A SYNOPSIS OF THE SAPROMYZIDAE.¹

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In the Génera Insectorum, Fascicle 68 (1908), Friedrich Hendel has given an excellent review of the group Lauxaniinae, generally known to American entomologists as the Sapromyzidae. As this work has introduced several changes in nomenclature differing from the list of species as given in Aldrich’s Catalogue, and as there has appeared no complete review of the North American species, the following synopsis is offered. It may seem presumptuous to publish this review, based as it is mainly on descriptions, for I have in all but eighty species of the family in my collection for reference, but the value of working tables in assisting future students is obvious enough to excuse its appearance in print.

Naturally, the attempt to visualize a species from a brief description alone does not assure the most satisfactory results, so that the following tables give largely an artificial classification. Such attempts at reconstructing a mind-picture of the species have proved especially unsatisfactory in the big group Lauxania, where the assignment of the species to Minettia or to Sapromyza has sometimes been merely a guess.

I am indebted to my colleague and neighbor, Professor J. M. Aldrich, for the inspiration that prompted this review and for his material assistance in sharing his library and collection during its progress. His collection has extended the distribution of many species, and in the following pages the localities of his species are added with the designation “Aldrich.” Those localities marked with the asterisk (*) are represented in my collection.

The North American species of Sapromyza have been twice tabulated. In 1892 Mr. C. H. Tyler Townsend published a “Preliminary Grouping of Sapromyza” in the Canadian Entomologist, pages 301 to 304. The next year appeared “El Género Sapro-

¹ Contribution from the Zoological Laboratory of the State College of Washington.
myza en América" by Felix Lynch Arribalzaga, in the Anales de la Sociedad Científica Argentina, xxxiv., pages 253 to 301.

The subgenus Sapromyza is our dominant group. The species may sometimes be difficult to place correctly in a tabulation since their yellow color may change at death. Where confusion was most obvious the species have been several times included in the key. Spottings of the abdominal segments may become vague through a darkening of the general color. Again, there is some variation in the extent of color markings; as, for example, univittata, aveola, and vinnula, probably varieties of a single species, show gradations in the extent of the mesonotal stripe, etc. Flavipennis Fabricius, with bare arista, is not the same species as flavipennis described by Wiedemann, although Wiedemann’s specimens came from Fabricius’ collection.

The following description of a new genus of Sciomyzidae is included in this paper, since it deals with a species hitherto classed as a Sapromyza.

PÆCILOMYIA: A NEW GENUS OF SCIOMYZIDÆ. (Figs. 1 and 2.)

In a note in connection with the original description of Sapromyza decora, Loew stated that the shape of the head and particularly of the antennae was very much like that of certain Tetanoceras, in view of which the species should be separated from Sapromyza as a distinct genus. Not recalling this note when studying specimens of decora I came independently to the same conclusion, and coincidentally received a letter from Mr. C. W. Johnson conveying the same suggestion.

Decora is an unusually distinct species, with its reticulate wings and maculate body. It clearly is not a Sapromyzine because of the following array of characters. These characters are invariably, or at least usually, associated with the Tetanocerine Sciomyzidae and are not at all, or at most very rarely, found in the Sapromyzidae.

Front broadly convex, the periorbits separated from the unusually broad, shining, central part by a strong suture; face strongly concave, the oral margin projecting, but the clypeus (Chitinbifeisen) rudimentary; cheeks nearly as deep as the eye-height; postvertical bristles divergent; second antennal joint elongate and bristly; the third joint triangular, pointed, excised above; palpi long and linear; thorax with a fine scabrous coating; prothoracic, mesopleural, and sterno-pleural bristles all wanting; front femora without a series of bristles on posterior flexor edge; middle tibiae without preapical spur but with apical crown of bristles; wings with complete anal vein.
The species is therefore certainly to be excluded from the Sapro-
myzidae, and as there is no genus in the Sciomyzidae to receive it, I would propose for it the new generic name *Poxilomyia*.

A further characterization presents the following:

Head in profile a little higher than broad, the upper portion spherical; peri-
orbits less than one-fourth the width of the interfrontalia (Mittelleiste), separated from it by well-marked sutures which are parallel with the eye-margin on the front, but converge at the vertex to meet the sutures of the epicerebrum (cerebrum) of the occiput. The interfrontalia is uniformly convex, glabrous, and highly polished, is darker than the silky peri-orbits, and is marked with a translucent median stripe extending forward from the anterior ocellus. The arms of the frontal suture (Stirn-
spaltenäste) continue weakly to the lower edge of the eye, but at the usual antennal dark spot they send a suture across to the eye thus dividing the frontal from the facial orbits (Wangen dreieck). The lunula is completely covered. The face (Gesichtsleiste) narrow but widening below, at its middle no wider than the sides (Wangen), in profile considerably concave, with oral margin projecting. Clypeus (Schlundgerüst) entirely undeveloped. Palpi linear, porrect, extending beyond oral margin, hairy beneath. Cheeks (Backen) one-half the eye-height, hairy, rounding into the sides of the face (ohne Vibrisseneck). Paracephala (Hinter-
hauptsorbits) loosely setose; a closely setulose patch above the neck. Eyes rounded, but obliquely longer than wide. First joint of antennae small, nearly bare, immersed in its socket; second joint conical, with the upper inner side project-
ing most, the outer side about one-half the length of the third joint, the inner side subequal to this joint, setose, except the outside, and with three long bristles on the upper edge; third joint pointed, somewhat excised above, uniformly fine-
haired; the dark arista rather loosely and evenly plumose above and below; the whole antenna no longer than eye-breadth, with the arista shorter than the last two joints. The bristles of the head are long and strong and include: a pair of diverging post-
verticals, a convergent inner and a divergent outer vertical, 2 reclinate fronto-
orbitals and a stout pair of proclinate ocellar bristles. The lesser ocellars are very small. The orbital bristles arise from dark-colored papillae. The chaetotaxy of the thorax is as follows: 1 humeral, 0 posthumeral, 2 notopleural, 1 presutural, 3 dorso-central, 1 pair prescutellar, 2 pair convergent scutellar, 1 supraalar, and 2 approximate postalar bristles; no prothoracic or pleural bristles, except a couple (Vallarborsten) on the pteropleural ridge just under the calypters. Meso-, ptero-, and sternopleural with scattered fine hairs, the last with a bristle in the angle below. Calypters pale yellow, with pale fringe. Front femora with several bristles in extensor row, hind femora ℋ biseriately spinose beneath; front and hind tibiae with preapical bristle, middle tibiae with usual ending of bristles. Last two segments of abdomen with long submarginal bristles; hypopygium globose. Wings reticulate with alternating light and dark spots, costal margin unbroken; first vein ending midway between tip of auxiliary vein and the anterior cross vein; veins not sinuate, third and fourth veins subparallel; anal vein complete.

Type: *Sapromyza decorata* Loew.

Of the eighteen genera of Sciomyzidae before me the new genus
bears most resemblance to *Trypetoptera* Hendel, but presents these differences: first vein ending far before the anterior cross vein; meso- and pteropleurse with very fine hairs which are scarcely bristle-like; second antennal joint obconical and not rounded; calypteres pale; fronto-orbital sutures distinct, in *Trypetoptera* the periorbits are not differentiated; three dorsocentral bristles.

None of the other genera, except *Coremacera* Rondani, have the periorbits so definitely separated from the interfrontalia. The presence of three dorsocentraals and of a convex and broad middle portion of the front are unusual characters in the Sciomyzidæ.

