lights. In the meantime, however, we must rely upon such remedies as tests have proved worthy of recommendation.*

A PARTIAL KEY TO SPECIES OF THE GENUS AGROMYZA (DIPTERA).

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It is my intention to publish keys to species groups of the genus *Agromyza* as aids to the identification of the numerous forms which have been described or recorded from North America. Up to the present time I have seen nearly ninety species of the genus from the United States. In order to make it possible for a serial magazine to present keys to this large number of forms I have divided the genus into arbitrary groups, the characters used in these divisions being enumerated in each instalment on the key.

The present key includes all species which have the *scutellum conspicuously yellow* either entirely or in part, *contrasting strikingly with the disc of the thorax*. The halteres in all the species are pale.

1. Antennæ with at least the entire third joint black (cf. *variata*).....2
- Antennæ entirely yellow or at most with the third joint partly infuscated.....5
2. Frons black, only frontal lunule yellow. Food-plant unknown. Mexico; New Mexico.....*xanthophora* Schiner.
- Orbits black, interfrontalia reddish yellow; very small species (.75 mm.); body with exception of scutellum black; legs black, only knees yellow. Food-plant unknown. Wash.; Ill.....*interfrontalis* Melander.
- Frons yellow, ocellar region and sometimes orbits partly black; body with more than scutellum yellow.....3
3. Palpi and legs black. Food-plant unknown.
- Texas.....*quadrissetosa* Malloch.
- Palpi and greater portion of legs yellow.....4
4. Wings clear. Food-plant unknown. Wash.; Alaska; B.C.; Ill.....(*longispinosa* Malloch) *pacifica* Melander.

*For further reference on this subject see Stingerland's "Trap-lanterns or Moth-catchers." Bull. No. 202, Ithaca, N.Y., 1902.
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- Wings with a conspicuous infuscation along costa from apex of first vein to apex of second. Food-plant unknown. Ill.....*fumicosta* Malloch.
5. Mesonotum with the disc broadly black, the yellow of the lateral margins not carried entirely across on posterior margin.....6
- Mesonotum with a large black or reddish mark on disc, the yellow of lateral margins connected along posterior margin, and usually a large subtriangular or subquadrate yellow mark on middle of posterior portion of disc.....10
6. Mesonotum with disc bare except for the dorso-central bristles.....7
- Mesonotum with numerous short setulose hairs on disc in addition to the dorso-central bristles.....8
7. Mesonotum with 2 pairs of dorso-central bristles; cheek nearly as high as eye; last section of fifth vein twice as long as penultimate section. Food-plant unknown. Idaho.....*lima* Melander.
- Mesonotum with 4 pairs of dorso-central bristles; cheek about one-third as high as eye; last section of fifth vein four times as long as penultimate section. Food-plant unknown. Arizona.....*discalis* Malloch.
8. Orbits glossy black; antennæ very small; pleuræ and abdomen almost entirely glossy black. Food-plant unknown. Ill.....*deceptiva*, sp. n.
- Orbits yellow; antennæ of moderate size; pleuræ and abdomen largely yellow.....9
- 9 Small species, .75-1.5 mm. in length; last section of fifth vein $2\frac{1}{2}$ -3 times as long as penultimate section. Larvæ in serpentine mincs in leaves of various legumes, cabbage, cotton, nasturtium, etc. U. S.; Canada; Europe.....*pusilla* Meigen.
- Larger species, 2-2.5 mm. in length; last section of fifth vein $1\frac{1}{2}$ -2 times as long as penultimate section. Food-plant unknown. Cal.; Arizona; Europe.....*scutellata* Fallen.
10. Third antennal joint largely blackened; palpi blackened at apices. Food-plant unknown. Maine; Ill.....*varicta* Malloch.

- Third antennal joint and palpi not blackened, rarely the former brownish at insertion of arista.....11
11. At least 4 more or less regular rows of setulose hairs between the dorso-central bristles on mesonotum.....12
- At most 2 irregular rows of setulose hairs between dorso-centrals on disc of mesonotum.....16
12. Mesonotum with the discal black marking opaque. Food-plant unknown. B. C.....*borealis* Malloch.
- Mesonotum with the discal mark either reddish or entirely glossy black.....13
13. Cheek posteriorly about half as high as eye; arista almost bare. Food-plant unknown. N.M. *flavonigra* Coquillett
- Cheek posteriorly less than half as high as eye; arista pubescent.....14
14. No posterior setulæ on mid-tibiæ; posterior margin of mesonotum with a broad, yellow band which is not anteriorly dilated centrally. Larvæ mine leaves of walking-leaf fern. N. Y.; Ill.....*felti* Malloch.
- Each mid-tibia with 2 distinct setulæ; posterior margin of mesonotum with a large subquadrate yellow mark in center.....15
15. Mesonotum with discal marks entirely black. Larvæ mine leaves of *Plantago major*. U. S.; Canada; Europe.....*melampyga* Loew.
- Mesonotum with discal mark largely reddish, only posterior extremities and lateral margins black. Larvæ mining in *Paspalum*. S. C.; Ill.....*marginalis* Malloch*.
16. Third antennal joint larger than normal in this group, the upper margin sharply angulated at apex. Food-plant unknown. Ill.....*angulicornis*, sp. n.
- Third antennal joint small, rounded at apex. Food-plant unknown. Ill.....*assimilis*, sp. n.

