inch; there is no great difference. The largest specimens in this collection measure .19 inch, just the size of Wiedemann's. It is an exceedingly common and widespread species, ranging north to New England and south to Brazil or farther.

18. *Psilopus nobilissimus*, sp. n. (Tab. VI. fig. 23, ♂.)

♂. Face very broad, especially above, not much pollinose in any light, with a deep transverse impression below the middle and a bulging prominence above this, extending into the lower part of the front; antennæ entirely black, small, second joint with a few moderately stout bristles only; arista subapical, extremely stout at the base, about the length of the entire body, ending in a small, ovate, pointed lamella. Front very bright green, wide, with numerous pale hairs. Thorax and abdomen bright blue or green, with long bristles; pleuræ in the proper light with white pollen. Tegulæ with long black cilia; halteres yellow, the stem more or less infuscated. Abdomen without black incisures; the bristles remarkably long. Hypopygium with the slender base purple, the middle black, the two joints of the body of it with long, slender, wavy bristles extending downward; the lamellæ large, narrow, crooked, pale yellow. Coxæ and femora black, the fore and middle knees yellow; tibiæ yellow, the hind ones very slightly infuscated at the tip; fore tibiæ on the outer side with a row of about seven bristles of increasing length, the last remarkably long and rather distant from the tip; middle tibiæ with a few scattered small bristles, of which two or three on the outer side are of increasing size towards the tip; fore tarsi whitish, bare, the last joint a little infuscated, with a few flattened silvery hairs above; middle tarsi slender, infuscated from the middle of the third joint, the last two joints, however, somewhat whitish, and on their upper surface thickly fringed with short silvery pile; hind tarsi short, plain, black.

Wings hyaline, with a slight infuscation before the third vein; first vein reaching fully to the middle of the wing; hind cross-vein oblique, not quite parallel with the margin.

♀. Arista only about half the length of that of the male, without disk; the fore and middle tibiae each with a row of long bristles, which become stouter outwards.

Length 4.5-5 millim.

Hab. MEXICO, Chilpancingo and Tepetlapa in Guerrero, Cuernavaca in Morelos, Atoyac in Vera Cruz, Teapa in Tabasco (*H. H. Smith*), N. Yucatan (*Gaumer*).

The female of this species is very like *P. comatus*, but may be distinguished from it by the absence of the small bristles on the upperside of the first joint of the fore tarsi.

19. *Psilopus comatus*.

Psilopus comatus, Loew, Neue Beitr. viii. p. 89¹; Mon. N. A. Dipt. ii. p. 262².

Hab. NORTH AMERICA, Middle States^{1 2}.—MEXICO, Atoyac in Vera Cruz (*Schumann*), San Lorenzo, Cordova (*M. Trujillo*), Tepetlapa in Guerrero (*H. H. Smith*), N. Yucatan (*Gaumer*).

20. *Psilopus argentatus*, sp. n.

♂. Face viewed from in front deep green, otherwise silvery-pollinose; antennae small, black, second joint with a few moderately stout bristles; front not excavated, except very moderately at the vertex, wholly silvery, the deep blue ground-colour showing but faintly. Thorax entirely covered with thin silvery pollen, on the dorsum, however, the violet ground-colour shows in some directions. Halteres yellow, the stem infuscated. Abdomen violet, with thin and broken white pollen; hypopygium small, black, the appendages narrow, crooked, obscurely brown. Legs wholly black, tarsi plain; fore tibiae with a partial row of three or four bristles on the front side; hind tibiae with much hair on the inner side, and a few bristles on the outer side. Wings subhyaline, the fork making an acute angle with the fourth vein, and a rounded right angle at its bend.

Length 3.3 millim.

Hab. MEXICO, Tierra Colorada in Guerrero, Teapa in Tabasco (*H. H. Smith*).

A single female has the legs coloured as in the male, the face moderately pollinose, and the front shining.

21. *Psilopus hirtipes*, sp. n.

♂. Face metallic, wide above, the lower part slightly white-pollinose; antennae rather large, the second joint with long, bushy, black bristles; front broad, bright green. Thorax green, pleurae scarcely at all pollinose. Halteres infuscated; cilia of tegulae large. Abdomen rather dull green, the incisures with narrow black bands; the bristles very numerous and large; hypopygium small, blackish, with small appendages of the same colour. Middle and hind coxae, as well as the last joints of the hind tarsi, black, the remainder of the legs wholly brown and immature in appearance; all the tibiae with noticeably coarse hairs; fore tibia and metatarsus equal in length, each with a thin row of long erect bristles on the hinder side, the following joints plain. Middle tarsus about one and a third times the length of the tibia, with a few minute scattered hairs under the first joint. Hind tibia with irregular long bristles on the outer side; hind tarsus with the second, third, and fourth joints a little compressed. Wings longer than in most species of the same size, hyaline; costa ciliated to the end of the second vein; costal cell not especially widened.

♀. Bristles of the antennae much fewer and shorter; legs paler brown and less hairy, while the tibiae, at least the middle ones, show prominent bristles; wings shorter and broader.

Length 3.5-3.6 millim.

Hab. MEXICO, Omilteme in Guerrero (*H. H. Smith*).

The four specimens all have a very immature appearance, and would certainly measure 4.6 to 5 millim. if less shrivelled.

22. *Psilopus purpureus*, sp. n.

♂. Head, thorax, and abdomen purple; coxæ, femora, and hind tibiæ black. Face wide, with a deep transverse impression, lightly yellowish pollinose; vertex very deeply excavated, clothed with fine yellowish hair. Pleuræ green, not much dusted. Halteres blackish. Abdomen with numerous pale hairs on the dorsum near the base and on the venter; hypopygium of moderate size, black, the lamellæ rather large, pale yellow. Fore tibiæ with a row of bristles on the outer side; fore tarsi moderately infuscated beyond the first joint; middle tibiæ with only two or three bristles on the outer side, their tarsi blackened beyond the middle; hind tarsi with a row of long bristles on the outer side, and a shorter denser row on the inner side. Wings hyaline; first vein reaching to the middle; hind cross-vein rather oblique; costa not ciliated.

♀. Green, the abdomen with black bands, the middle tibiæ with several long bristles, the pollen on the face and the halteres white.

Length 4-4.5 millim.

Hab. MEXICO, Medellin near Vera Cruz, Tierra Colorada in Guerrero, Frontera and Teapa in Tabasco (*H. H. Smith*).

23. *Psilopus forcipatus*, sp. n.

♂. Face wide, bright bluish-green, with a deep transverse impression, almost destitute of white dust; antennæ black, hairs of the second joint few, but rather long, arista less than half the length of the body; front bright metallic, with abundant fine whitish pile on the sides. Thorax and abdomen deep bluish-green, both, as well as the vertex, with noticeably long bristles; pleuræ with thin white pollen, which in a certain direction is quite conspicuous. Tegulæ with long and coarse cilia; halteres infuscated. Abdomen with some white pile on the sides of the first four segments; at the tip are two extremely long wavy bristles, and several shorter ones; hypopygium large, black, the appendages brown, and in the form of two large, stout, curved forceps-like organs. Coxæ, trochanters, and femora black; fore and middle tibiæ yellow, hind ones brown; fore and middle tarsi infuscated from the end of the first joint, hind tarsi black; fore tibia with a row of rapidly lengthening bristles on the anterior side, not reaching the tip; fore tarsus twice the length of the tibia, plain; middle femora with some long black bristles on the under-side of the apical half (the middle tibiæ have been somewhat denuded in the described specimens, but there appears to be only one bristle of noticeable size, which is placed beyond the middle on the outer side); middle tarsus almost one and a half times the length of the tibia, its fifth joint with some noticeable small white hairs above. Wings hyaline, the apical half with a very diffused infuscation, which is densest before the third vein; cross-vein moderately oblique.

Length 5 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Two males. This species is somewhat related to *P. comatus*, but differs in many respects.

24. *Psilopus basilaris*.

Psilopus basilaris, Wiedem. Aussereur. zweifl. Ins. ii. p. 215¹.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).—BRAZIL¹.

Four females. The original specimen seems to have been of the same sex. The yellow antennæ, pale tegular cilia, yellow pleuræ, including the ends of the transverse suture, and the yellow bands of the abdomen render it a very easy species to identify. Wiedemann's description¹ is very satisfactory: the colours are truly "herrlich."

25. *Psilopus interceptus*, sp. n.

♂. Face blue, elongate, with white pollen: antennæ black, small, second joint with a few small bristles only: front pollinose below, with white hairs on the sides. Thorax green, very lightly pruinose with white, the pleuræ in a certain light white-pollinose; halteres infuscated. Abdomen rather narrow at the base, green, with black bands on the incisures; hypopygium black, with round black lamellæ and some small filamentary organs. Coxæ and trochanters, including the front ones, black; femora and tibiæ yellow, the latter with few bristles; fore metatarsus one and a half times the length of its tibia, distinctly whitish at the tip, the following four joints two-fifths the length of the preceding, black, the fourth fringed above with black, the fifth with a shorter fringe of white; middle tarsi infuscated from the base, hind ones wholly black. Wings yellow in front at the base; the cross-bands separated by a hyaline space that runs forward to the second vein; tip wholly infuscated, except behind.

Length 7 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

One male.

26. *Psilopus pennifer*, sp. n.

♂. Face and front blue, deeply pollinose with white, a few pale hairs in a recumbent position at the corners of the vertex; antennæ small, black, second joint with very few small bristles. Thorax brilliant blue, verging into violet, the pleuræ in the proper light bright white-pollinose. Halteres blackish. Abdomen bright blue or green, with black bands including nearly half the width of the segments; hypopygium rather large, black, with rounded blackish lamellæ, and two long feather-like appendages, which are also blackish and covered with brown hairs. Coxæ and trochanters black; femora and tibiæ yellow, the hind femora at the tip and the hind tibiæ at the base, however, infuscated for a fourth of their length; fore tibia with two minute bristles only, which are on the outer side; fore metatarsus longer than the tibia, with a few minute hairs on the underside, the tarsus infuscated from the tip of this joint; middle tibia with a few small bristles only, the tarsus like the front one, but relatively shorter; hind tibia rather hairy, and provided with one noticeable bristle on the outer side near the base. Wings with the usual two cross-bands, which are expanded both ways, so as to include almost the whole tip of the wing, and also to make a costal stripe beginning before the end of the first vein; the intervening hyaline stripe extends forward to the second vein.

♀. Very like the male, but with the hind knees a little less infuscated.