**Table of Genera.**

1. Tibiae with evident preapical bristle; two fronto-orbital bristles; postvertical bristles convergent; ovipositor not specialized, with two small lamellae (Subfamily *Lauxaniinæ*). ........................................... 2

   Tibiae without preapical bristle; front with only the upper orbital bristle; postvertical bristles divergent; ovipositor flattened, with chitinous tube-like ending (Subfamily *Loncheinæ*). ....................................... 13

2. Face swollen, in profile convex. ....................................... 3

   Face flat, without convexity in the middle, in profile a straight line. .......... 7

3. Third antennal joint greatly lengthened, pointed or slender and linear. ........ 4

   Third antennal joint shortened and oval, first joint shorter than second. ....... 6

4. Two sternopleural bristles; both fronto-orbital bristles reclinate; face not strongly gibbous. (Fig. 10.) .................................*Lauxania* Latreille.

   One sternopleural; anterior pair of fronto-orbital bristles convergent; face markedly gibbous. ........................................... 5

5. Head higher than long, occiput and front concave; the line connecting the fronto-orbital bristles converging in front, lower orbital bristle strongly inclined; facial groove nearly touching lower angle of eye, extending back under the eye so that the face is strongly developed underneath as well as in front; ocelli not elevated. (Fig. 6.) .......................... *Physogenia* Macquart.

   Head more globular, the front convex; fronto-orbital bristles in parallel rows; facial groove parallel with margin of eye, continuing obliquely downward leaving the cheeks free, the face in front of and not beneath this line; ocellar triangle somewhat raised. (Fig. 7.) .......................... *Pachycerina* Macquart.

6. Face with a transverse groove above the mouth, or with lateral vestiges of a groove, the oral margin projecting more or less in front of this groove; arista sometimes pubescent. (Fig. 12.) .......................... *Caliope* Haliday.

   Face swollen, with or without a transverse groove above the mouth, but the oral margin retracted beneath or behind this groove; arista plumose. (Fig. 11.) .......................... *Xangelina* Walker.

7. In profile the angle formed by the front and face acute, less than 90 degrees; front less inclined than the face, so that the mouth opening is strongly retracted. .......................... 8
Angle of front and face obtuse, the front more inclined than the face, the mouth opening therefore not retracted

8. Posterior cross-vein in middle of wing; third vein sinuous. (Fig. 4.)

Posterior cross-vein beyond the middle of wing; third vein straight; eyes horizontally oval. (Fig. 8.)

9. Both fronto-orbital bristles reclinate

Anterior pair of fronto-orbitals extending inwards and forwards; 1 sternopleural; third joint of antennae elongate. (Fig. 9.)

10. Front forming no evident angle with the face; head higher than long; fourth vein bowed forward at tip of wing, narrowing the first posterior cell. (Fig. 5.)

11. Orbital bristles arising from tubercles; wings rather slender basally.

Orbits without tubercles; wings not narrowed on basal half.

12. Thorax opaque or sub-opaque, ground color usually dark, ocellar bristles usually large and spaced far apart near the front ocellus, behind the ocellars typically one or two pairs of outwardly diverging small bristles; arista usually plumose and at the same time the scutellar bristles usually cruciate; front often relatively broad; wings rarely pictured; hind tibiae often marked with a basal ring. (Fig. 14.)

13. Metallic black species; front rather narrow; two dorsocentral bristles. (Fig. 15.)

Yellow, largely yellowish, or cinereous species, not metallic: front broad; four dorsocentrals. (Figs. 16–21.)

Lauxania Latreille, sensu lato.

Including Lauxania s. str., Caliope Haliday, Xangelina Walker, Minettia Robineau-Desvoidy, and Sapromyza Fallen.

1. Dorsum of thorax black or blackish in ground color, overlaid or not with pollinose coating; wings never pictured (except sometimes extreme base of cross-veins infuscated)

Mesonotum yellow, testaceous, reddish, or brown, not black in ground color, except rarely a median dark vitta; wings often pictured

2. Third antennal joint linear, elongate, cylindrical, the first joint as long as or longer than the second; center of face protuberant; facial orbits white pruinose (Lauxania sensu stricto)
Third antennal joint ovate or oblong-ovate, not more than four times as long as broad, the first joint shorter than the second; center of face gibbose (Caliope and Xangelina) or not (Sapromyza and Minettia) ............... 10

3. Wings short and broad, brown; second vein arched forward; scutellum long and flat; four rows of acrostichals, the middle rows very indistinct; arista plumose. (N. J.; Fla., Aldrich; Ga.*). Lauxania latipennis Coquillett.
Wings not abnormally broad and short, the submarginal cell not broadened at the expense of the marginal; scutellum shorter. ..................... 4

4. Knob of halteres black; calypteres and fringe dark; base of wings darker than remainder; arista short-plumose; front legs black, the posterior tibiae and tarsi brown. ................................. 6

5. Scutellum convex; body and head polished; periorbits broad, ceruleous, the median vitta of front shining black. Eur.*, N. Scot., Mass.*, N. Y.*, (N. J., Pa., Mich., Wisc. Aldrich), Ga., N. Mex., Queb.*, Ont.*, B. C.*, Alaska*. (Fig. 10.) Lauxania cylindriconis Fabricius.
Scutellum flat, white pollinose; mesonotum white pollinose except a narrow median stripe and the sides broadly; pleurae with two white pollinose spots. 6

6. Face completely white pollinose; front opaque with the sides white pollinose, a lateral vitta cinereous and the median vitta black; arista dark except base. Fla., N. J. Lauxania opaca Loew.
Face with a middle line and lateral vittae more or less white-pollinose, otherwise shining; front shining black except the narrow orbits, but viewed from above showing a black median vitta and lateral black spots circumscribed with white pollen; arista pale. (facialis Coquillett) Fla., Ga.*, La.*, Tenn. Aldrich. Lauxania trivittata Loew.

7. Arista densely pubescent with appressed white hairs; front shining black. 8

8. Arista loosely plumose; center of front opaque black; legs largely whitish. 9

Head, thorax and abdomen shining, with slight coppery tinge; legs brownish but the posterior femora largely black; 4 dorsocentrals, 2 acrostichals. Cal.* Lauxania albiseta Coquillett.

9. Scutellum shining, lightly white pollinose; front legs ♂ black from end of femora to tip of metatarsi, remainder of front tarsi white; costal part of wings yellowish, apex and posterior part infuscated. Pa. Lauxania femoralis Loew.

10. Face more or less protuberant in center, in part at least polished, although sometimes with oral, orbital or subantennal pruinose markings; halteres yellow. 11

11. Face flat or concave, wholly silvery, white, yellow or gray pruinose, or otherwise marked with pollen, not polished; halteres sometimes black. 24
11. Antennal arista bare or microscopically pubescent; wings nearly hyaline
   Antennal arista moderately or long plumose, or with dense pubescence; front
   not yellow, except sometimes a spot on lunule; wings yellowish
12. Front not vittate; insect entirely black, except halteres and wings. Cal.*
   .................................................. Caliope nigerrima sp. nov.
   Front vittate with reddish
13. Head largely yellow or red
   Head black, the front anteriorly and the face in part yellowish
14. Very robust, cheeks broad; head reddish except for an occipital fascia, three
   frontal vittae, the middle one triangular, and six facial spots; scutellum and
   base of abdomen reddish; legs reddish, femora in part black; thorax pollinose;
   third antennal joint elongate; 3 dorsocentrals, 2 sternopleurals; scutellars strongly diverging. Tex.; Miss. Aldrich. Minettia eucephala Loew.
   Head yellow, the occular region and short lateral vittae black; third antennal
   joint ovate; legs blackish, the knees and end of tibiae tipped with yellow;
15. Third antennal joint less than twice as long as wide; legs yellow except base of
   femora; 4 dorsocentrals. Tex.*, Ariz. Caliope variceps Coquillett.
   Third antennal joint over three times as long as wide; legs black, the knees and
   posterior tibiae and tarsi yellow; 3 dorsocentrals. Ariz., N. M. Caliope longicornis Coquillett.
16. Scutellum flat and velvety black; legs whitish, the femora black
   Scutellum convex and not velvety
17. Scutellum entirely velutinous; center of front shining, laterally with a bisected
   Scutellum subshining at base; front opaque black above the antennae, laterally
   shining; arista very long-plumose. Mass., Pa.* N. J. (Fig. 12.) Caliope gracilipes Loew.
18. Front tibiae largely blackish
   Front legs including coxae yellow; arista short-plumose, white, the base yellowish;
   face strongly gibbous. Cal.* Lauxania albiseta Coquillett.
19. Thorax and scutellum white pruinose; front tibiae and tarsi black, contrasting
   with remainder of legs; arista densely white-pilose. Ariz., Cal. Caliope nigrimanus Coquillett.
   Thorax and scutellum shining, not or scarcely pruinose; arista dark
20. Thorax with slight metallic tinge; pleuræ sometimes more or less brownish
   (compare species of alternate also)
21. Thorax chalybeous, becoming reddish in back and on sides; pleuræ brownish;
   Thorax chalybeous, pleuræ sometimes brownish in part; legs black, the tibiae
   and tarsi yellow; 2 dorsocentrals, acrostichals numerous; third antennal
   joint oblate-ovate; face moderately convex. S. Am., Mex., W. Ind., Ala.,
   La.*, N. J.; Orizaba, Aldrich. Caliope muscaria Loew.
22. Face in profile incised at middle, bulbous only beneath antennæ; arista pilose.
   Face large, bare, smooth, evenly convex from side to side and from antennæ
to near the oral margin, just above the oral margin a narrow horizontal
groove; arista plumose; deep shining black throughout, the third antennal
joint and four posterior tarsi reddish. W. Ind., S. Am. (Fig. 11.)

