

FORMOSAN AGROMYZIDÆ.

By J. R. MALLOCH.

(Plates IX—X.)

The material upon which the present paper is based was collected in Formosa by Mr. SAUTER and is now deposited in the Hungarian National Museum in Budapest.

The most striking feature about the material is the very large number of species included in it, which belong to the group with black halteres, and the comparative scarcity of other forms. The species belonging to the group most numerously represented in this material are very similar in general appearance to those which occur in America as gall makers, or as root or stem miners. The absence of any species in the genus *Agromyza*, with the costa carried only to the end of the third vein, is also a feature, though this is probably due to the fact, that this group is, as elsewhere, rather less numerously represented than the others.

While many of the *Agromyza* species included in this paper have much the habitus of some of those occurring in America and Europe, I have failed to identify satisfactorily any form but *pusilla* MEIGEN, which is possibly cosmopolitan and *longipennis* LOEW. In the species *variihalterata*, we find a parallel to *maculosa* MALLOCH in the peculiar bicolored halteres, but there are many good characters by means of which they may be separated.

There is no indication on any of the material as to the habits of the species.

MILICHINÆ.

Pseudorhinoessa, nov. gen.

This genus may be separated from *Rhinoessa* by the following characters. The orbits have one strong backwardly-directed bristle at about the transverse line of the anterior ocellus, one strong outwardly-directed bristle much below this one, and one or two, much shorter bristles, between this point and the base of the antennæ; the cruciate bristles on the center of the frons are represented by 2 or 3 pairs; the post-vertical bristles are strong and cruciate, otherwise the head is much as in *Rhinoessa*. Thorax

bristled as in *Rhinoessa*, but the dorso-centrals are stronger than is the rule in that genus. Legs formed as in *Rhinoessa*, but both the mid and hind tibiæ have well developed bristles on the dorsal surfaces; no preapical bristle present. Wing with costal vein reaching only to third vein, the setulæ minute, very slightly increasing towards end of first vein; at the apex of the first costal division, there is a distinct small bristle, and a very indistinct break; anal cell distinct; anal vein subobsolete; outer cross vein at before wing middle. Squamæ very small.

This genus presents, in the bristling of the tibiæ, a character which I have not observed in *Rhinoessa* or its allies, but the type species is so closely allied in other respects with this genus, that I have considered it advisable to associate it with *Rhinoessa* in my description.

Pseudorhinoessa spinipes n. sp.

Female: Head yellow; ocellar triangle, black, the surface obscured by gray pollen; back of head black, obscured with gray pollen; antennæ yellow, third joint brownish; arista brown; face and cheeks with whitish reflection. Thorax black-gray, opaque, covered with gray pollinosity; pleuræ with a brownish tinge, opaque. Abdomen slightly shining, black-brown, sides of the two basal segments yellowish, and a narrow, whitish yellow, hind marginal fascia on each segment, which is slightly interrupted on segments 3 to 5. Legs yellow, including the coxæ; all femora broadly browned on apices; tibiæ with apices browned; tarsi with the last two joints brownish. Wings clear; costa, first, third, and fifth veins brown, second and fourth veins indistinct, the latter especially so on its whole length. Squamæ and halteres yellow. Hairs and bristles black.

Ocellar bristles strong, divergent, widely separated at their bases; surface of frons with scattered short hairs; antennæ of moderate size, third joint rounded; arista thin, short, not longer than width of frons at anterior margin; head higher than long; cheek barely one-third as high as eye, marginal bristles in a single row, the bristles, increasing in length towards anterior angle, upcurved; vibrissa hardly stronger than last marginal bristle; proboscis fleshy, stout; palpi rather small. Mesonotum with 4 pairs of dorso-centrals; the disc with very numerous short setulæ, of which there are 6 rows between the dorso-centrals; disc of scutellum with similar setulæ. Abdomen with numerous surface hairs, those on the posterior and lateral margins of the segments bristle-like. Legs short-haired; mid tibiæ with 2 antero-dorsal bristles, and 3 very high-placed on the postero-dorsal surface, giving them the appearance of being almost on the dorsal surface; hind tibiæ with 3—4 antero-dorsal bristles, and 2 on the

dorsal surface, one before and one beyond the middle. (As these bristles are rather hair-like, I assume they will be subject to variation both in number and in position). Wing venation as figure 9.