Length 5.2 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

27. *Psilopus flavicoxa*, sp. n.

Differs from *P. pennifer* in the following particulars only:—Fore coxæ and trochanters yellow; hind knees a little less, but still perceptibly, infuscated; halteres yellow or but slightly brownish; hypopygium with narrow yellow lamellæ, and no feather-like processes.

Hab. MEXICO, Atoyac in Vera Cruz, Teapa in Tabasco (*H. H. Smith*).

Two males

28. *Psilopus clavipes*, sp. n.

♂. Face and front metallic, overlaid in certain directions with white pollen, which is thinner on the latter; antennæ small, black, with small and few bristles. Thorax bright green, pleuræ white-pollinose. Halteres pure yellow. Abdomen bright green, the last segment deep purple, the incisures with narrow black bands; hypopygium of moderate size, black, with rather large, black, hairy appendages. Middle and hind coxæ and their trochanters, and the hind tarsi, black. Fore coxæ a little infuscated at the base; fore tibia with a row of stiff bristles on the outer or hinder side. Fore tarsus with the first joint almost as long as the tibia, blackened at the tip, with an irregular row of bristles on the outer side and

some little spine-like hairs near the apex; second and third joints short, black, bent on each other; fourth joint black, of moderate length, with a row of small spines below; fifth joint small, black. Middle and hind tibiae with few and small bristles. Wings with the usual two blackish cross-bands, the basal half yellow before the third vein, the apex considerably hyaline; fork of the fourth vein with an acute but rounded angle at its bend.

Length 7 millim.

Hab. MEXICO, Tierra Colorada in Guerrero (*H. H. Smith*).

One male.

29. *Psilopus tonsus*, sp. n.

♂. Face pure green, depressed across the middle, with white pollen; antennae black, the second joint with one or two rather long bristles only on the underside; front bright green, with some pale hair on the sides. Thorax bright green, the sides not very heavily pollinose; halteres pure yellow. Abdomen with black bands, which are wider towards the tip; hypopygium closely drawn up (and hence difficult to describe), but apparently of moderate size, with some protruding, jagged, black organs. Middle and hind coxae, and the hind trochanters, black; hind femora infuscated at the tip, especially above; tarsi simple in structure, without rows of bristles or other special characters. Wings subhyaline; venation as in *P. caudatus*.

Length 4 millim.

Hab. MEXICO, Frontera in Tabasco (*H. H. Smith*).

One male.

GNAMPTOSILOPUS.

Gnamptopsilopus, Aldrich, Kans. Univ. Quart. ii. p. 48 (1893).

Table of the known Species, based on males only.

1. Antennae entirely black	2.
· At least the basal joints yellow	6.
2. Femora yellow	3.
Femora black	5.
3. Fore coxae with black bristles at the tip (Mex.)	<i>infumatus</i> , sp. n.
Fore coxae with pale bristles at the tip	4.
4. Base of the hind coxae and hind margin of the thorax pale (U.S.)	[<i>costalis</i> , Aldr.]
The same parts dark (U.S.)	[<i>scintillans</i> , Loew.]
5. Wings without black markings (Mex.)	<i>ciliipennis</i> , sp. n.
Wings black, except the apex and hind margin (Mex.)	<i>dimidiatus</i> , Loew.
6. Dorsum of thorax yellow, with a green or blue stripe	7.
Dorsum of thorax wholly metallic	8.
7. Pleurae yellow; middle tibiae and metatarsi with erect cilia (W.I.)	[<i>flavidus</i> , Aldr.]
Pleurae with an indistinct dark spot; tarsi plain (W.I.)	[<i>dorsalis</i> , Loew.]
8. Thoracic dorsum opaque, dusted; abdomen not pale at the base (U.S.)	[<i>pallens</i> , Loew.]
Thoracic dorsum shining; abdomen usually pale at the base	9.
9. Middle coxae infuscated on the outer side at least to the middle	10.
Middle coxae wholly or almost wholly yellow	13.
10. Costa ciliated, with an irregular projection forward near the tip (U.S.)	[<i>psittacinus</i> , Loew.]
Costa without such projection	11.
11. Middle femora shortened, dark at the base, the tibiae elongate (U.S.)	[<i>filipes</i> , Loew.]
Middle femora normal, pale	12.

12. Abdomen pale at the base above (U.S.; Cuba) [*variegatus*, Loew.]
 Abdomen not pale at the base above (Cuba) [*castus*, Loew.]
 13. Fore femora with slender erect bristles below (U.S.) [*tener*, Loew.]
 Fore femora without such bristles 14.
 14. Hind margin of the pleuræ yellow 15.
 Hind margin of the pleuræ green (Mex.) *mexicanus*, sp. n.
 15. Abdomen above with a basal yellow band, the remainder green (U.S.) . [*unifasciatus*, Say.]
 Abdomen with several bands, including the greater part of the first four
 segments (U.S.) [*rotundiceps*, Aldr.]

NOTE.—*Gnamptopsilopus flavicornis*, Ald., from St. Vincent, W.I., known only from the female, is not included.

1. *Gnamptopsilopus dimidiatus*.

Psilopus dimidiatus, Loew, Berl. ent. Zeitschr. vi. p. 216¹; Mon. N. A. Dipt. p. 246².

Hab. MEXICO^{1 2}, Cuernavaca in Morelos (*H. H. Smith*).

Two males, one in bad condition. These seem to have paler femora and darker tibiae than indicated by Loew's description; the hyaline space at the tip of the wing hardly occupies one-fourth of the entire wing. In spite of the black cilia of the tegulae, the species belongs to the present genus, as there are only two large bristles on the scutellum, and the third vein of the wing is strongly bicurvate at the tip.

G. dimidiatus was included by Osten Sacken amongst the unidentified species of *Psilopus*, anteà, p. 214.

2. *Gnamptopsilopus infumatus*, sp. n.

♂. Face and front bright green, the former in a certain light white-pollinose. Antennæ black. Thorax and abdomen bright green; pleuræ in an oblique light with considerable white pollen; cilia of tegulae brown or blackish; halteres pure yellow; hypopygium globular, blackish, with small, hairy, brownish-black appendages. All the femora and tibiae, and the fore coxæ, are yellow, the last long, with three black bristles at the tip; middle and hind coxæ black, the trochanters brownish. Wings large and broad, with a broad, but ill-defined, brownish band extending from the costa to the hinder end of the cross-vein, the latter forming its outer boundary; on the apical side of this band the wing is hyaline, the basal side, however, is slightly infuscated; the costa is ciliated to a little beyond the end of the second vein; the third vein is almost exactly parallel with the margin, except at the tip; the cross-vein is long, with the convexity outward.

In the female the cilia of the costa are scarcely at all perceptible, the brown mark is absent from the wing, and the cilia of the tegulae are paler, in some lights yellowish; but the black bristles of the fore coxæ are present.

Length 3-4.3 millim., the smaller being the female.

Hab. MEXICO, Amula and Chilpancingo in Guerrero (*H. H. Smith*).

Three males and one female.

3. *Gnamptopsilopus mexicanus*, sp. n.

♂. Face so densely white-pollinose that the ground-colour is almost hidden; the upper part is very wide. Antennæ yellowish, the apex infuscated. Front white-pollinose, the violet ground-colour but faintly showing through. Thorax pure green, sparsely dusted with white along the front; pleuræ with sparse

white dust, still in a certain light almost silvery; cilia of the tegulæ pale; halteres yellow. Abdomen green, with three pairs of lateral yellow triangles and some indistinct yellow markings on the dorsum of the first two segments; hypopygium small, greenish, rather embedded, with two minute yellow filaments protruding. Legs, including the coxæ, yellow, without bristles or special structures; the tarsi but little infuscated, except the hind ones, which are blackened from the beginning of the second joint. Wings hyaline, the costa not ciliated, the third vein bicurvate, the hind cross-vein with a slight double curvature.

Length 4.4 millim.

Hab. MEXICO, Medellin near Vera Cruz, Teapa in Tabasco (*H. H. Smith*).

Two males.

4. *Gnamptopsilopus ciliipennis*, sp. n. (Tab. VI. fig. 24, wing of ♂.)

♂. Face blue, rapidly widening above, with sparse white pollen. Antennæ black, without any bristles of noticeable size. Front broad, blue or purple, destitute of pale hairs. Thorax bright bluish-green, the sides with sparse white pollen; cilia of tegulæ blackish; halteres yellow, the basal part of the stem infuscated; scutellum with a large inner and a very small outer pair of bristles. Abdomen somewhat elongate, with rather long bristles before the incisures; hypopygium small, almost globular, blackish, the basal part metallic green below, the appendages minute, hairy, and blackish. All the coxæ, trochanters, and femora black; the femora have very few and small pale hairs below; tibiæ destitute of bristles, yellow, the hind ones moderately infuscated for the greater part of their length, especially on the outer side; tarsi elongate, moderately infuscated from near the base, the hind ones more distinctly so. Wings subhyaline, with a brownish tinge along the costal half; costa ciliated with fine, somewhat erect, hairs to the end of the second vein or beyond it; first vein ending before the middle of the wing; third vein very distinctly bicurvate near the tip; first posterior cell very wide; hind cross-vein long and curved, with the convexity towards the margin.

Length 4.1 millim.

Hab. MEXICO, Omilteme in Guerrero (*H. H. Smith*).

One male. The females, from the same locality, and taken on the same date, differ from the description in having the fore coxæ and all the trochanters and femora yellow; the fore coxæ with pale hairs only at the tip; the wings with a row of minute slanting hairs only, from the tip of the first vein to that of the second.

EMPIDÆ*.

Subfam. *EMPINÆ*.

EMPIS (p. 214).

Synopsis of the Central-American forms.

[The species described by Osten Sacken (*antea*, pp. 215, 216), as well as some of those of Loew, Wiedemann, and Bellardi, are unknown to us, and the characters are therefore taken from the descriptions.]

- | | |
|---|----|
| 1. Metallic green-blue or black species; sixth vein evanescent; legs peculiarly ornamented. (<i>LAMPREMPIS</i> , subgen. nov.) | 2. |
| Not such species | 6. |
| 2. Legs yellow; no pollinose stripes on the mesonotum | 3. |
| Legs black or dark brown | 4. |

* By Prof. W. M. WHEELER and A. L. MELANDER, of the University of Texas.