........................................... Xangelina nigra Williston.

23. Face glistening beneath the antennae; third antennal joint four times as long as
wide, dark; legs black, except knees and posterior tibiae and tarsi. Eur., N.
Scot., Wash.* ........................................... Caliope elisae Meigen.

Face pollinose immediately beneath antennae; third antennal joint three times
as long as wide, often reddish; legs entirely yellowish. Cal., Vanc., Wash.*, Id.* (livingstoni Coquillett) .......... Caliope quadrisetosa Thomson.

24. Some of the abdominal segments marked with spots; thorax opaque gray pruin-
ose.......................................................................................... 25
Abdomen not regularly spotted .................................................. 31

25. Arista long-plumose .................................................................. 26
Arista short-pubescent; mesonotum with four fuscous vitæ, scutellum with
two fuscous dots; front bivittate; abdominal segments with four series of
brown spots; legs yellow.................................................................. 30

26. Abdominal segments yellow, marked with pairs of blackish spots; thorax not
vittate; scutellum cinereous black .................................................. 27
Abdomen largely black .................................................................. 28

27. Lower part of pleurae yellow; 2 dorsocentrals and 1 sternopleural. Kans.

................................................ Minettia crevecoeurii Coquillett.
Pleurae concolorous with notum; 4 dorsocentrals and 2 sternopleurals. Md.

................................................ Minettia glauca Coquillett.

28. Abdomen largely blackish, base and tip yellow, dull with thick cinereous coating;
thorax uniformly cinereous, but humeri and scutellum yellow; 4 acros-
tichal rows; legs yellow; last sections of fourth vein subequal. Wash.*

................................................ Minettia univittata var.
Abdomen polished; thorax vittate with brown; scutellum largely or wholly
black .......................................................................................... 29

29. Abdomen black, base and tip yellow, each segment with lateral gray pruinose
spots; legs whitish; thorax with four vitæ; face whitish; hind cross vein
broadly brown; cross veins approximate. Nicaragua.

................................................ Minettia albipes Coquillett.
Abdomen black with hind margins of segments brownish and pollinose, fifth
segment with four gray pruinose spots; legs black except tibiae and most of
tarsi; thorax with three vitæ; cheeks with black spot. Nicaragua. (varia
Coquillett.) ................................................ Minettia variata Hendel.

30. Abdominal segments marked with four brown spots; femora not with patches
of setulæ; antennæ often black at base; cheeks with large blackish spot;

................................................ Minettia quadrilineata Loew.

Abdominal segments marked with many small brown setigerous spots; front
femora with a row of minute setulæ on distal part of flexor surface; antennæ
yellow. Me.*; Tenn., Wisc. Aldrich; Wash.* Minettia annulata sp. nov.

31. Face silvery pollinose on a brown ground; thorax and abdomen shining bluish
black, the pleuræ brownish; femora blackish, tibiae brownish, tarsi whitish.

5.3 mm. S. Am., W. Ind. .......... *Minettia argyrostoma* Wiedemann.

Otherwise; if the face is silvery the thorax is pollinose .......... 32

32. Arista pubescent or bare .................................................. 33

Arista plumose ................................................................. 36

33. Body very slender; black, thorax gray pruinose, legs brown, the posterior tibiae and tarsi yellow; antennæ yellow, arista bare; wings four times the length of the abdomen. N. H., Alaska.

.................................................. *Minettia brachystoma* Coquillett.

Third antennal joint partly blackish, arista pubescent .......... 34

34. Mesonotum trivittate; front with median brown vitta .......... 35

Mesonotum and scutellum uniformly dusted; front shining black except a yellow anterior fascia, face silvery-dusted; legs blackish. Wash.*

.................................................. *Minettia nigrans* sp. nov.

35. Face silvery white; center of scutellum brownish; abdomen black; femora blackish, tibiae brownish, their base yellow, tarsi more or less yellowish. St. Vincent.

.................................................. *Minettia exul* Williston.

Face with small brown spot each side of center; scutellum gray-pruinose;
3 dorsocentrals of which one is presutural, 2 acrostichals, 2 sternopleurals;
venter yellow, dorso of abdomen fuscous; base and middle ring of tibiae yellow. 2.5 mm. Ga.; Tenn. Aldrich ......... *Minettia vittigera* Coquillett.

36. Wings blackish at base; halteres black; thorax opaque black; abdomen black. 37

Root of wing not blackened; halteres yellow; thorax grayish pollinose or subshining .................................................. 38


.................................................. *Minettia longipennis* Fabricius.

38. Mesonotum very lightly gray pollinose, shining; 3 dorsocentrals, 4 acrostichals; head shining black. Eur., N. Am. (*frontalis* Loew).

.................................................. *Sapromyza hyalinata* Meigen.

Mesonotum and head opaque .................................................. 39

39. Mesonotum opaque gray pollinose, with lateral margins brownish; strikingly marked with brown setigerous spots; 2 dorsocentrals, 1 sternopleural; scutellum gray pruinose; abdomen polished black, somewhat brassy. Fla., Cuba, Aldrich.

.................................................. *Minettia cineracea* Coquillett.

Mesonotum not marked with brown spots ........ 40

40. Mesonotum vittate; abdomen largely or wholly black .......... 41

Mesonotum densely cinereous pruinose, not vittate .......... 42

41. Mesonotum blackish, almost opaque, with two narrow gray vittae, scutellum black, abdomen reddish terminally; head yellow; legs light yellow. W. Ind. .......... *Sapromyza puella* Williston.

Mesonotum opaque black, with four white-pollinose vittae; scutellum black with white-pollinose margin; abdomen thinly gray-pollinose, shining at apex; head black. W. Ind. .......... *Minettia albovittata* Loew.
42. Scutellum bordered with velvet black; palpi black; legs mostly yellow; 3 dorso- 
N. H., Vt.*, N. Y., N. J., Pa.*, Ill.*, Mont.*, Wyo.*, Id.*, Wash.*, (Mich., 
Wisc., Or., Tenn., Kans. Aldrich) (Fig. 14). *Minettia lupulina* Fabricius. 
Scutellum entirely gray-pollinose; palpi yellow......................43

43. Abdomen black, cinereous pruinose, base of segments 3, 4, 5, black-fasciate; 
head yellow, upper part of occiput and vertex black; legs mostly black. 
At most a brownish fascia on those segments; head mostly black in ground 
color.......................................................44

44. Legs yellow, front of femora, a basal ring and apex of tibiae sometimes darker; 
face yellowish with central U-shaped brown spot and facial grooves black. 
D. C.......................... *Minettia magna* Coquillett. 
Legs black; face uniformly overlaid with gray pollen. Mass.* 
........................................................................... *Minettia cana* sp. nov. 