Length: 2 mm.

One female, Takao, April 13, 1907.

Rhinoessa LOEW.

The three species represented amongst the material belonging to this genus have all been described by Prof. HENDEL in a paper dealing with part of SAUTER's material which is deposited in another collection.

The following table will serve to identify the species.

1. Cheek half as high as eye, or nearly so; inner cross vein at very little before middle of discal cell; last section of fifth vein subequal with penultimate section of fourth; wing veins heavy and dark, wing slightly grayish.
ochracea HENDEL.
- Cheek very distinctly less than half as high as eye.2.
2. Last section of fifth vein distinctly shorter than penultimate section of fourth; inner cross vein at about one third from base of discal cell. *sexseriata* HENDEL.
- Last section of fifth vein distinctly longer than penultimate section of fourth; inner cross vein at about two fifths from base of discal cell. *fulva* HENDEL.

Rhinoessa ochracea HENDEL.

Rhinoessa ochracea HENDEL, Suppl. Entomol. Nr. 2, 1912, p. 109

Ten specimens from the following localities: Takao, January, March, April, and May 1907; Anping, April, 1912.

Rhinoessa fulva HENDEL.

Rhinoessa fulva HENDEL, id., p. 110.

Two specimens agreeing with the original description, Anping, October and April. Two specimens from Anping, April, and two from Tainan, February and April, are considerably darker in color, especially on the dorsum of the abdomen, which is almost black, and in being distinctly more slender in build. I do not separate this form from *fulva* as I consider that color alone is not a reliable guide to specific identity, and other characters are not constant throughout the series. While this is noticeable particularly in the venation, the last section of the fifth vein is distinctly longer than the penultimate section of fourth in all the specimens, which serves at once to distinguish the species from the following one.

Rhinoessa sexseriata HENDEL.

Rhinoessa sexseriata HENDEL, id., p. 110.

Four examples from the following localities: Anping, July, 1911, June, 1912; Takao, May 3, 1907, and April 23, 1907.

Desmometopa tarsalis LOEW.

Desmometopa tarsalis LOEW, Berl. ent. Zeitschr., 1865, p. 184.

Two examples of this species from the following localities: Takao, June 25, 1907, and Anping, April, 1912.

Mallochiella lacteipennis HENDEL.

Madiza lacteipennis HENDEL, Suppl. Entomol. Nr. 2, 1913, p. 108.

A single male agreeing with HENDEL's description, Pilam, August, 1912.

The description of the female only is given by HENDEL. The male differs in having the hind femora swollen, and the hind tibiæ spatulate as in *halteralis* Coq. The legs do not show the annulations mentioned by HENDEL as present on the mid and hind tarsi, though a close examination shows the first three joints to be reddish with brown apices.

It may be well to mention that this species will fall into *Desmometopa* if regard is paid to the presence of the setulæ at the base of the wing, and the outcurving of the two upper pairs of orbital bristles. In other respects, the shining frons and body particularly, the species is obviously more closely related to *halteralis* than to *M-nigrum* and its allies, so that it may well be retained in *Mallochiella*.

Phyllomyza FALLÉN.

The species herein described are congeneric with those placed by MELANDER in his genus *Neophyllomyza*.¹ The only character which serves to distinguish the present species from the type of *Phyllomyza* is, that, in the latter, there are four pairs of dorso-central bristles, whereas in the species in *Neophyllomyza* there are only two. In other respects the generic characters are the same, and the species may the more readily be retained in *Phyllomyza* as within the limits of the group of species placed in *Neophyllomyza* there are characters, in the structure of the head especially,

¹ Journ. N. Y. Ent. Soc. 1913, p. 243.

which are in this family accepted as of generic value, though the number of dorso-central bristles is not so considered.