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| 3. Front legs altogether yellow and without fringes (♂ ♀) | <i>diaphorina</i> , O. S. |
| Front legs not altogether yellow | <i>cyanea</i> , Bell. |
| 4. Wings pure hyaline | <i>suavis</i> , Loew. |
| Wings subhyaline or infuscated | 5. |
| 5. Hind femora on the inner inferior side with two slender finger-like processes | <i>chichimeca</i> , sp. n. |
| Wings marked with black | <i>violacea</i> , Loew. |
| Wings subhyaline, with a yellowish tinge (♂ ♀) | <i>benigna</i> , O. S. |
| 6. Thorax rufous, shining, sixth vein evanescent | <i>rubida</i> , sp. n. |
| Thorax wholly opaque black | 7. |
| 7. Wings with fuscous markings; legs honey-yellow | <i>spiloptera</i> , Wiedem. |
| Wings more uniform; legs darker coloured | 8. |
| 8. Tarsal joints darker at tip | 9. |
| Tarsi uniform in colour | 10. |
| 9. Femora reddish-yellow | <i>annulipes</i> , sp. n. |
| Femora black | <i>atrifemur</i> , sp. n. |
| 10. Tibiæ at most fuscous | 11. |
| Tibiæ black | 12. |
| 11. Anterior branch of third vein perpendicular to costa, straight | <i>azteca</i> , sp. n. |
| Anterior branch oblique, slightly sinuous | <i>dolorosa</i> , sp. n. |
| 12. Wings fuliginous | 13. |
| Wings hyaline | 16. |
| 13. Wings uniformly dark | 14. |
| Wings lighter at base (♀) | <i>bicolor</i> , Bell. |
| 14. Legs regularly ciliate | 15. |
| Legs with bunches of hair | <i>montezuma</i> , sp. n. |
| 15. Abdomen yellow basally | <i>pegasus</i> , O. S. |
| Abdomen black | <i>totipennis</i> , Bell. |
| 16. Legs and thorax strongly pilose (♂) | <i>bicolor</i> , Bell. |
| Legs and thorax not pilose | <i>xochitl</i> , sp. n. |

4. *Empis cyanea*.

Empis cyanea, Bellardi, Saggio etc. ii. p. 98¹.

Hab. MEXICO¹, Amula in Guerrero 6000 feet (*H. H. Smith*).

A single female specimen. The third antennal joint is considerably shorter than the two preceding joints together; it is pointed and terminates in a slender style, which is as long as the joint itself. The front metatarsi are elongated and flattened, and, like the distal end of the tibiæ, provided with a fringe of scale-like hairs. The hind tarsi are nearly black; the metatarsi flattened, but not fringed. The mesonotum has no trace of stripes. The hind femora and tibiæ are fringed on both sides with scale-like hairs. *E. cyanea* was placed by Osten Sacken (*antea*, p. 216) amongst the unidentified Mexican species.

5. *Empis chichimeca*, sp. n.

- ♂. Shining metallic green. Face and occiput black, dusted with white. Eyes contiguous on the front. Proboscis nearly as long as the head. Antennæ black; third joint shorter than the first and second joints taken together, very nearly of the length of the first joint; style very short. Mesonotum shining metallic blue-green, with three deep blue stripes anteriorly, and beset with erect and rather dense brownish-black hairs. Abdomen metallic green, with black hair. Hypopygium small, black, with only the base of the filament exposed. Pleuræ shining black, metallic blue-green anteriorly, dusted with white posteriorly. Legs black, covered with black hairs; knees, fore and middle tibiæ, and all the tarsi yellow. Fore metatarsi thickened, nearly as long as remaining tarsal joints taken together. Middle legs plain. Hind femora on the inner inferior side with two slender finger-like processes, with an emargination between them; hind tibiæ on the inner side with a stout scoop-shaped process, truncated and flattened at the extremity; hind metatarsi incrassate, somewhat concave on the plantar surface, and bearing on the outer side a prominent pointed projection tipped with two small black spines. Wings tinged with brown, yellowish anteriorly; veins yellow; stigma fuscous, slender and inconspicuous; anterior branch of third vein short, rectangular.
- ♀. Colour, especially of the abdomen, more metallic blue. Face shining metallic blue. Middle femora below, hind femora above and below, and the four posterior tibiæ on their inner and outer sides with thick-set rows of black scale-like hairs. Middle and hind tibiæ grooved on the outer side. Fore metatarsi incrassate, as in the male; hind metatarsi less thickened, and the legs wholly without the peculiar processes of the male. Stigma of the wings obsolete.

Length 4-5 millim.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

Two males and seven females. This species may be distinguished from *E. benigna*, O. S., by the processes of the hind legs of the male; and from *E. cyanea*, Bell., by the colour of the front legs, the structure of the fringes, and the smaller or obsolete stigma.

6. *Empis suavis*.

Empis suavis, Loew, Cent. viii. no. 56¹.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

A single female specimen, easily referable to this species, save for the fact that the first section of the fourth vein is in no sense obsolete; the mesonotum is chalybeous throughout in certain lights, metallic green in others; the front metatarsi are but slightly incrassate. *E. suavis* was not identified by O. Sacken (*antèa*, p. 216).

7. *Empis rubida*, sp. n.

- ♀. Front and face shining black. Antennæ reddish-yellow; third joint slender on the distal part, the style slender, aristiform. Proboscis yellow, not longer than the vertical diameter of the head. Mesonotum shining yellowish-red, strongly convex, bare; pleuræ yellower. Abdomen brownish-yellow. Legs light yellow, not dilated or ciliated; tip of all the metatarsi and of the remaining tarsal joints, and the tip of the hind femora and tibiæ, blackish. Wings cinereous-hyaline, with yellowish veins; stigma elongate, brown; anterior branch of the third vein nearly rectangular and gently arcuated. Halteres yellow.

Length 4 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

One specimen.

p. 361
see p. 352

8. *Empis montezuma*, sp. n.

♂. Black, opaque, cinerascens. Eyes contiguous on the vertex. Proboscis one and a half times the length of the head. Antennæ dark fuscous, first joint short, with a few bristles near the apex (third joint wanting). Thorax black, cinerascens, with indications of a median and two side-stripes showing black through the coating, sparsely hairy on the disc, densely and strongly so on the humeri and about the scutellum. Pleuræ and pectus concolorous with the mesonotum. Abdomen velvety-black, fuscous on the venter at the base. Halteres black. Hypopygium small, black; lamellæ incrassate, deeply emarginate above, with loose dark hairs and small apical teeth; median style densely finely plumose; penis exposed, reddish. Legs black, the femora and the base of the tibiæ with a reddish tinge; furnished with spines, hairs, and pile; the pile long, and denser on the middle femora beneath near the base, the middle tibiæ beneath near the tip, the posterior tibiæ on the outer edge, the first and second tarsal joints, and the hind metatarsi outwardly; middle femora and tibiæ arched; front metatarsi equal in length to the next two joints (in *E. bicolor* the metatarsi are longer). Wings uniformly dark fuliginous; neuration as in *E. bicolor*.

Length 6.25 millim., of the wing 5 millim.

Hab. MEXICO, Santiago in Jalisco (*Schumann*).

A single male specimen.

9. *Empis azteca*, sp. n.

♀. Black. Head thickly greyish-pollinose, the ocellar spot in some reflections showing black. Face shining black below, grey-pollinose beneath the antennæ. Antennæ black, longer than the head; third joint gently tapering, as long as the first; style minute. Proboscis and labella reddish-yellow, black at the base, altogether about as long as the thorax. Thorax opaque grey, variable in colour in different reflections; pile erect, black; margin of the scutellum with a row of long hairs. Legs yellow, with black hairs; femora, except the tip, black; last joint of all the tarsi brown or black. Wings uniformly yellowish-brown; anterior branch of the third vein very short, rectangular; fourth vein arched back, distant from the third at the tip; penultimate section of the fifth vein unusually short, not twice the length of the anterior cross-vein; discal cell small. Halteres black, with yellow peduncles. Abdomen thickly grey-pollinose, the second and third segments wholly shining black. Front metatarsi dilated, and darker than the second to the fourth tarsal joints.

Length 6 millim.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

One specimen. The small discal cell and shining segments of the abdomen will render this species recognizable.

10. *Empis annulipes*, sp. n.

♀. Black. Front and face dusted with white. Antennæ black; the second joint largely or wholly reddish-yellow, about half as long as the first; third joint tapering, about twice the length of the first two joints together; style very diminutive. Proboscis reddish, about as long as the thorax. Thorax rather thickly grey-dusted, the dust modifying the ground-colour; mesonotum with four slender darker stripes; pile and bristles black, the former abundant, erect; humeral and post-alar callosities reddish. Scutellum with six bristles. Abdomen black, greyish-dusted, colour very variable in different reflections. Legs reddish-yellow; front and hind tibiæ on the distal portion, middle tibiæ at the tip, front metatarsi (except the immediate base), and the tips of all the other tarsal joints dark brown or black; front metatarsi elongate and thickened; all the tibiæ with rather dense hairs on the outer side, but not ciliate. Wings uniformly light yellowish-brown; discal cell long. Halteres black, with yellow peduncles.

Length 8-9 millim.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

Six specimens.

11. **Empis atrifemur**, sp. n.

Hab. MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

A single female from the above-mentioned locality represents a species closely allied to, but distinct from, *E. annulipes*. It differs as follows:—Antennæ shorter; second joint but little shorter than the first; first and second joints light yellow, the first somewhat darker; style more slender. Proboscis piceous. The stripes of the mesonotum apparently wanting. Femora black, the anterior ones brownish towards the tip. Front metatarsi shorter and more incrassated. The hairs on the legs longer and denser, especially on the posterior pair.

12. **Empis bicolor**.

Empis bicolor, Bell. Saggio, etc. ii. p. 98¹.

Hab. MEXICO, Amula in Guerrero (*H. H. Smith*), Cuautla¹.

Two males and eight females. The males have the wings clear. A species not identified by Osten Sacken (*anteà*, p. 216).

13. **Empis xochitl**, sp. n.

♀. Robust; dull, opaque black throughout, the only lighter portions being the piceous proboscis, the base of the halteres, and the subhyaline wings. Front of uniform moderate width. First antennal joint short, second shorter, third slightly longer than the other two together; arista forming a continuation of the third joint, stout. Proboscis twice as long as the eye-height. Margin of first abdominal segment fringed with bristles, which are stronger laterally. Legs not ciliated, though the longer hairs are serially arranged on the underside of the femora and on the inner and outer sides of the tibiæ; front metatarsi slightly compressed. Wings almost hyaline; no stigmal spot; anterior branch of the third vein obliquely disposed; anal vein attaining the margin.