45. Species whose wings are marked or spotted in some way or other........46
Species with wings not at all ornate, except sometimes at very base, or with 
uniform infuscation..........................................................63

46. One or both cross-veins alone with brown clouding; usually 4 dorsocentrals...47
Costal margin before submarginal cell as well as one or both cross-veins brown; 
generally 3 dorsocentrals....................................................51

2, 3 and 4 veins tipped with a brown dot, cross-veins clouded and third vein 
with one or two additional spots.........................................61
With numerous confluent black dots and an apical spot surrounded by eleven 
dots; opaque gray spotted with brown on head, thorax and abdomen; legs 
yellowish, femora with two rings, tibiae with one; halteres black. D. C., Tex. 
.............................................................................. *Minettia stictica* Loew.

47. Arista long-plumose; thorax with four brown vittae; face with black central 
spot; front with ocellar mark; base of antennae black; abdominal segments 
trimaculate; hind tibiae ringed. Nicaragua, Tex. 
.................................................................................. *Sapromyza picticornis* Coquillett. 

48. Thorax opaque, dusted; 3 dorsocentrals, 6 uniform acrostichals; arista nearly 
bare; front longer than broad; hairs of lower facial ridge large; mesopleurum 
setulose. Ill.*; Kans. Aldrich.................. *Minettia ordinaria* sp. nov. 
Thorax subshining; 4 dorsocentrals, 4 acrostichals, the middle rows setiform; 
mesopleurum bare............................................................ 49

49. Arista short-plumose or pubescent; thorax yellowish; face and front uniformly 
yellow; antennae yellow; abdomen not spotted; tibiae not ringed........48

50. Last ventral segment cº dilated or with two strong black teeth, lamelle 
rounded and black-pilose; abdominal segments margined with long setae; 
occular bristles closer together than width of front ocellus. Neb.; Mass.*, 
Vt.*, Ill.*, Ind.*, (Mich., Wisc., S. Dak., Kans. Aldrich) 
.................................................................................. *Sapromyza bispina* Loew.
Abdomen not furnished with spines; entire insect yellow; ocellar bristles separated more than the width of the front ocellus; \( \sigma \) lamellæ long and linear Mex., N. J., B. C.*; Cal. Aldrich...............Sapromyza innuba Giglio-Tos.

51. Mesonotum vittate; face maculate..................................................52
52. Mesonotum opaque yellow and with four vittæ; posterior tibiae with basal ring; fifth vein not brown....................53
53. Mesonotum brown and bivittate, pleuræ bivittate; tibiae more or less brown but not ringed; fifth vein brown; face with two oral spots; abdomen testaceous; the last two segments with medial vitta. S. Am., Mex.

...............................Sapromyza geminata Fabricius.

54. Scutellum with two black spots on margin; arista bare; abdomen with darkened incisures and median vitta. Mex., S. Am............Sapromyza bipunctata Say.
Scutellum unicolorous; arista pubescent to plumose; abdomen yellow to brown but not marked..............................55
55. Brown of costal margin arising over posterior cross-vein and confluent with cloud on this cross-vein; \( \sigma \) lamellæ large, black-hairy; second joint of hind tarsi black, in \( \sigma \) broad; arista short-pubescent; oral hairs more prominent than usual, the foremost almost bristle-like. Mass., D. C., N. J., Va., Fla., La.*..................Sapromyza umbrosa Loew.

Brown of costal margin arising near base of wing and usually separate from cloud on posterior cross-vein; second joint of hind tarsi rarely differentiated from the others.............................................................56
56. Brown of costal margin including the anterior cross-vein.......................57
57. Brown of costal margin separate from anterior cross-vein........................59
58. Costa broadly brown; second joint of hind tarsi not differentiated. N. Y.

...............................Sapromyza sheldoni Coquillett.
Brown of costa quite narrow at end of second vein; second joint of hind tarsi black, in \( \sigma \) somewhat widened. Mass.*........Sapromyza houghii Coquillett.

...............................Sapromyza latelimbata Macquart.
Brown of costa extending beyond fourth vein at apex of wing.................60
Psyche [April

60. Arista with scarcely perceptible pubescence. Ariz. ................................................ Sapromyza hubbardi Coquillett.
Arista short-plumose. Mex. ................................................ Sapromyza stata Giglio-Tos.

Third vein with two spots near middle of last section. ................................................ Sapromyza philadelphica Macquart.

Hind femora bare; four dorsocentrals; arista short-plumose. Pa., N. J., Cal.*, Wash. ..................... Sapromyza fraterna Loew.

63. Abdominal segments marked with regular series of spots, or vittate. .................. 64
Abdomen not seriately maculate. .................. 77

64. Face with brown or black spot in middle above oral margin; usually scutellum bimaculate also. .................. 65
Face yellowish, not spotted; usually the scutellum not maculate. .................. 68

65. Basal joints of antennae black; pleurae bimaculate; thorax with a narrow median vitta; 2 dorsocentrals, no acrostichals, one sternopleural; middle tibiae without preapical bristle; segments 3, 4, 5 of abdomen bimaculate, a dorsal vitta on last three segments. Fla. ........................ Sapromyza slossonse Coquillett.
Antennae entirely yellowish; pleurae not maculate. .................. 66

66. Thorax quadrivittate; hind tibiae with basal ring; pleurae bivittate; the flat disc of the scutellum with two indefinite broad brown marks; arista short-plumose; upper side of abdominal segments trimaculate; palpi black; 3 dorsocentrals, 6 acrostichals. Tex., W. Ind., Brazil, N. J.; Mass.*, La.*; Kans. Aldrich .................. Minettia macula Loew.
Thorax not clearly vittate; tibiae not ringed; pleurae not vittate; scutellum bimaculate. .................. 67

67. Segments 2, 3, and 4 each with two spots, c with median vitta on terminal segments also. W. Ind. ........................ Sapromyza octopunctata Wiedemann.
Abdomen with series of median and lateral spots; arista short-pubescent. W. Ind. ........................ Sapromyza ingrata Williston.

68. Mesonotum vittate. .................. 69
Mesonotum not vittate; scutellum not maculate. .................. 72

69. Mesonotum with broad median vitta; palpi yellow; arista plumose; tibiae not ringed; hind femora tipped with two small dark spots; abdominal spots not clearly defined, sometimes forming a basal fascia on the segments. Cal.* ........................ Minettia univittata Coquillett.
Mesonotum with lateral vitta; palpi blackish; arista short-pubescent. .................. 70

70. Hind tibiae with proximal ring; scutellum typically bimaculate; mesonotum quadrivittate; 4 dorsocentrals, 2 acrostichals, 2 sternopleurals; antennae red. ........................ Sapromyza venusta Williston.
Tibiae not ringed; scutellum not maculate; notum shining, with three broad vittae, the median geminate; third antennal joint black; abdominal segments more or less trimaculate. St. Vinc. ........................ Sapromyza venusta Williston.

72. Abdominal segments fasciate, their marginal setae strong

73. Abdominal segments spotted

74. Abdominal segments with median spots only

75. Last four segments of abdomen with both lateral and median spots; palpi yellow; mesonotum pruinose, scutellum shining. Nicaragua.

76. Mesonotum little shining; arista pubescent; wings gray hyaline, penultimate section of fourth vein but little more than one-half the ultimate; front narrow; palpi black at tip. W. Ind. Sapromyza triseriata Coquillett.

77. Face centrally marked with a velvet-black spot; front with a black ocellar spot; arista pubescent; notum thinly gray-pruinose, 3 dorsocentrals, 4 acrostichals; length 2.5 mm. N. H. Sapromyza puncticeps Coquillett.