Table of species.

1. Cross veins closely approximated, the penultimate section of fourth vein not half as long as last section of fifth. *approximata* MALLOCH.
- Cross veins not closely approximated, the penultimate section of fourth vein subequal with last section of fifth, or rather longer. 2.
2. Palpi clear yellow, protruding, but not much broadened. *luteipalpis* n. sp.
Palpi black, much protruding, and very distinctly broadened 3.
3. Palpi very long, equal to $1\frac{1}{2}$ times the height of the head, parallel-sided, bare; halteres black, yellowish at base. *nudipalpis* n. sp.
- Palpi broad and leaf-like, tapering to the apex, not as long as height of head; halteres yellow. *dilatata* n. sp.

Phyllomyza approximata MALLOCH.

Phyllomyza approximata MALLOCH, Proc. U. S. Nat. Mus. vol. 46, 1913. p. 138.

One female evidently referable to this species from Pilam, August, 1912. Originally described from the Eastern United States.

Phyllomyza luteipalpis n. sp.

Male: Subopaque, brown-black. Frons, viewed from behind, subshining on orbits, and on ocellar triangle, opaque on central stripe. the latter brownish, becoming yellowish anteriorly; antennæ brown, the lower portions, and especially the underside of the third joint, yellowish; arista brown; face opaque, brownish, cheeks concolorous; palpi clear yellow; proboscis brown. Mesonotum and scutellum with grayish-brown pollinosity; pleuræ shining on the central portion. Abdomen brownish, subopaque. Legs yellow, femora browned, except at bases and apices, mid and hind tibiæ slightly obscured, but without distinct brown marks. Squamæ and halteres yellow. Wings clear, veins brown.

Upper pair of orbital bristles reclinate, the next two pairs directed out over the eye, the two lower pairs directed inwards; central, cruciate setulæ forming two weak lines; orbits widest on just below the third pair of bristles; a few short hairs are present on the orbits, in addition to the orbital bristles; antennæ large, third joint almost half as large as the eye; profile as fig. 2; arista hair-like, almost bare; proboscis short, the apical portion shorter than the subapical portion; palpi almost bare, not much dilated. Mesonotum with the posterior pair of dorso-centrals large, the

anterior pair, and the pair of bristles between the posterior pair, weak; discal setulæ, numerous, but not strong; apical pair of scutellar bristles long, the basal pair weak. Abdomen with short surface hairs. Legs with short hairs, the ventral surface of the femora with the hairs stronger; a distinct hair at apex of the mid trochanter, which is directed alongside of the femur. Wing as fig. 18.

Length 1—1.5 mm.

Locality: Takao, April 10, 1907.

Paratypes and allotype: Same locality, 300 m., March 31, 1907.

Female: Similar to the male, except in having the antennæ smaller, and in being rather larger over all.

Phyllomyza nudipalpis n. sp.

Male: Black. Fore tibiæ and all tarsi yellowish; mid pair and bases of hind pair, brownish-yellow. Mesonotum grayish-brown pollinose; pleuræ, with a shining black area in front of mid coxæ, the rest grayish pollinose. Abdomen subopaque. Palpi and halteres black. Squamæ grayish, the fringe dark.

The upper 3 pairs of orbital bristles directed outwards over the eye, the lower 2 pairs directed inwards; orbits distinct, slightly shining, the central stripe velvety-black; orbits with a few weak hairs in addition to the bristles; cruciate setulæ weak; profile as fig. 3; arista placed very near to the anterior upper angle of third joint, hair-like, with very slight pubescence; proboscis very much shorter than the much enlarged, bare palpi. Mesonotum with the same bristles as *luteipalpis*. Legs with short surface hairs. Wings as fig. 16.