Length 4.5 millim., of the wing 4 millim.

Hab. MEXICO, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

14. **Empis dolorosa**, sp. n.

♂. Black. Eyes closely contiguous, with an acute angular emargination on each side of the face above. Face shining black. Antennæ black, about as long as the head; second joint more than half the length of the first; third joint longer than the first two together, narrowed on the distal half or more; style slender, about half as long as the joint. Proboscis black, as long as the head and thorax together. Mesonotum very slightly dusted with white, shining; hair and bristles not abundant, black. Pleuræ whitish-pollinose. Four anterior femora and the middle tibiæ and tarsi luteous-yellow; front tibiæ and tarsi and the hind legs darker brown or blackish; metatarsi not dilated; legs provided with rather sparse hairs. Wings somewhat broad, varying from brownish to hyaline, with an elongated inconspicuous brown stigma; discal cell short; the penultimate section of the fifth vein much shorter than the ultimate section; furcation of the third vein acute; fourth vein abbreviated, not reaching the margin. Abdomen scarcely shining. Hypopygium small; filament yellow, thick, with its tip concealed.

Length 5 millim.

Hab. MEXICO, Amula in Guerrero 6000–8000 feet (*H. H. Smith*).

Two specimens.

RHAMPHOMYIA.

Rhamphomyia, Meigen, Syst. Besch. iii. p. 42 (1822).

1. *Rhamphomyia cyanogaster*, sp. n.

♂. Black, silvery-dusted. Abdomen metallic blue. Eyes separated, narrowly on the lower part of the face, facets nearly uniform. (Antennæ imperfect.) Trophi piceous at the base and yellow distally, one and a quarter times the height of the head. Thorax black, closely covered with silvery tomentum, therefore when viewed from the front presenting a white appearance; this tomentum encroaches on the first two segments of the abdomen and on the coxæ, and is slightly noticeable, but greyer, on the venter and hypopygium. No thoracic pile. Halteres swollen, black. Abdomen depressed, shining metallic blue, greenish towards the tip, with scattered, fine, black bristles and a terminal fringe of closer-set ones. Hypopygium small, terminal, consisting of two dorsal and two longer lateral robust metallic pieces and the hidden yellow filament. Legs rather short and strong, piceous, with brownish irregularly-placed hairs. Wings completely hyaline; veins brownish; discal cell complete; costa a little thickened beyond the first vein.

Length 2.75 millim., of the wing 3 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

One male.

2. *Rhamphomyia furcifer*, sp. n.

Black. Antennæ black, stout, shorter than the head; first joint short, third equal to two and a half times the length of the second; arista short, stout. Face dull black. Thorax dull black, except where the coating is rubbed, when the surface is of a shining metallic blue; prominent in front, in length equal to the abdomen, not pilose. Halteres black. Abdomen shining. Legs rather stout, almost black.

♂. Third antennal joint stouter at the base. Eyes moderately separated. Proboscis piceous, equal in length to the eye-height. Abdomen robust, cylindrical, metallic blue. Hypopygium small, terminal; filament thick, black, all but the tip exposed. Posterior tibiæ with a tubercle at the middle of the posterior surface, above which is an obliquely forked process, the outer tooth of this being strong; beyond the tubercle the posterior surface is clothed with a brush of brownish hairs. Wings opalescent-white; nervures, except the costa and the first longitudinal vein, very weak; third vein light brown.

♀. Eyes widely separated. Proboscis black, in length equalling one and a half times the eye-height. Abdomen depressed, black, not metallic, except slightly so in certain lights, pointed at the tip, and with two long, apical, black styles. Wings cinereous-hyaline, all the veins stronger, though not all well-marked.

Length 2 millim., of the wing 2.25 millim.

Hab. MEXICO, Omilteme in Guerrero 7000 to 8000 feet (*H. H. Smith*).

3. *Rhamphomyia tolteca*, sp. n.

♂. Head and thorax opaque greyish-black. Head and face dusted with greyish. Eyes narrowly contiguous; facets distinctly larger on the upper part of the eye. Antennæ black; first and second joints subequal, rounded, third twice as long as the other two together; arista shorter than the second antennal joint, well-marked. Proboscis equal in length to the height of the head, black. Palpi dull fuscous. Dorsum of thorax and scutellum, pleuræ, and coxæ, except the tips, black, cinerascens, with a brownish tinge; mesonotum with indications of median, lateral, and humeral broad faintly greenish vittæ, the humeral ones interrupted; thorax without pile. Halteres pale yellow. Abdomen twice the length of the head and thorax, with a greenish tinge, grey-pollinose, with fine, scattered, yellow hairs, besides the fine dark bristles; hypopygium ascending, apically yellow, filament exposed. Legs slender; hind pair long, fuscous, almost piceous, especially towards the base; tibiæ, especially the posterior pair, with short

bristles serially arranged, two rows on the inner and one on the outer edges; front and middle tarsi slender, tarsal joints gradually decreasing in length, fourth and fifth joints subequal; hind metatarsi strongly compressed, equal to the three following joints together. Wings large, almost hyaline, veins brown, no stigmal spot, discal cell complete, fourth vein well-developed.

Length 3.5 millim., length of wing 4 millim.

Hab. MEXICO, Sierra de las Aguas Escondidas in Guerrero 9500 feet (*H. H. Smith*).

A single specimen.

Subfam. *HYBOTINÆ*.

HYBOS.

Hybos, Meigen, in Illiger's Mag. ii. p. 269 (1803).

Euhybus, Coquillett, Proc. U.S. Nat. Mus. xviii. p. 437 (1896).

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| 1. Wings rounded, costa with strong spines | <i>spinicosta</i> , sp. n. |
| Costa straight, without spines | 2. |
| 2. Wings, at least in part, hyaline. Femora more slender | 3. |
| 3. Legs wholly yellow | <i>dimidiatus</i> , Bell.* |
| Legs in part dark brown to black | 4. |
| 4. Halteres yellow. Tarsi black | <i>typicus</i> , sp. n. |
| Halteres infuscated. Tarsi yellow in part | 5. |
| 5. Stigmal spot well-developed | 6. |
| Stigmal spot obsolete (<i>triplex</i> , Walk.) | 8. |
| 6. Wings completely hyaline. Tibiæ black | <i>mellipes</i> , sp. n. |
| Wings fuliginous on basal half | 7. |
| 7. Body submetallic | <i>triplex</i> , var. <i>loewi</i> (Loew,
Wien. ent. Monatschr. v. p. 36). |
| Body shining black | <i>triplex</i> , var. <i>tabascensis</i> , n. |
| 8. Discal cell, at least in basal part, smoky | 9. |
| Discal cell wholly hyaline | 12. |
| 9. Abdomen purplish | <i>triplex</i> , var. <i>purpureus</i> , Walk. |
| Abdomen shining black | 10. |
| 10. Posterior tibiæ and femora black | <i>triplex</i> , var. <i>triplex</i> , Walk. |
| Knees lighter | 11. |
| 11. Wings dark on basal half and greyish on rest | <i>triplex</i> , var. <i>subjectus</i> , Walk. |
| Wings brown on basal half, paler at tip and posterior margin | <i>triplex</i> , var. <i>duplex</i> , Walk. |
| 12. Pile of mesonotum anteriorly greyish | <i>triplex</i> , var. <i>smithi</i> , n. |
| Pile brownish to black | 13. |
| 13. Posterior tibiæ and femora black. Smaller species | <i>triplex</i> , var. <i>yucatanus</i> , n. |
| Posterior tibiæ and femora brown. More robust species | <i>triplex</i> , var. <i>bakeri</i> , n. |

* Enumerated, but not identified, by Osten Sacken in the earlier part of this work.

1. *Hybos typicus*, sp. n.

♂ ♀. Black-cinereous, slender. Face dusted with silvery-grey. Antennæ black, short; third joint oval, not longer than the first; arista slender, equal in length to the eye-height. Eyes contiguous below the antennæ. Proboscis black, but little shorter than the height of the head. Mesonotum prominent, black, shining through the coating of brown dust; pleuræ cinereous-black. Halteres yellow. Abdomen slender, piceous, with loose whitish hairs, slightly pubescent, especially towards the apex. Genital apparatus small, not giving the abdomen a club-shape, with two projecting filaments; somewhat similar externally in the two sexes. Legs slender, piceous, shining, with scattered pubescence; knees lighter; front tarsi long, metatarsus equal in length to the tibia; middle tibiæ with two long slender bristles on the external side (one at the basal fourth and one at the centre), and with three on the inner side (at the middle, outer fourth, and tip); hind femora reaching to about the tip of the abdomen, moderately thickened, not evidently serrate beneath, but with a series of about six darker hairs, besides the pubescence; hind tarsi not toothed beneath. The males have the front tibiæ on the posterior side, and the metatarsi on both sides, ciliated with long hairs. Pulvilli small. Wings hyaline, subquadrate, obtusely rounded at the apex, anal angle not strong; veins yellowish; third vein terminating beyond the middle, parallel with the fourth; stigmal spot not well-developed, not filling out the apex of the marginal cell; discal cell broad; anal vein not evident. The fine hairs around the margin of the wing are not so closely placed as usual.

Length 4.5 millim., of the wing 4.5 millim.

Hab. MEXICO, Omilteme and Sierra de las Aguas Escondidas in Guerrero 8000 to 9500 feet (*H. H. Smith*).

Two males and three females.

2. *Hybos mellipes*, sp. n.

♀. Black, shining, moderately strongly yellow-pilose. The two parts of the antennæ are subequal in length; arista shorter than the eye-height. Eyes contiguous below the antennæ, leaving a small subantennal triangular space shining black. Mesonotum shining black, moderately strongly pilose. Pleura black, shining, not cinerascens. Pedicel of halteres black (knobs wanting). Abdomen shining black, robust, compressed at the base and depressed apically, not unusually hairy; ovipositor with short bristles. Legs, except the tarsi, shining black, strongly hairy; posterior femora incrassate, reaching the tip of the abdomen, not strongly spinulose beneath; first two joints of the tarsi yellowish, the remainder blackened. The hairs of the legs are longer laterally, so as to give the legs, especially the tarsi, a ciliated appearance when viewed from the front. Wings narrow, wholly hyaline, except for the fuscous stigma, which completely fills the outer third of the marginal cell; veins strong; discal cell narrow.

Length 4 millim., of the wing 4 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

3. *Hybos triplex*.