78. The ventral spines very large, broad and conspicuous; \( \delta \) lamellae rounded, black-pilose. (connexa Say is probably the \( \phi \)) Mass. to Kans. Sapromyza bispina Loew.

79. The ventral spines slender; \( \delta \) lamellae minute, short black-pilose. Neb., Mex. Sapromyza tenusipina Loew.
83. Shining luteous species with black palpi and a black ocellar spot; mesonotum with two lighter vittae. Ga., Fla., N. J., N. Y. Sapromyza resinosa Wiedemann. Otherwise. .................................................. 84

84. Palpi brown; abdomen brown, the segments more or less fasciate on hind border and with long bristle-like hairs; front yellow. Mex. Minettia vinnula Giglio-Tos. Palpi and abdomen yellow. ............................. 85

85. Arista plumose; antennae yellow. .................................................. 86

86. Thorax dull with yellow pruinosity; ocellar bristles and thoracic setulae strong; 2 and 3 segments of abdomen with long bristles near hind margin, especially on sides; 3, rarely 4, dorsocentrals, 6 acrostichals. .................................................. 87

87. Arista rather long-plumose; wings nearly hyaline; front with faint yellow fascia bordered with brown. Cal.*, Or.*, Wash.* Minettia faveola Coquillett. Arista short-plumose; wings strongly infumated; front not fasciate. Cal. Aldrich. Minettia fumipennis sp. nov. ............................. 88

88. Front as broad as long; arista long-plumose on upper side. Fla., Ga., W. Ind.; Tenn. Aldrich. Sapromyza sordida Wiedemann, Williston. Front one-third broader than long; arista very long-plumose. Ga., La.* Sapromyza amida Walker. ............................. 89

89. Front with central black spot; 4 dorsocentrals; third antennal joint twice as long as deep, the upper side excised. Wyo.* Sapromyza cyclops sp. nov. Front yellow; 3 dorsocentrals; third antennal joint short-ovate. Id.*, Wash.* (Fig. 13) Sapromyza monticola sp. nov. ............................. 90

90. Mesonotum with narrow vittae; front quadrate. .................................................. 91

91. Arista plumose; thorax brownish, with two narrow grayish stripes; antennae black; scutellum and base of abdomen black. W. Ind. Sapromyza puella Williston. Arista pubescent; thorax reddish, with four slender brown stripes; antennae red, tipped with brown. W. Ind. Sapromyza lineata Williston. ............................. 92

92. Third antennal joint black; arista short-pubescent; palpi mostly black; thorax shining yellow with three broad brownish stripes, the middle one obsoletely geminate. W. Ind. Sapromyza venusta Williston. Antennae yellow, the arista long-plumose; palpi yellow; thorax opaque, univittate or the disc dark. .................................................. 93

93. Mesonotum with a median broad dark stripe, at least the humeri yellow; hind femora tipped with minute shining black dot on each side; 3 or 4 dorsocentrals, 4 acrostichals; front yellow. Cal.* Minettia univittata Coquillett. Disc of mesonotum dark; front brown on upper half. ............................. 94
94. Face with a U-shaped brown mark flanked by an oblique stripe; pleurae not vittate; femora striped with gray in front, tibiae with a basal ring. D.C. ............................................. Minettia magna Coquillett.

Face yellow; pleurae vittate above; legs yellow. Kans. .................................................. Minettia crevecourii Coquillett.

Caliope nigerrima sp. nov.

♂. Length 3 mm. Entirely black, the halteres, calypteres and wings alone yellowish. Front shining, with slight coppery hue, slightly broader than long, the ocellar bristles approximate: face in profile convex only near the antennæ, broadly angulate at the middle; center and sides of the face white-pruinose; lower occiput white-pruinose. Third antennal joint elongate-oval, twice as long as wide, the black arista microscopically pubescent. Palpi linear, black-hairy. Mesonotum shining greenish black, thinly coated with olivaceous pollen; four dorsocentrals, acrostichals very sparse, apical scutellars divergent, two sternopleurals. Abdomen shining, slightly metallic. Wings hyaline, with yellowish tinge, veins yellow, last two sections of the fourth vein nearly one to two.

A single specimen taken by Professor Aldrich at Pacific Grove, California, May 6, 1906.

The profile of the face indicates that this species is related to quadrisetosa and elisæ, but the uniformly black color and the subbare arista are different.

Caliope elisæ Meigen.

Meigen's original description calls for a species with white arista and red antennæ. Zetterstedt states that the arista is white and the tip of the antenna is brown. Schiner says that the infuscation of the antenna is variable and that the arista is light brown; while Rondani and Becker give the arista as brown.

This species was included in the North American fauna on Walker's authority. I have a series of specimens from Mount Constitution, on Orcas Island, Washington, that agree with the descriptions of elisæ, and may or may not be the same as the European species. In the absence of typical specimens of elisæ it would be premature either to describe them as new or to vouch their identity. They have the face but little bulbous beneath the antennæ and below the swelling it is excised in profile. This character is quite different from the evenly convex face of cylindricornis, with which species elisæ is repeatedly compared. The third antennal joint is dusky, four times as long as deep, its upper and lower edges parallel, so that before the tip it is not smaller
Psyche

than in the middle. The face is pollinose only along the orbits and not at all in the middle beneath the antennae. The front legs are the darkest, their knees only are broadly yellowish.

Minettia nigrans sp. nov.

♀. Length 4 mm. Shining black, with pale wings. Occiput shining black; front one-fourth broader than long, shining black with bluish tinge, especially on the broad paraorbits, the front edge above the antennae yellow, ocellar bristles moderate, rather distant; face not convex, uniformly white-pruinose; cheeks white-pruinose except the narrow shining oral margin; proboscis and palpi black. Thorax highly shining black, but the disc of the mesonotum dusted with gray, scutellum concolorous; three postsutural dorsocentrals, four rows of acrostichals, two sternopleurals; mesopleuræ with weak setulae; scutellar bristles long, convergent. Abdomen shining black, the marginal setæ about two-thirds the length of the segments. Front legs entirely black, middle femora black except the knees, their tibiae and tarsi blackish, hind femora black, the tibiae and tarsi blackish, hind tibiae without preapical bristle. Halteres white. Wings large, clear hyaline, veins pale, the last two sections of fourth vein proportioned two to five.

One specimen from Monroe, Washington; May 20, 1908.

Minettia cana sp. nov.

Like lupulina but the scutellum not bordered with black, palpi yellow, face uniformly gray-pruinose, and front lacking the conspicuous yellow fascia: like glauca but the abdominal segments not spotted and the front differently marked.

♀. Length 4 mm. Head and thorax black, thickly covered with blue-gray pollen. Middle of front with a broad brown fascia and orbits with a triangular brown spot at the level of the antennæ. Above the base of the antennæ the front shows but little trace of yellow ground-color, but is blue-gray pruinose like the face, vertex and occiput. Ocellar bristles distant, behind them six cruciatesetulae. Antennæ reddish brown, the third joint ovate, with short-plumose brown arista. Palpi reddish yellow; proboscis black. Three dorsocentrals, four rows of acrostichals, the acrostichals and the other setulae strong, metapleuræ setulose, two sternopleurals: mesonotum not vittate, scutellum uniformly cinereous above. Abdomen entirely yellowish, the segments not margined with long setæ. Legs blackish, the front legs black, front femora cinereous, knees narrowly yellowish, posterior tibiae with base and a broad medial ring somewhat paler, hind tibiae without preapical bristle. Halteres yellow. Wings uniformly with yellow tinge, as in lupulina; the last two sections of the fourth vein equal.

One specimen received with a lot of lupulina from Dr. Garry deN. Hough, who took it at New Bedford, Massachusetts, on Memorial Day, about twelve years ago.
Minetteria annulata sp. nov.