Length: 2 mm.

Locality: Takao, 300 m., April 18, 1907. One male.

Phyllomyza dilatata n. sp.

Male: Orbits and frontal triangle shining black, center stripe deep black, opaque; antennæ, palpi and proboscis black. Mesonotum shining, black, with but slight signs of pollinosity; pleuræ glossy, with only slight pollinosity below wing base and posteriorly. Abdomen subopaque, black. Legs yellow, coxæ, and femora, except the extreme bases and apices, black-brown. Squamæ brownish, fringe brown. Halteres reddish yellow. Wings clear, veins brown.

Orbital bristles similar to those of *nudipalpis*, but much stronger, the second lowest pair much stronger than the lowest pair; the cruciate

central setulæ distinct; second antennal joint with a very distinct bristle at the apex, which is almost as long as the height of the third joint; third joint rounded; the arista not as near to the apex as in the last species, and rather more distinctly pubescent; cheek linear; profile as fig. 1; palpi leaflike; proboscis short, geniculated. Mesonotum and scutellum bristled as in *luteipalpis*. Legs with the hind femora thickened; several bristle-like hairs of the antero-ventral surface of hind femur from about the middle to the apex; all legs with numerous short surface hairs. Wings as fig. 17.

Length: 2.75 mm.

Locality: Toyenmongai. One male.

Milichiella lacteipennis LOEW.

Lobioplera lacteipennis LOEW, Berl. ent. Zeitschr., 1865, p. 185.

There is a single female of this very widely distributed species amongst the material taken at Tainan.

AGROMYZINAE.

Cerodonta acuticornis MEIGEN.

Agromyza acuticornis MEIGEN, Syst. Beschreib., VI, 1826, p. 175, 26.

Three examples, Takao, May 3, 1907, and one Tainan, February.

Table of species in *Agromyza*.

- | | |
|--|------------------------------|
| 1. Frons, lateral margins of mesonotum, and disc of scutellum yellow..... | 2. |
| — At least the scutellum entirely black. | 3. |
| 2. Disc of mesonotum glossy black, the yellow color not carried across in front of the scutellum. | 1. <i>pusilla</i> MEIGEN. |
| — Disc of mesonotum dull grayish-black, the yellow color carried distinctly across in front of the scutellum. | 2. <i>subpusilla</i> n. sp. |
| 3. Frons yellow. | 4. |
| — Frons black, or black brown. | 8. |
| 4. Femora, entirely, or mostly, yellow, only sometimes slightly brownish at apices. | 5. |
| — Femora entirely black, or only the apices yellow. | 6. |
| 5. Glossy black species, pleuræ black; femora entirely yellow. 3. <i>flavofemorata</i> n. sp. | |
| — Dull, black-gray species; pleuræ yellow; femora more or less browned at apices. | 4. <i>formosensis</i> n. sp. |
| 6. Legs entirely black..... | 5. <i>frontella</i> n. sp. |
| — Legs with apices of femora clear yellow..... | 7. |