Hybos triplex, Walk. List Dipt. Brit. Mus. iii. p. 486 (1849)¹.

Hybos purpureus, Walk. loc. cit. p. 486².

Hybos duplex, Walk. loc. cit. p. 486³.

Hybos subjectus, Walk. loc. cit. p. 487⁴.

Hab. NORTH AMERICA¹⁻⁴.—MEXICO, Vera Cruz, Teapa (*H. H. Smith*), Yucatan (*Gaumer*).

Four specimens taken in different parts of Mexico differ among themselves and from examples of *H. triplex* from the United States. These differences are so slight that

in this exceedingly variable insect the specimens are given as types of mere varieties. The four species described by Walker in his List of Dipterous Insects in the collection of the British Museum (*H. purpureus*, *H. duplex*, *H. triplex*, *H. subjectus*), and upon which Mr. D. W. Coquillett based his genus *Euhybos*, are but forms of one only. An examination of a large series of specimens from the United States shows forms intermediate between all of Walker's types. The Mexican varieties of *H. triplex* are characterized in the preceding Table of Species; they are from the following localities:—

Var. *tabascensis*, ♂, Teapa, Tabasco (*H. H. Smith*).—Length 4·5 millim.

Var. *smithi*, ♂, near Vera Cruz (*H. H. Smith*).—Length 4·25 millim.

Var. *yucatanus*, ♀, Yucatan (*Gaumer*).—Length 3 millim.

Var. *bakeri*, ♂, "Mexico" (*Baker*).—Length 3·25 millim.

4. *Hybos spinicosta*, sp. n.

♂. Similar to *H. typicus* in the minor details, the description of which will answer for this, with the following exceptions:—Face narrower, dusted with silvery-white. Legs wholly pitchy-black; the tibial and tarsal bristles are shorter and more numerous, though they occupy the same relative positions. The posterior legs and the abdomen are covered with much shorter hairs. Abdomen not shining, dusted. The hypopygium is terminal and more enlarged. The wings are somewhat infuscated, broader, with peculiar venation; costa bent at the tip of the first vein, so that the anterior edge of the wing is bowed outwardly, beset with spiny hooks from the junction of the auxiliary vein, these hooks gradually becoming straight about the middle of the wing and passing insensibly into the usual fringe of hairs; stigmal spot very broad; second vein strongly curved in an ogee to accommodate itself to the deep stigma, ending much nearer to the tip of the first vein than usual; third vein straight, subparallel with the costa in the outer part of its length; discal cell narrow, the cross-vein at its apex perpendicular to the penultimate section of the fifth vein. The halteres are broken, though from the stumps remaining they seem to have been dark.

Length 4·5 millim., length of wing 4 millim.

Hab. MEXICO, Sierra de las Aguas Escondidas in Guerrero 9500 feet (*H. H. Smith*).

A single male.

SYNECHES.

Syneches, Walker, *Insecta Saund.*, Dipt. p. 165 (1852).

1. *Syneches quadrangularis*, sp. n.

♂. Fuscous. Mouth-parts yellowish. Mesonotum fuscous, with faint indications of the usual lighter vittæ, slightly tomentose. Halteres concolorous with the thorax, pedicel lighter. Abdomen dark brown. Hypopygium small. Legs, including the coxæ, yellow; the hind pair with the apices of the femora, tibiæ, and tarsi brown. Wings hyaline, with a single, well-limited, quadrate, dark brown stigmal spot at the apex of the first vein; marginal cell not widened at the stigma; third vein not rigidly straight; veins brown.

Length 2·5 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Two male specimens.

Subfam. *TACHYDROMIINÆ*.

PLATYPALPUS.

Platypalpus, Macquart, Dipt. du Nord France, 1827, p. 92.

1. ***Platypalpus trivialis***.

Platypalpus trivialis, Loew, Cent. v. no. 76¹.

Hab. NORTH AMERICA, Maine¹.—MEXICO, Omilteme in Guerrero 6000 to 8000 feet (*H. H. Smith*).

Four females from Guerrero are referable to this species, but they differ from northern specimens in their larger size (length 3 millim., wing 5 millim.), longer, pure yellow legs, not darker at the tips of the tarsal joints, and lighter venter. One of them has the sides of the notum and the pleuræ reddish.

TACHYDROMIA.

Tachydromia, Meigen, in Illiger's Mag. ii. p. 269 (1803).

1. ***Tachydromia schwarzi***.

Tachydromia schwarzii, Coquillett, Proc. U.S. Nat. Mus. xviii. p. 440 (1896)¹.

Hab. NORTH AMERICA, Utah¹.—MEXICO, Guerrero (*H. H. Smith*).

Three specimens from Guerrero appear to belong to this species. The slight differences of lighter-coloured legs and broader submarginal cell are not of sufficient value for the erection of a new specific name.

PHONEUTISCA.

Phoneutisca, Loew, Berl. ent. Zeitschr. vii. p. 19 (1863).

1. ***Phoneutisca simplicior***, sp. n.

♀. Black, shining; legs yellow. Antennæ short, black; third joint shorter than the second; style four times as long as the antennæ. Eyes contiguous on the face. Vertex broad, black, with purple tinge. Palpi whitish. Proboscis black, short, equal in length to one-third of the eye-height. Thorax shining black, with faint purplish reflections; pleuræ slightly pruinose. Halteres pale yellow. Abdomen depressed, black, with a bronze tinge. Legs, including the coxæ, yellow; anterior femora incrassate; tarsi darker on the last joint. Wings cinereous-hyaline, unspotted; veins strong, fuscous, third and fourth straight, slightly divergent.

Length 1.5 millim., of the wing 1.5 millim.

Hab. MEXICO, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

DRAPETIS.

Drapetis, Meigen, Syst. Besch. iii. p. 91 (1822).

1. *Drapetis femoralis*, sp. n.

♀. Shining black; legs largely yellowish; wings lightly grey. Front and proboscis black. Antennæ and palpi fuscous; arista three times length of the antenna. Front broad. Eyes contiguous below the antennæ. Thorax and abdomen shining black, sparsely hairy; stylets not shining. Halteres whitish. Legs yellowish-brown, anterior femora stoutest, four anterior femora darker above, hind femora darker on the distal half; tarsi darker, especially the hind metatarsi, which are equal in length to the remainder of the tarsus; hind tibia with a short terminal spur. Wings greyish, veins strong, dark brown; first posterior cell narrowed at the tip; second basal cell moderately short.

Length 2 millim.

Hab. MEXICO, Vera Cruz and Tabasco (*H. H. Smith*).

Two specimens.

2. *Drapetis flavida*.

Drapetis flavidus, Willist. Trans. Ent. Soc. Lond. 1896, p. 308, t. 11. ff. 86, 86 a¹.

Hab. MEXICO, Orizaba, and Medellin near Vera Cruz (*H. H. Smith & F. D. G.*), Yucatan (*Gaumer*).—ANTILLES, St. Vincent¹.

The two specimens from Vera Cruz differ but slightly from the type of this species; the five others from Yucatan are smaller and of a dusky yellow colour.

These forms, together with the West-Indian one, resemble each other very closely and though perhaps phylogenetically different should at present be included under the same name.

Subfam. *HEMERODROMIINÆ*.

SCIODROMIA.

Sciodromia, Haliday, in Westwood's Introd. to the Mod. Classif. of Insects, ii. p. 132 (1840).

1. *Sciodromia mexicana*, sp. n.

♀. Head black, thorax red, abdomen fuscous, legs yellow. Eyes widely separated on the front, narrowly on the face, rather small. Face silvery, front greyish. Antennæ short, first two joints yellow; the third joint pointed, the terminal seta less than twice the length of the antenna. Proboscis very short, yellow. Thorax reddish, pollinose, with black macrochætæ, and with two abbreviated black vittæ in front. Halteres yellowish. Antennæ cylindrical, blunt. Legs lengthened, slender, except the thickened anterior femora; posterior tibiæ with a slight widening at the extreme tip; anterior coxæ elongate, yellow, remaining coxæ reddish. Wings greyish-hyaline, narrow, somewhat pointed; veins fuscous.

Length 2 millim.

Hab. MEXICO, Sierra de las Aguas Escondidas in Guerrero (*H. H. Smith*).

List of Species recorded from Mexico or Central America since 1887, not enumerated in the Supplement.

MYCETOPHILIDÆ.

- Plesiastina mexicana*, Giglio-Tos, Boll. Mus. Torino, no. 84, p. 143 (1890)
 (*Ditomyia*); Mik, Wien. ent. Zeit. 1894, p. 26.—Mexico.
 — *zonata*, Giglio-Tos, loc. cit. p. 142 (*Ditomyia*); Mik, loc. cit. p. 26.—Mexico.
Sciara striata, Rübsaamen, Berl. ent. Zeit. 1894, p. 37.—Mexico.

PSYCHODIDÆ.

- Psychoda punctatella*, Townsend, Ann. & Mag. Nat. Hist. (6) xx. p. 19 (1897).—
 Mexico.

STRATIOMYIDÆ.

- Acanthina (?) bellardii*, Giglio-Tos, Boll. Mus. Torino, vi. no. 102, p. 2 (1891).—
 Mexico.
Clitellaria stigma, Giglio-Tos, loc. cit. p. 2.—Mexico.
Cyphomya ochracea, Giglio-Tos, loc. cit. p. 2.—Mexico.
Euparyphus carbonarius, Giglio-Tos, loc. cit. p. 2.—Mexico.
Heteracanthia mexicana, Giglio-Tos, loc. cit. p. 1.—Mexico.
Merosargus coriaceus, Giglio-Tos, loc. cit. p. 4.—Mexico.
 — *dissimilis*, Giglio-Tos, loc. cit. p. 3.—Mexico.
 — *hyalopterus*, Giglio-Tos, loc. cit. p. 3.—Mexico.
 — *orizabæ*, Giglio-Tos, loc. cit. p. 3.—Mexico.
Microchrysa nova, Giglio-Tos, loc. cit. p. 2.—Mexico.
Ptecticus trivittatus, Giglio-Tos, loc. cit. p. 3.—Mexico.
Chrysonotus æneiventris, Giglio-Tos, Mem. Acc. Torino, xliii. p. 121 (1893).—
 Mexico.
Odontomyia mexicana, Johnson, Trans. Am. Ent. Soc. xxii. p. 271 (1895).—
 Mexico.
Sargus sp., Townsend, Ann. & Mag. Nat. Hist. (6) xix. p. 18 (1897).—Mexico.