♂ and ♀. Length 3 mm. Very close to quadrilineata Lw., in size, structure, chaetotaxy, color, and variations in color, but distinguishable by its different sexual structures, the setulae of the front femora, and the maculation of the abdomen.

Ground color mostly blackish, although sometimes quite testaceeous, overlaid on head and thorax with dense cinereous pollen. Front large, a little broader than long, with two well-defined darker vittae extending from the antennae to the level of the posterior ocelli, elsewhere cinereous; ocellar bristles of moderate length and well separated from each other; face cinereous-white, the ground color beneath the antennae sometimes more or less blackish, along the orbits whitish; below the eyes the cheeks are marked with a large darker spot. Antennae yellowish, the third joint ovate; arista short-pubescent. Palpi black. Mesonotum blackish to testaceous, with alternating stripes, five cinereous and four fuscous, with four strong dorsocentral bristles, of which one is presutural, with but two definite rows of minute acrostichals, one intraalar; mesopleuræ with scattered short hairs; two sternopleural bristles: scutellum rather flat, cinereous except for the continuation on its disc of the median fuscous vittæ of the notum. Abdomen subshining, brownish to yellow, with numerous small brownish mottlings, most distinct at the bases of the submarginal rows of bristles, the mottlings toward the base of the segments sometimes confluent to form vague resemblances to the maculations of quadrilineata; hind margins of segments paler; marginal bristles nearly as long as the segments; hypopygium narrowly and deeply cleft, the two sides of the emargination sharply projecting ventrally as a pair of finger-like processes, ventrally at the base of the hypopygium there is another pair of black acuminate recurved processes. Femora brown to yellow but the underside of each with a well-defined dark spot near the distal third, the spot of the front pair provided in both sexes with a row of about ten microscopic close-set black teeth along the inner edge: tibiae with basal dark ring opposite the femoral mark; tarsi dull yellowish. Halteres whitish. Wings uniformly subhyaline, the last two sections of the fourth vein proportioned three to five.

Nine specimens are before me from East Eddington, Maine (Hough), Price County, Wisconsin (C. F. Baker), Knoxville, Tennessee (Aldrich collection), and Mount Constitution, Washington, July 3, 1908.

Loew's species quadrilineata, well represented in Professor Aldrich's collection from Pennsylvania, Michigan, Tennessee, and Wisconsin, differs as follows: The stouter hypopygium is broadly emarginate, the finger-like prolongations of the sides of the excision dark in color and the basal pair of black acuminate processes straight and approximate. Unless the hypopygium is open these structures are not to be seen. The femora usually lack the distal black spot and always are devoid of the row of
denticles. Moreover, the maculation of the abdominal segments is not in the form of small setigerous spots.

**Minettia nubila** sp. nov.

♀. Length 4 mm. Body with antennae, mouth-parts, legs and halteres entirely flavous, wings hyaline with yellowish tinge, the cross-veins broadly blackish. Third antennal joint oval, one-half longer than deep, the black arista moderately long-plumose, the hairs of the lower side nearly as long as the upper. Front slightly longer than broad, not shining; ocellar bristles long, located on a line with the posterior ocelli but in back of the front ocellus; hairs of lower facial ridge minute; postverticals strong. Thorax lightly dusted, subshining, not vittate, thoracic bristles relatively strong, four dorsocentrals, the foremost much in front of suture, four rows of acrostichals, the middle rows setiform, two sternopleurals, scutellar bristles convergent. All the abdominal segments but the first with submarginal rows of bristle-like hairs. Brown cloud of anterior cross-vein extending along the third and fourth veins to form an H-shaped spot, brown of posterior cross-vein similarly extending on the fourth vein, but not on the fifth, so that its outline is narrowly triangular.

One specimen, collected near Chicago, Illinois, August 10, 1901. Another typical specimen in Professor Aldrich’s collection is labeled Lawrence, Kansas.

VAR. A female specimen from Hood River, Oregon, in Professor Aldrich’s collection differs in having the bristles reduced in size. The genitalia are small, with the lamellae of the ovipositor blackish and densely dark-pilose. The front is relatively a little broader and the clouds of the cross-veins are less distinct.

**Minettia ordinaria** sp. nov.

♂. Length 4 mm. Dull testaceous including the appendages; wings hyaline, the cross-veins with faint clouds. Third antennal joint broadly oval, the black arista with very short pubescence. Front slightly longer than broad, opaque with reddish pollen, except that the orbital bristles arise from spots of yellowish-gray pollen. Ocellar bristles moderate in length, spaced apart a little more than the width of the front ocellus, the lesser ocellar bristles distinct; occipital setulae and those of lower facial ridge conspicuous, the foremost like an oral vibrissa. Thorax opaque, not vittate; setulae of thorax well developed, forming six acrostichal rows; mesopleuræ with numerous setulae in addition to the usual macrochaeta; three dorsocentrals, all postsutural. Marginal setæ of third and fourth abdominal segments as long as the segments: hypopygium, small, the lamellæ retracted. Tibial spurs of moderate length. Penultimate section of fourth vein two-thirds the length of the ultimate section.

One specimen, collected in 1897 at Chicago, Illinois, and another in Professor Aldrich’s collection taken at Lawrence, Kansas.
Minettia fumipennis sp. nov.

♂. Length 5 mm. A stout and large species easily recognized by its strongly infumated wings. Very close to flavoeola Coquillett, differing only in the dark wings, more protruberant center of the face and shorter plumosity of the arista. In flavoeola the hairs of the upper side of the arista are as long as the depth of the third antennal joint and also conspicuously longer than the hairs below. In fumipennis the hairs of both sides of the arista are of the same length and are less than one-half the depth of the third antennal joint, i.e. short-plumose. The infuscation of the wings is strongest in front: along the hind border the wings are subhyaline. Chaetotaxy and structure as in flavoeola. Color testaceous.

One specimen in Professor Aldrich’s collection, taken near Stanford University, California, 21 October, 1905.

Sapromyza cyclops sp. nov.

♀. Length 4 mm. Testaceous yellow throughout, except a shining black spot in center of front, and outer one-half of third antennal joint black. Front one-third broader than long, shining; ocellar bristles strong and closely approximate behind the front ocellus; cheeks two-thirds the eye-height; face flat, the central part sericeous. Third antennal joint nearly twice as long as the width in front of the arista, its upper edge concave so that the upper apical corner is rounded-rectangular; arista microscopically pubescent. Thorax lightly yellow-tomentose, four postsutural dorsocentrals, the rows diverging posteriorly so as to meet a moderately-sized intraalar bristle; six rows of scattered acrostichals; two sternopleurals. The abdomen of the dried specimen is somewhat brownish, lightly pollinose, the last segment shining. Femora with the usual bristles of moderate size. Wings hyaline, with yellowish tinge, veins yellow, the posterior cross-vein darker; anterior cross-vein a little beyond the middle of the discal cell, opposite the end of the first vein; penultimate section of the fourth vein four-fifths as long as the ultimate, last section of fifth vein one-half the length of the posterior cross vein.

The distinguishing characteristics of this species are the yellow color, black-spotted front, black-tipped antennae with excised antennal joint and nearly bare arista, and clear wings.

One specimen collected by Dr. W. M. Wheeler at Dinwiddie Creek, Wyoming, September 5, 1895.

Sapromyza monticola sp. nov. (fig. 13)

♂ ♀. Length 3.5 mm. Entirely testaceous, except the tip of the antennae. Front about one-fourth broader than long, fine-hairy in front, shining, a line connecting the front-orbital bristles would meet the base of the antenna; ocellar bristles spaced apart the width of the front ocellus just behind which they are located, the lesser ocellar bristles minute; face receding, but the clypeus prominent,
in color pale yellow, neither shining nor sericeous, the central part of the face is twice as broad as the sides: cheeks scarcely one-half the eye-height, the lower edge with minute hairs: palpi and proboscis yellow, rarely the tip of the palpi blackened; Third antennal joint oval, one-half longer than broad, the outer third to half blackened, the arista microscopically pubescent.