7. Frons clear lemon yellow; last section of fifth vein at most as long as penultimate section; generally shorter. 6. *longipennis* LOEW, var. *nigricoxa* n. var.
- Frons brownish; last section of fifth vein distinctly longer than penultimate section. 7. *brunnifrons* n. sp.
8. Apices of femora and bases of tibiae, narrowly, but conspicuously yellow, contrasting with the other parts of the legs, which are brownish black.
7. *brunnifrons* n. sp.
- Legs unicolorous black, or at least with the knees not conspicuously yellow. . 9.
9. Halteres entirely yellow. 10.
- Halteres at least partly black. 16.
10. Squamæ yellow, or whitish, the fringe pale. 11.
- Squamæ brownish, the fringe concolorous. 12.
11. Mesonotum with 4 pairs of dorso-centrals. 8. *flavisquama* n. sp.
- Two strong and one weak pairs of dorso-centrals on the mesonotum. . 13.
12. Wings whitish, veins almost colorless; 6 pairs of bristles on the orbits.
9. *niveipennis* n. sp.
- Wings hyaline, veins distinct; 5 pairs of orbitals. 10. *plebeia* n. sp.
13. Penultimate section of the fifth vein distinctly shorter than the last section; legs entirely black. 11. *atrata* n. sp.
- Penultimate section of fifth vein distinctly longer than the last section; tarsi yellowish. 14.
14. Small species, 1.5 mm; wings short and broad. 12. *latipennis* n. sp.
- Larger species. 2 mm. and over, wings normal. 15.
15. Tarsi black; inner cross vein at very distinctly before the middle of the discal cell, and before the end of first vein. 13. *koshumensis* n. sp.
- Tarsi yellowish; inner cross vein at slightly before the middle of discal cell, and just below the end of first vein. 14. *obesa* n. sp.
16. Squamæ white or yellow, fringe pale. 17.
- Squamæ blackish or brownish, fringe dark. 21.
17. Frontal triangle very broad, extending to lunule, metallic greenish black, at middle of frons occupying over one half the width of center stripe; eyes of male distinctly hairy on an area above, most readily seen from the side.
15. *obtusa* n. sp.
- Frontal triangle not very broad, with an acute apex, the sides rapidly converging anteriorly. 18.
18. Large species, averaging over 3 mm; eyes of male distinctly hairy above, those of the female slightly pubescent. 16. *lasiops* n. sp.
- Smaller species, averaging about 2.5 mm; eyes of male not hairy. 19.
19. Mouth margin slightly produced; upper margin of basal joint of antenna at below the level of the middle of the eyes; inner cross vein at distinctly beyond the middle of the discal cell. 17. *producta* n. sp.
- Species without the above combination of characters 20.
20. Arista covered with dense pubescence which is at least twice as long as the basal diameter of the arista; cheek linear. 18. *piliseta* n. sp.

- Arista tapering, almost bare, the pubescence never distinctly longer than the basal diameter of the arista; cheek distinct, though not broad. 19. *prolifera* n. sp.
21. Cheek produced into a distinct point anteriorly. 20. *anguliceps* n. sp.
- Cheek not angularly produced anteriorly. 22.
22. Mesonotum with three pairs of dorso-central bristles. 21. *aliena* n. sp.
- Mesonotum with two pairs of dorso-central bristles. 23.
23. Fore tibia with a distinct setula on the posterior side at about the middle. 24.
- Fore tibia without such bristle. 25.
24. Halteres entirely black. 22. *setigera* n. sp.
- Halteres black, the apical part of the knob pale yellow. 23. *variuhalterata* n. sp.
25. Subopaque black species; frons buccate; last section of fifth vein subequal with last section. 24. *Sauderi* n. sp.
- Shining black species; frons not buccate. 26.
26. Frontal triangle subshining; penultimate section of fourth vein subequal with the preceding section. 25. *subfusca* n. sp.
- Frontal triangle glossy; penultimate section of fourth vein shorter than preceding section. 27.
27. Small species, 1—1.75 mm. 26. *atomella* n. sp.
- Larger species, 2.5—2.75 mm. 27. *nigrisquama* n. sp.

1. *Agromyza pusilla* MEIGEN.

Agromyza pusilla MEIGEN, Syst. Beschreib., vol. 6, 1830, p. 185, species 60.

Specimens of this widely distributed species are amongst the material before me from the following localities, Tainan, Takao and Taihoku. Nine specimens in all.

2. *Agromyza subpusilla* n. sp.