TABANIDÆ.

- Atylotus obesus*, Bigot, Mém. Soc. Zool. Fr. v. p. 660 (1892).—Mexico.
 — *erythræus*, Bigot, loc. cit. p. 661.—Mexico.
 — *fuscicrura*, Bigot, loc. cit. p. 662.—Mexico.
 — *erythrocephalus*, Bigot, loc. cit. p. 668.—Panama.
Dichælacera pachypalpus, Bigot, loc. cit. p. 631.—Mexico.

Stibasoma pachycephalum, Bigot, loc. cit. p. 636.—Mexico.

Tabanus servittatus, Bigot, loc. cit. p. 682.—Mexico.

— *pruinus*, Bigot, loc. cit. p. 683.—Mexico.

— *mexicanus*, Linn., var. *limonus*, Townsend, Ann. & Mag. Nat. Hist. (6) xx. p. 21.—Mexico, Vera Cruz.

— *campecheanus*, Townsend, Canad. Ent. xxix. p. 197 (1897).—Mexico, Campeche.

— *yucatanus*, Townsend, loc. cit. p. 198.—Yucatan.

BOMBYLIIDÆ.

Anthrax eurhinatus, Bigot, Ann. Soc. Ent. Fr. 1892, p. 355.—Mexico.

Bombylius albopenicillatus, Bigot, loc. cit. p. 363.—Mexico.

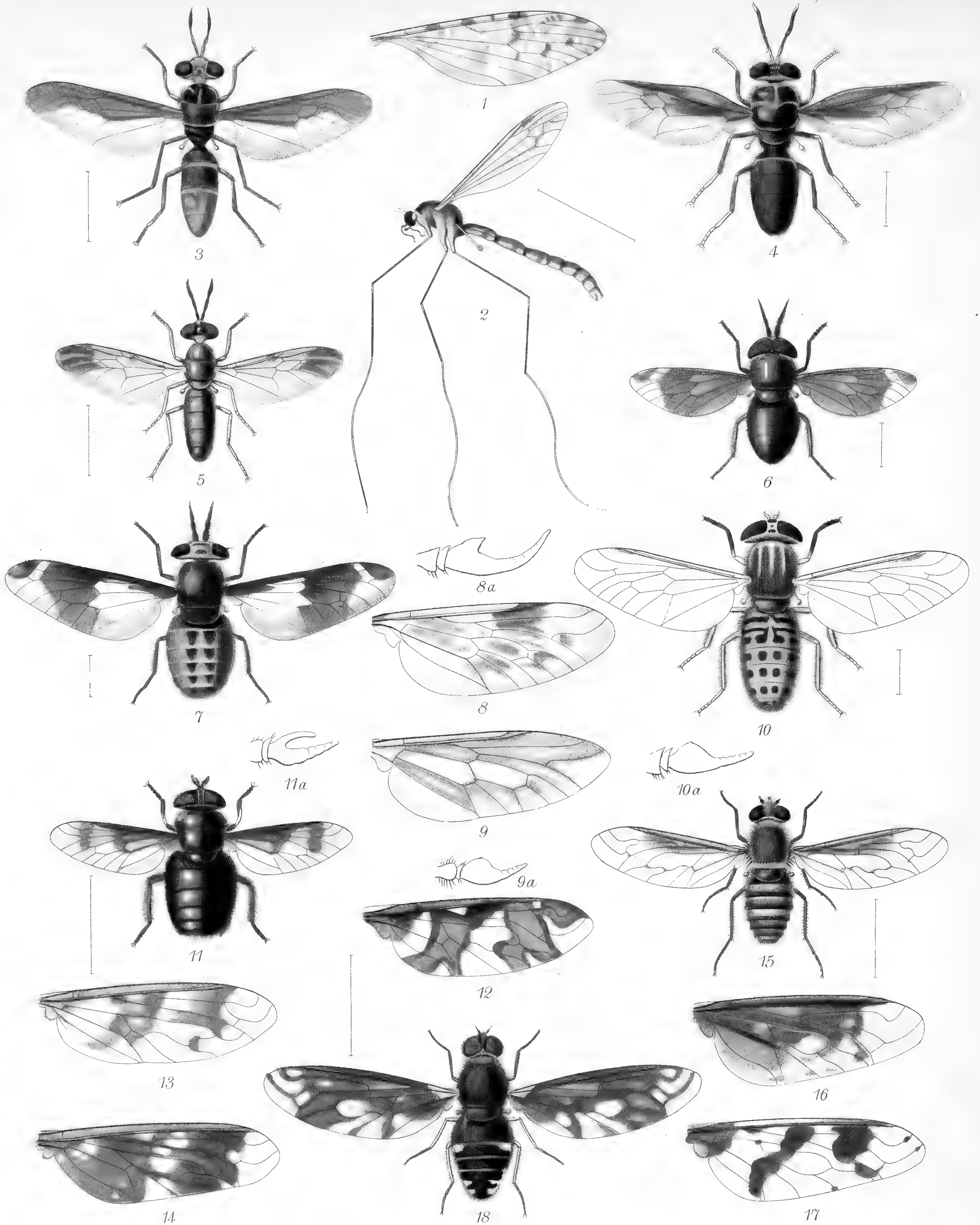
LEPTIDÆ.

Arthrostylum fascipennis, Willist. Kansas Quart. iv. p. 109 (1895).—Mexico.

THEREVIDÆ.

Ozodiceronyma (sic) *mexicana*, Bigot, Ann. Soc. Ent. Fr. 1889, p. 321.—Mexico.

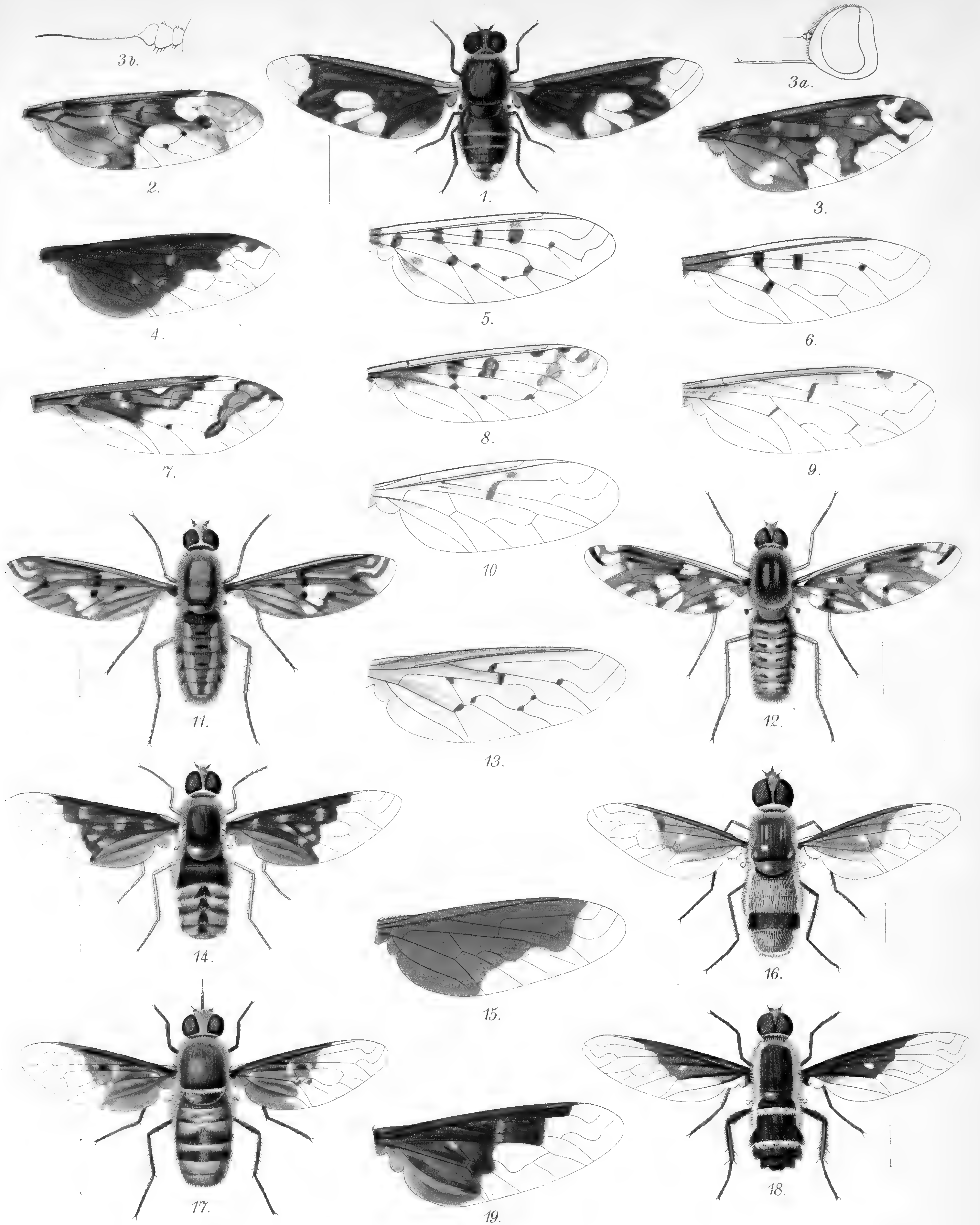
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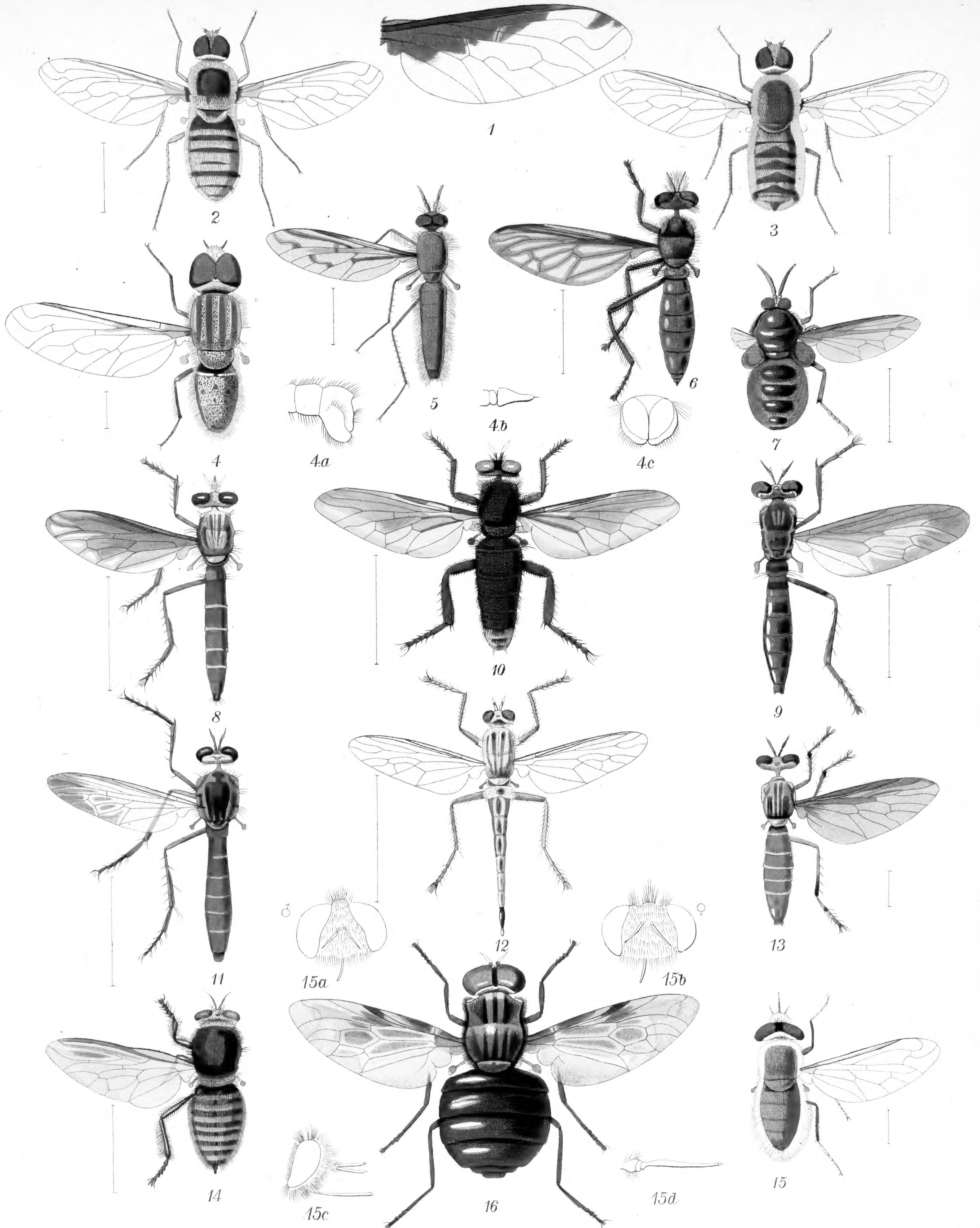
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|--------|------------|--------------|----|------------|----------------|----|-------------|---------------------|
| 1 | EPIPHRAGMA | CIRCINATA. | 8 | TABANUS | EBRIUS. | 13 | EXOPROSOPA | IOTA. |
| 2 | TANYPREMNA | OPILIO. | 9 | " | BIFENESTRATUS. | 14 | " | RHEA. |
| 3 | HERMETIA | COMSTOCKI. | 10 | " | CRIBELLUM. | 15 | " | PARDUS. |
| 4 | " | CRABRO | 11 | " | CHIONOSTIGMA. | 16 | HYPERALONIA | PILATEI <i>Var.</i> |
| 5 | " | PTEROCAUSTA. | 12 | EXOPROSOPA | CALIPTERA. | 17 | " | DIDO. |
| 6♂, 7♀ | CHRYSOPS | ALTIVAGUS. | | | | 18 | " | LATREILLEI. |