Mesonotum shining, very thinly yellow-pollinose, three postsutural dicroacentrals, four definite rows of acrostichals; one intraalar, apical scutellars convergent, usually but one pronounced sternopleural, mesopleurse not setulose. Abdomen shining, no long marginal bristles, hypopygium small, compressed. Front tarsi sometimes a little dusky. Wings with decided yellowish tinge, the last section of the fourth vein nearly two times the penultimate section, the last section of the fifth vein nearly as long as the posterior cross vein.

Seventeen males and twelve females. One specimen from Bellingham, Washington, two from Tacoma, all the others from Moscow Mt., Idaho; June to August. One female is a variant in having the anterior cross vein located further towards the end of the wing, so that the penultimate section of the fourth vein is about one-third the ultimate.

Genus Camptoprosopella Hendel.

1. Mesonotum and pleurae each with a median dark vitta; wings strongly infumated.
   Mex., N. Mex., Col.* (melanoptera Hendel) ............... dolorosa Williston.
   Thorax not or but faintly vittate; wings nearly hyaline ................. 2
2. Arista densely plumose, third antennal joint somewhat tapering, three times as long as broad. N. J., Fla., Ga.*, N. Mex., Peru; S. Dak. Aldrich. (xanthoptera Hendel) (fig. 9).

Arista more loosely plumose, the third antennal joint oblong-ovate, less than three times as long as broad. Me., Ont.*, Mass., N. Y., N. J.*, Pa.*, Ind.*, Ill.*, Wisc., La.*, Ala.*, Tex.*, N. Mex., Col.*, Wyo.*, Cal.*, Mex., Nicaragua,* W. Ind.*, S. Am.; (N. H., Mich., S. Dak., Ia., Kans., Vera Cruz, Oaxaca, Puebla, Cuba, Aldrich) (cincta Loew; plumata Wulp; ocellaris Townsend; claripennis Coquillet) ........................................ vulgaris Fitch.

Mr. Aldrich has informed me that Mr. Coquillett corrected the name claripennis to claripennis in the separata he distributed, and Mr. C. W. Johnson, who has recently examined his type specimen of this species in the National Museum, writes that it is verticalis, under which name he submitted the specimen. The error in describing the species as new under the name claripennis was occasioned by Mr. Coquillett’s misidentification of the dark colored dolorosa as verticalis. So writes Mr. Johnson.
Genus Chaetocelia Giglio-Tos.

1. Wings brown except most of second posterior cell and the anal angle which are hyaline, brown of center of wing without clear spots; face not or but feebly maculate; thorax brown punctate. Mex. ................. palans Giglio-Tos. Brown of center of wings with clear spots; face with two evident black spots . . 2

2. The larger part of the second posterior cell and of the anal angle brown, disc of wings with three clear spots, two on fourth vein and one on posterior cross-vein. Mex., S. Am. (fig. 3) ......................... distinctissima Schiner. The larger part of the second posterior cell and of the anal angle hyaline. . . 3

3. The brown area of the wings between the second and fifth veins with many irregular clear spots; abdominal segments not margined with setigerous black spots. Mex. ......................................... caloptera Hendel. Wings with two small round clear spots near tip of third vein and another above posterior cross-vein, near which spots the brown is more intensive, discal cell largely hyaline. W. Ind. ......................... angustipennis Williston.

Genus Griphoneura Schiner.

Blackish, shining, thorax not vittate; antennae yellowish, arista plumose; face white-pruinose; legs black, the tibiae and tarsi brownish; wings yellowish with the apical third brown, more intensive in front. 5 mm. Mex., S. Am. (fig. 5) ........................................ imbuta Wiedemann.

Genus Procrta Hendel.

Shining yellow, abdomen black; costal half of wing brown, sharply extending in several places into the hyaline portion. Mex. (fig. 4) ................ pectinata Hendel. Entirely shining yellow, the small ocellar triangle and the tip of the antennae alone black; brown of wings including the costal portion, ends of the veins, and the hind cross-vein. Costa Rica ......................... sigma Hendel.

Genus Trigonometopus Macquart.

1. Wings hyaline, cross-veins bordered with brown, third vein with two brown spots; yellow, mesonotum quadrivittate and scutellum brown. Col. ........................................... punctipennis Coquillett. No round wing-spots ........................................... 2

2. Costal margin narrowly brown, cross veins slightly clouded; reddish, mesonotum darker laterally. W. Ind. (fig. 8) .................. rotundicornis Williston. Wings with vitta including third and fourth veins and a cloud at end of second vein; yellow, thorax quadrivittate with brown, scutellum brown except a median line. Ga. .......................... vittatus Loew.

Genus Physogenia Macquart.

1. With sub-alar round velvet-black spot ........................................... 2

Without such mark on pleuræ; testaceous, thorax obscurely brown-vittate. Cal. ........................................... planiscuta Thomson.
2. Face translucent yellow; thorax weakly bivittate. S. Am., Mex.* (urina Giglio-Tos) ................................................. ferruginea Schiner.
Face trimaculate; thorax quadrivittate. W. Ind.*, S. Am.; Vera Cruz, Aldrich (obscuripennis Bigot, variegata Loew, nasalis Thomson) (fig. 6)
.................................................. vittata Macquart.

This genus is easily recognized by the greatly swollen and translucent face. The species are reddish yellow in color. The brief description of Lauxania planiscuta by Thomson brings to mind the other species of Physogena: the testaceous color, the convex protuberant glabrous face, the position of the anterior cross vein much beyond the end of the first vein and the vittate thorax are rather distinctive characters. Possibly it is a synonym of ferruginea. Lauxania nasalis Thomson is certainly the same as vittata Fabricius. The erect dark stripe of the pleura, surmounted by a velvety black spot, the black dots above the antennae, and the greatly swollen face indicate the synonymy.

Genus Pachycerina Macquart.

The North American species previously assigned to Pachycerina are to be found in Camptoprosopella. The present species differs from the type of Pachycerina, the European seticornis Fallen, in the following structural characters which hardly have generic value: The occiput is flattened instead of convex, the face is gently convex instead of bulbous, the anterior fronto-orbital bristles are more strongly inclinate, the third antennal joint is elongate-linear and the short arista is loosely plumose, instead of the antennae tapering and arista with appressed pubescence. There are three dorsocentral bristles, six distinct rows of acrostichals, one humeral, one presutural, two notopleural, one supraalar, two postalar, one pair prescutellar, four scutellar, the apical pair parallel, one mesopleural, one sternopleural and one prothoracic, all but the last two directed backwards, the sternopleural and prothoracic bristles directed upwards. Seticornis has four dorsocentrales and two rows of acrostichals, but the other bristles are arranged as in the following species.

From Camptoprosopella the present species differs in the convex face and narrower facial orbits. In Camptoprosopella the sides of the face are broad and join the oral margin so that the central portion of the face takes no part in the formation of the cheeks.
Pachycerina ornata sp. nov. (fig. 7)

9. Length 4 mm. Largely testaceous, the lower part of the head paler yellow, ocellar prominence and a large round spot in center of face shining black. Base of antennae reddish, becoming black beyond the arista; arista reaching but two-thirds the length of the third joint, loosely plumose, long- above and short-plumose below. Oral margin retracted; proboscis yellow, palpi black. Thorax with the following markings: humeri, scutellum and posterior half of mesopleure whitish yellow; two transverse bands blackish, one in front of scutellum including the pteropleure, and another including the front half of the mesopleure continuing across the notopleural suture to the mesonotal suture and then broadly interrupted across the disc of the mesonotum. Abdominal segments, except the first, with broad sub-basal black fasciae, interrupted along the median line. Legs yellow, front tarsi dusky, all the tibiae with preapical bristle. Calypteres and fringe yellow, but a dusky spot on the margin. Halteres yellow. Wings hyaline, with a very faint yellowish tinge: anterior cross-vein beyond the end of the first veiny the last two sections of the fourth vein subequal; last section of fifth vein shorter than posterior cross vein and one-sixth the length of the preceding section.