***Agromyza deceptiva*, sp. n.**

Female.—Glossy black, with reddish yellow and lemon-yellow markings. Occiput, ocellar triangle, and frontal orbits glossy black; frontal stripe, antennæ, and upper portion of face reddish yellow; cheeks yellow, with a narrow, black margin; proboscis

*Originally described as a variety of *melampyga* Loew.

and palpi yellow; arista blackish. Scutellum except at base on each side, and a large, subquadrate area on margin of mesonotum between base of wing and humerus lemon-yellow. Abdomen entirely glossy black. Legs black, femora lemon-yellow. Wings slightly brownish-tinged, especially on anterior half. Squamæ with margins and fringes blackish. Halteres cream-coloured.

Head large, viewed in profile the face is distinctly retracted below, orbits clearly differentiated from central stripe, each about half as wide as latter; orbital bristles 5 in number, long and slender; cheek twice as high posteriorly as anteriorly. Mesonotum with 4 pairs of dorso-centrals, the anterior 2 pairs very weak; discal thoracic setulæ numerous and rather long; scutellum with 4 long marginal bristles. Abdomen short and broad; ovipositor conical but not tubular. Legs stout; mid-tibia without posterior setulæ. Costa to apex of fourth vein, the latter ending in apex of wing; inner cross-vein below apex of first and at middle of discal cell; last section of fifth vein about 1.5 as long as preceding section.

Length 2 mm.

Type locality, Alto Pass, Ill., May 8, 1917 (J. R. Malloch).

This species bears a strong resemblance to *quadrisetosa* Malloch, but may be readily separated from that species by the colour of the legs, palpi and antennæ.

***Agromyza angulicornis*, sp. n.**

Male.—Yellow, slightly shining, conspicuously marked with black. Head yellow; ocellar region, greater portion of occiput, clypeus, and arista black or blackish. Dorsum of mesonotum with a black mark similar to that on *melampyga*, the yellow pre-scutellar mark subquadrate; disc slightly pruinose; the following parts each with a black spot—humerus, propleura, mesopleura, pteropleura, sternopleura, and hypopleura; scutellum with a black spot on each side, postnotum black except on upper margin. Abdomen infuscated on dorsum; hypopygium glossy black. Legs yellow, tibiæ and tarsi black. Wings slightly grayish, veins dark brown. Halteres yellow.

Anterior ocellus situated further proximad of posterior pair than it is in *pusilla* and allied species, the sides of the triangle being unequal; frons narrowed anteriorly, its anterior width being distinctly less than half that of head; antennæ larger than usual.

in the *melampyga* group, the third joint distinctly angulated above at apex; arista microscopically haired; cheek anteriorly as high as width of third antennal joint. Mesonotum with 4 pairs of dorso-centrals, the disc bare except for a few setulose hairs arranged in 2 irregular rows between the dorso-central series and another in line with the latter. Femora rather stout. Wing venation similar to that of *melampyga*, differing in having the third and fourth veins subparallel from middle of their last sections to apices; inner cross-vein one-third from apex of discal cell; last section of fifth vein nearly 3 times as long as preceding section.

Length 1 mm.

Type locality, Waukegan, Ill., August 25, 1917, (J. R. Malloch). Taken on shore of Lake Michigan. Food-plant unknown.

This species resembles *pusilla* Meigen, but differs from it in having fewer fine hairs on disc of mesonotum and in having the prescutellar yellow mark. From all species known to me it differs in having the third antennal joint angular at apex above.

***Agromyza assimilis*, sp. n.**

Male.—In colour this differs from the preceding species in having the tibiae and tarsi yellow, indistinctly clouded with fuscous, and the yellow prescutellar mark on mesonotum triangular, its anterior extremity being pointed.

Structurally the principal differences lie in the shape of the third joint of the antennae, which is considerably smaller and disc-like, in the position of the ocelli, which are in an equilateral triangle, and in the venation, the third and fourth veins being gradually divergent throughout the entire length of their apical sections. The dorsum of the mesonotum has even fewer short hairs than that of *angulicornis*, but a single irregular series appearing between the dorso-centrals.

Length 1 mm.

Type locality, Freeport, Ill., July 4, 1917, (J. R. Malloch). Food-plant unknown.

This species strongly resembles *pusilla* Meigen, but differs in having the disc of mesonotum with fewer short hairs between the dorso-centrals, and a conspicuous, triangular yellow mark on posterior margin.