Male: Yellow, subopaque. Head and all its parts, except the vertex and back, as well as the ocellar region, which are blackish, yellow. Mesonotum opaque, grayish-black on disc, the marking resembling that on the thorax of *melampyga* LOEW. but the posterior yellow excisions not so clearly defined; the central one represented in type by a triangular mark; pleuræ with a slight darkening above fore coxæ, and a large blackish-gray mark between mid and hind coxæ; scutellum blackened on each side at base; postnotum gray, yellow just below scutellum. Abdomen brownish, the posterior margins of all segments yellow. Legs yellow, tibiæ and tarsi slightly browned. Wings clear, veins black-brown. Squamæ yellow. Halteres yellow.

Orbits with four pairs of bristles, which are rather weak, and decrease

in size anteriorly; antennæ rather small, third joint rounded; arista slightly thickened, bare, and as long as length of frons; head in profile as fig. 6; Mesonotum with 2 pairs of strong and 2 pairs of much weaker dorso-centrals, the third and anterior pairs the weakest, the former being close to the suture; very few hairs on disc, no bristles discernable between the posterior pair of dorso-centrals; scutellum with four subequal bristles. Legs normal; no distinguishable bristles on mid tibia. Wing venation as fig. 5.

Length: 1.25 mm.

Locality: Tainan. One specimen.

3, *Agromyza flavofemorata* n. sp.

Male: Black. Head yellow, vertex, ocellar region and back of head black, orbits darkened posteriorly, becoming yellow anteriorly; third antennal joint reddish, the basal joints clear yellow; arista black-brown; palpi and proboscis yellow. Mesonotum and scutellum glossy black; pleuræ brown-black, opaque; postnotum black, becoming yellow just below the scutellum. Abdomen glossy black on dorsum, yellowish on venter; hypopygium black. Legs yellow, apices of tibiæ slightly, and the tarsi more distinctly browned. Wings clear, veins black, the base of wings yellowish. Squamæ yellow. Halteres yellow.

Orbits with four pairs of bristles, which decrease slightly in strength anteriorly, orbits wide, each about equal to half the width of the central stripe, very few weak hairs on the orbits in addition to the bristles; head in profile as fig. 7; arista with close and short pubescence; vibrissa slightly differentiated. Mesonotum with very slight grayish pollinosity on surface; 4 pairs of dorso-centrals present, the 2 anterior pairs weak; about three rows of weak hairs between the dorso-centrals anteriorly, and no bristles between the posterior pair of dorso-centrals; scutellum with 4 subequal bristles. Abdomen elongate, cylindrical; hypopygium slightly over the normal size; all abdominal segments covered with short hairs. Legs rather slender; mid tibia without distinct bristles on the posterior surface. Wing as fig. 15.

Length: 1.75.

Locality: Polisha. One specimen.

4. *Agromyza formosensis* n. sp.

Male: Yellow, subopaque. Head pale yellow, back of head, vertex, and ocellar region grayish, central stripe reddish yellow; third antennal joint with a large reddish-brown mark at the insertion of the arista, re-

mainder of antennæ pale yellow; arista brown; palpi and proboscis yellow. Disc of mesonotum broadly opaque gray, this color extending less distinctly to lateral margins; scutellum concolorous with the disc, in the male sometimes slightly yellowish; pleuræ yellow, spotted as in *subpusilla*; postnotum shining black. Abdomen yellow, each dorsal segment broadly browned on base, leaving only a narrow posterior yellow fascia; hypopygium yellow. Legs yellow, apices of fore femora slightly blackened dorsally, apices of other femora very indistinctly browned; all tibiæ and tarsi brownish yellow. Wings almost clear, veins brown, fifth vein indistinct at apex. Squamæ and halteres yellow.

Orbits with 3 pairs of bristles, which decrease slightly in size anteriorly, otherwise, generally, bare; profile almost as in *subpusilla*; arista thickened, the pubescence very indistinct; cheek with a few marginal hairs, the vibrissa very weak. Mesonotum with the bristling as in *subpusilla*, the area between the dorso-centrals bare, or with a few scattered, short hairs, forming two irregular rows. Abdomen elongate, narrow; hypopygium normal. Legs slender, no bristles on the posterior surface of the mid tibia. Wing venation almost as in *subpusilla*, the small cross vein generally slightly before the middle of the discal cell; last section of the fourth vein about six times as long as the penultimate section; last section of fifth vein about one and three-fourths the length of the penultimate section, generally evanescent on apical third.