Two specimens from Professor Aldrich’s collection, received from Mr. Crawford, who collected them at Dona Marcia, Chiapas, Mexico.

Genus Lonchea Fallen.

1. Arista plumose; third antennal joint short, testaceous; legs piceous, tarsi testaceous. Mex.......................................................... discrepans Walker.
   Arista bare or short-pubescent........................................2

2. Front with a median reddish vitta; venter yellowish, with a broad black stripe; legs brown. W. Ind., Ga.......................... glaberrima Wiedemann.
   Front and venter not red or yellow....................................3

3. Antennae not reaching the oral margin..................................4
   Antennae reaching or surpassing the oral margin.....................9

4. Legs entirely black or blackish........................................5
   Metatarsi yellow..........................................................6

5. Metallic black, scutellum more green, abdomen deep metallic green. 1.5 mm. W. Ind.......................................................... orchidearum Townsend.
   Shining black, scarcely at all metallic, abdomen thinly covered with brownish dust; calypteres with brown cilia. 3 mm. Eur., Alaska, Wash.*.......................................................... deutschi Zetterstedt.

6. Cheeks bristly; front femora strongly setose beneath; two basal joints of tarsi yellow; calypteres yellow; head, thorax and abdomen deep metallic green; front of 9 two times as long as wide, its sides parallel. St. Vinc.; Cuba, Aldrich.......................................................... brevicornis Williston.
   Cheeks hairy, at most with one or two bristles in front; legs not with stout bristles...............................7
7. Calypteres fringed with dusky hairs; lunule bare; base of tarsi alone yellow; arista bare. .......................................................... 8

Calypteres yellow, with yellow fringe; lunule hairy; tarsi largely or wholly yellow; arista microscopically pubescent; third antennal joint large, longer than broad; front of ♀ slightly narrowed anteriorly; epistome projecting. Eur., La.*; Id., Aldrich. ...................................................... laticornis Meigen.

8. Third antennal joint orbicular, not longer than broad; front broadly quadrate, not at all narrowed anteriorly, the lunula broadly arched; face retreating, the epistome retracted, the face very wide, its sides white-pruinose; tarsi noticeably flattened. Eur.; Id. Aldrich. ...................................................... parvicornis Zetterstedt.

Third antennal joint longer than broad; front of ♀ narrowed anteriorly, the lunula highly arched; epistome projecting; side of face less pruinose and face not unusually wide. Eur.; Id. Aldrich, Mont.*. ............... viridana Meigen.

9. Legs entirely black or blackish ........................................... 10
   At least base of tarsi yellowish ........................................... 13

   Head and thorax jet black, or at least but little metallic; antennae reaching the oral margin. .................................................. 11

11. Vertex opaque, with three shining spots .................................. 12

   Anterior cross-vein before the apex of the auxiliary vein; calypteres fuscous. Eur., Alaska. ...................................................... hyalipennis Zetterstedt.

13. Calypteres with white cilia .............................................. 14
   Calypteres with blackish cilia .......................................... 15

   Thorax and abdomen more or less metallic blue-violet or bluish green; face entirely white-pruinose, nearly flat in profile; wings hyaline; tarsi yellow except the tip brown. Mass., N. H., N. Y., N. J., Pa., Ga., La.*, Ind., Ill.*, S. Dak.*, Ariz., Wash.*. Mex. [polita Say (1830); caryota Walker (1849) rufitarsis Macquart (1851)] (fig. 15)  .......... polita Say (1830)

15. Thorax pilose; front shining black. Eur., Ga., Id.* .......... tarsata Fallen.

Genus Palloptera Fallen.

1. Cross-veins not bordered with brown; thorax gray-pollinose; auxiliary and first vein and apex of wing brownish. Alaska, Wash.* (fig. 21) .......................................................... terminalis Loew.
   Cross-veins bordered with brown; thorax and abdomen yellowish .......... 2

2. First vein wholly included in the brown color, costa wholly or almost entirely brown .......................................................... 8
First and auxiliary veins brown only at costa, the base and middle of costa not brown, wing also tipped with brown. Eur.*, N. H. (fig. 17)

3. Front half of wing and posterior cross vein broadly brown. .......................... arcuata Fallen.

Wings mostly hyaline, the submarginal cell clear except at tip. Alaska, Wash.*


6. Head, thorax and abdomen shining yellow; brown of wings diffusing into hyaline portion. ............................... superba Loew.

7. Abdomen setulose, but with strong marginal bristles arising from black spots; acrostichals dense. Me. ............................... similis Johnson.

Palloptera setosa sp. nov.

♂♀. Length 3.5 mm. Pale cinereous in color covered especially on occiput and mesonotum with whitish gray pruinosity; anterior portion of front, face, cheeks, scutellum, pleuræ, abdomen, halteres, calypteres and legs becoming yellowish; base of antennæ and mouth-parts testaceus; outer portion of third antennal joint infuscated. Arista dusky, pubescent. Four dorsocentrales, one of them presutural, four rows of sparse delicate acrostichals. Abdominal setæ arising from minute black dots, rather robust, the marginal ones a little stronger; fifth abdominal segment elongate. Anterior half of wing, apex and broad cloud about posterior cross vein infumated, a small clear costal spot just before the end of the auxiliary vein, the brown surrounding the cross-veins more saturate, remainder of wings clear hyaline; posterior cross-vein at right angles to the fifth vein; last section of fourth vein arched.

Two males and one female collected by Professor Aldrich at Battle Creek, Michigan. The female has a slender hyaline stripe extending down the middle of much of the submarginal cell.

**Explanation of Plate 3.**

1. Poecilomyia (new genus of Sciomyzidae) decoru Loew.
2. Poecilomyia decoru Loew. Front and face.
5. Griphoneura imbuta Wiedemann. From Hendel.
6. Physojenia viitata Macquart. Profile of head.
7. Pachyserna ornata, new species. Profile of head.
8. Trigonometopus rotundicornis Williston. Profile, from Williston.
Psyche

11. *Xangelina nigra* Williston. Profile of head, from Williston.
15. *Lonchaea polita* Say. Profile of head.

BOOK NOTICE.


This little book is without a parallel in so far as a concise and scientific treatment of economic entomology is concerned. It is built on a plan of three parts. Into the first part O'Kane gathers material which deals with the structure, habits and classification of insects. Some of the subjects in this part are very lightly touched, but enough of insect adaptations and habits are given to arouse an interest in people engaged primarily in the control of noxious forms. The second part deals with various methods of control such as crop rotation and mechanical means involving banding, screening and trapping. Many insecticides for biting and sucking insects are given as well as repellants and fumigants. This is followed by three illustrated chapters on spray machinery and its uses. Part three is entitled "Injurious Insects" and constitutes the bulk of the book. This section deals with insect pests of garden and field crops and with those infesting orchards and small fruits, followed by a chapter on household pests and one on those of domestic animals. Each economic species is treated separately, and with the aid of the excellent photographs which accompany each description, one is able to recognize the insect in question. The life history and habits which are naturally bound up with the injury inflicted to plant or animal are discussed in a clear and concise manner. If a method of control is known, it invariably follows.

O'Kane's conciseness in exposition and consistency in treatment are two of the book's most prominent features. The sentence construction in places is not as good as it might be, but this occasional weakness is not such as to cause any great difficulty. The photographs are another feature worthy of mention for they are well chosen and usually illustrate the insect, its stages and its destructive work, all of which should aid materially in identification.

The book is of such a nature that few would care to read it through from cover to cover, but it will undoubtedly prove to be an invaluable handy reference work to both entomologist and layman.

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Bussey Institution.