Van der Wulp del.

* see correction, p. 19



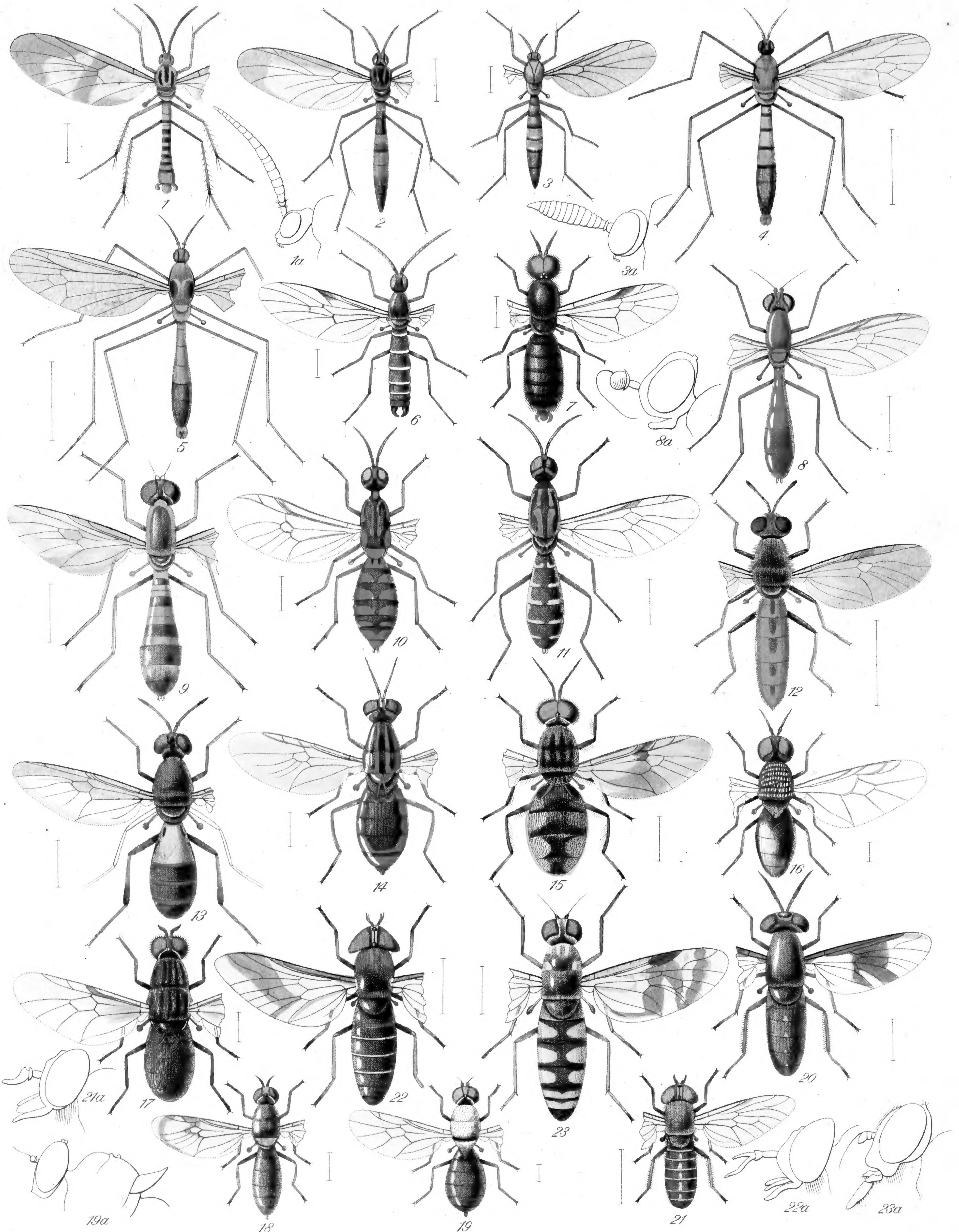
1♀	HYPERALONIA LATREILLEI.	7	LEPIDANTHRAX DISJUNCTA.	14	ANTHRAX SELENE.
2	ANTONYX CLOTHC.	8	" PROBOSCIDEA.	15	" GALATHEA.
3	" CLELIA.	9	" ANGULUS	16	" CUNICULUS.
4	ISOPENTHES JAENNICKEANA.	10	" ARETHUSA.	17	" REX.
5	ARGYRAMCEBA SERIEPUNCTATA.	11	ANTHRAX PORCIOLOGASTER.	18	" LEPIDOTA
6	" DAPHNE.	12	" EDITITIA.	19	" EUMENES
		13			



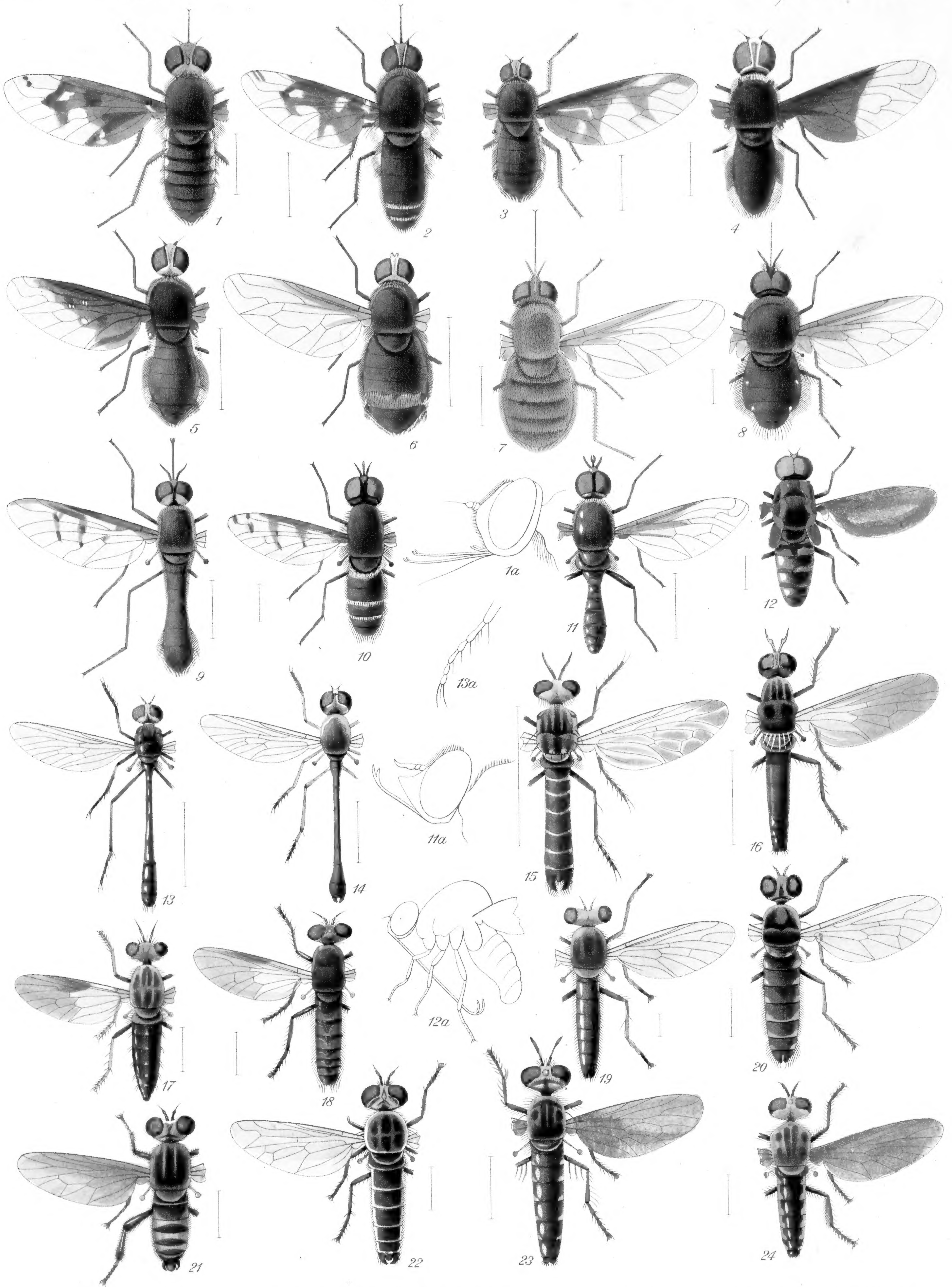
1 ANTHRAX SCYLLA.
 2♂ " LIVIA.
 3♀ " AGRIPPINA.
 4♂ APHOEBANTUS CYCLOPS.
 5 ECLIMUS AURIPILUS.

6♀ LAPHRIA ICHNEUMON.
 7 OCNAEA GROSSA.
 8♂ DIOGMITES SALLÆI.
 9 " MEMNON.
 10♂ LASTAURUS ANTHRACINUS.
 11 DIOGMITES TAU.

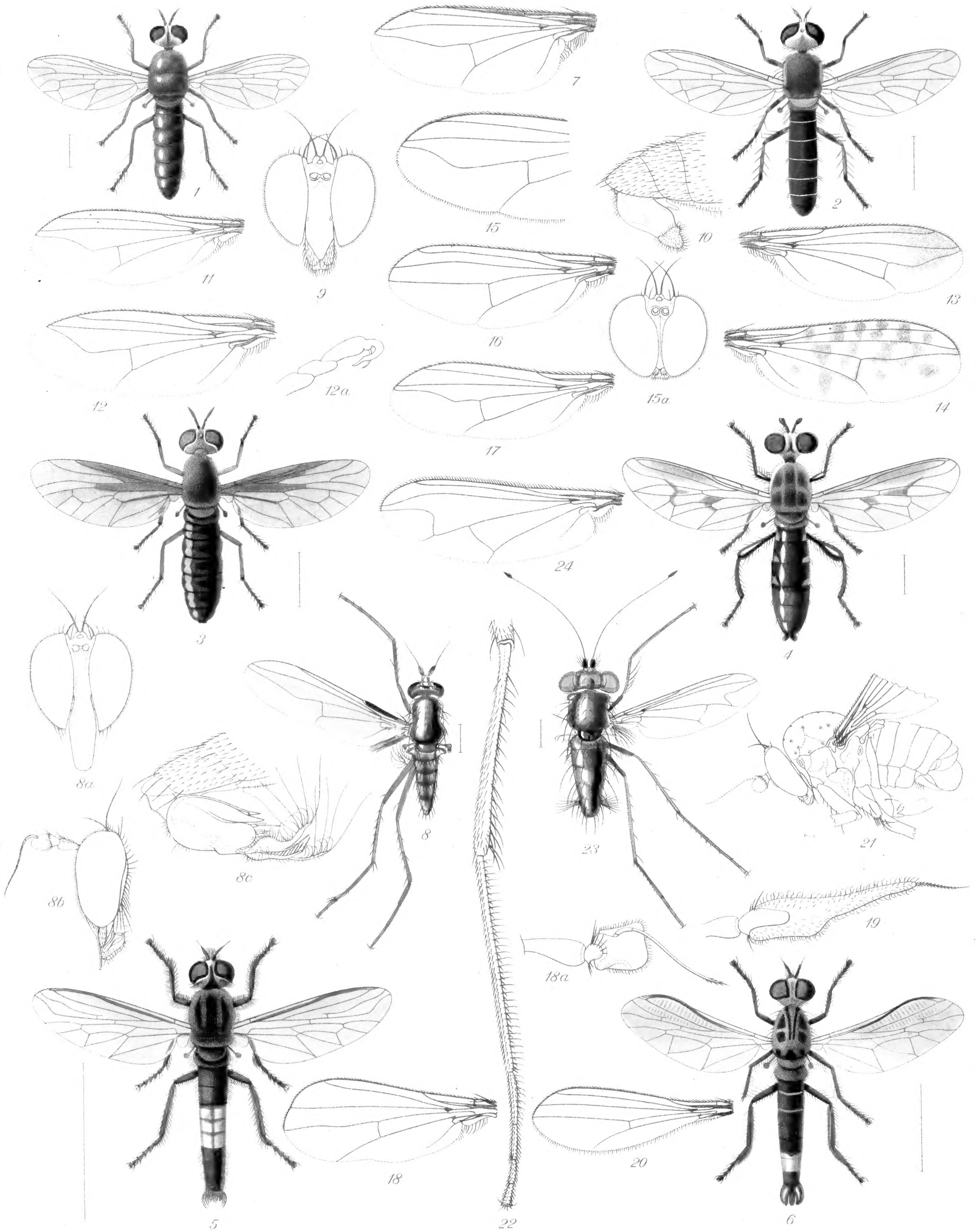
12♀ PROCTACANTHUS EXQUISITUS.
 13♀ COPHURA SODALIS.
 14♀ MALLOPHORA FAUTRIX.
 15♂ PANTARBES PUSIO.
 16♀ ACANTHOMERA CHAMPIONI.



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|---------|--------------------------|------|---------------------------|-----------|---------------------------|
| 1, 1a ♂ | PLESIASTINA BIFASCIATA. | 9 ♂ | MEROSARGUS CONCINNATUS. | 16 ♀ | LOPHOTELES PALLIDIPENNIS. |
| 2 ♀ | PLATYURA ELEGANTULA. | 10 ♀ | ANALCOCERUS HORTULANUS. | 17 ♀ | ACANTHINA INORNATA. |
| 3, 3a ♂ | CEROPLATUS BELLULUS. | 11 ♀ | CAMPEPROSOPA LONGICORNIS. | 18 ♀ | MYXOSARGUS SCUTELLATUS. |
| 4 ♂ | ERIOCERA FASCIATA. | 12 ♀ | HERMETIA CONCINNA. | 19, 19a ♂ | CYNIPIMORPHA MINUTA. |
| 5 ♂ | " BRUNNEIPES. | 13 ♀ | " CERIA. | 20 ♀ | CHRYSOPS NEGLECTUS. |
| 6 ♂ | OLBIOGASTER SP.? | 14 ♀ | EUPARYPHUS ELEGANTULUS. | 21, 21a ♀ | TABANUS PUMILOIDES. |
| 7 ♂ | BERISMYIA NIGROFEMORATA. | 15 ♂ | CYPHOMYIA LASIOPHTHALMA. | 22, 22a ♀ | DICHELACERA PULCHRA. |
| 8, 8a ♀ | MEROSARGUS BULBIFRONS. | | | 23, 23a ♀ | ATHERIX CONCINNA. |



1.1a ♀	STONYX	MELIA	9 ♀	ECLIMUS	FASCIPENNIS.	17 ♀	HOLOPOGON	VIOLACEUS.
2 ♂	"	LELIA.	10 ♀	SPHENOPTERA	VARIIPENNIS.	18 ♂	"	PULCHER.
3 ♂	ANTHRAX	PLURICELLA.	11, 11a ♂	AMPHICOSMUS	CINCTURUS.	19 ♂	TOWNSENDIA	MINUTA.
4 ♂	"	ORBITALIS.	12, 12a ♂	PHILOPOTA	LUGUBRIS.	20 ♂	PSILOCURUS	CAUDATUS.
5 ♀	"	PLEURALIS.	13, 13a ♂	LEPTOGASTER	TRIUNGULATA.	21 ♂	DAMALIS	OCCIDENTALIS.
6 ♀	ANISOTAMIA	FASCIATA.	14 ♂	"	MACROPYGIALIS.	22 ♂	TRICLIS	ARGENTIFACIES.
7 ♂	BOMBYLIUS	IO.	15 ♂	DICRANUS	JALISCOENSIS.	23 ♀	TARACTICUS	NIGRIMYSTACEUS.
8 ♂	"	DOLOROSUS.	16 ♀	OSPRIOCERUS	DIVERSUS.	24 ♀	COPHURA	PULCHELLA.



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|------------|-----------------------|-----------|---------------------------|-----------|------------------------------|
| 1 ♀ | ATONIA BREVISTYLATA. | 9 ♀ | POLYMEDON NIMIUS. | 17 ♂ | HERCOSTOMUS FLAVIPES. |
| 2 ♀ | APHESTIA MEXICANA. | 10 ♂ | PARACLIUS HUMERALIS. | 18, 18a ♂ | SYNTORMON QUADRATUS. |
| 3 ♂ | SARPOGON PULCHERRIMA. | 11 ♂ | " VENUSTUS. | 19 ♂ | PARASYNTORMON WHEELERI. |
| 4 ♂ | NUSA SEXPUNCTATA. | 12, 12a ♂ | PELASTONEURUS HAMATUS. | 20 ♂ | SYMPYCNUM ANGUSTIPENNIS. |
| 5 ♂ | KRAX SPLENDENS. | 13 ♂ | " BIGEMINATUS. | 21 ♂ | " COXALIS. |
| 6 ♂ | " DOLICHOGASTER. | 14 ♂ | " VARIEGATUS. | 22 ♂ | PSILOPUS CILIIPES. |
| 7 ♂ | POLYMEDON ARGENTATUS. | 15, 15a ♂ | PCECHLOBOTHRUS FLAVICOXA. | 23 ♂ | " NOBILISSIMUS. |
| 8, 8a, c ♀ | " NIMIUS. | 16 ♀ | PHYLARCHUS TRIPARTITUS. | 24 ♂ | GNAMPTOPSILOPUS CILIIPENNIS. |