Length: 1.5—1.75 mm.

Female: Similar to the male in color etc.; the ovipositor glossy brown-black. The wings are sometimes slightly grayish in this sex.

Locality: Taihoku. Seven specimens.

5. *Agromyza frontella* n. sp.

Female: Black, subshining. Head yellow, slightly ochreous; back of head, ocellar region, and upper half of orbits blackened; face brown in the depressions where the antennæ lie, the margins yellow; antennæ black; inner mouth margin glossy black; palpi and proboscis yellowish. Mesonotum with brownish pollinosity, scutellum concolorous; pleuræ shining black, the sutures and below wing base brown. Abdomen with slight indications of very narrow pale posterior margins to the segments; venter yellowish, most distinct on lateral margins at middle; ovipositor glossy black. Legs black, or black-brown. Squamæ brownish yellow, fringe concolorous. Wings clear, veins brown. Halteres yellow, knob white.

Four orbital bristles present, which are rather weak and decrease but slightly anteriorly, the upper two pairs directed backwards, the lower

two pairs directed inwards; orbits otherwise bare; width of each orbit less than half the width of central stripe, the bristles situated near to the eye margins; profile as fig. 8; arista very short, not longer than the width of the frons at the anterior margin, bare; eyes bare. Mesonotum with 2 distinct pairs of dorso-centrals, and in front of the anterior pair a series of setulæ, the most posterior of which is stronger than the others, and may be in some cases strong enough to rank as a dorso-central, in which cases the anterior setulæ will also be correspondingly increased in size; disc with numerous short hairs, about 8 rows between the dorsocentrals; no differentiated bristles between the posterior dorso-centrals. Abdomen subovate; ovipositor distinctly protruding, rather short and flattened. Legs moderately stout; mid tibiæ without discernable bristles. Wing as fig. 4.

Length: 1.25.

Locality: Pilam, August, 1912.

Allied to *A. gyrans* FALLÉN, but readily separated by the yellow palpi, which are exceptionally small, and the pale frons as well as other, minor, characters.

6. *Agromyza longipennis* LOEW, var. *nigricoxa* n. var.

This variety differs from the type form in having the apex of the second joint of the antennæ clear yellow, contrasting sharply with the black base; the vibrissa less distinctly differentiated; and the fore coxæ blackened instead of yellow.

Longipennis LOEW is very closely related to *geniculata* FALLÉN, the differences between which and the former I have pointed out in my recent paper on the genus *Agromyza*, in the Annals of the Entomological Society of America, vol. 6, 1913, No. 3. The pubescence of the arista in the form here listed is much less distinct than in the type form is, and possibly the examination of more material may result in the elevation of the former to specific rank.

Three specimens, Takao, May 3, 1907.

7. *Agromyza brunnifrons* n. sp.

Female: Black, shining. Frons black-brown, becoming black above the lunule; orbits shining, center stripe opaque; lunule yellow; antennæ black-brown, apex of second and base of third joints yellow; arista brown; face and cheeks pale yellow; proboscis and palpi yellow. Disc of mesonotum, scutellum, and pleuræ shining black, with slight indications of gray polli-

nosity; the narrow upper margin and vertical suture of pleuræ, as well as the usual patch below wing base, yellowish. Squamæ, their fringes and the halteres yellow. Abdomen black, rather glossy, the segments without pale margins; ovipositor glossy black. Legs black, shining, the apices of the femora and the bases of the tibiæ rather broadly clear yellow. Wings clear, veins black.

Frons over one third the head width; orbits with 4 pairs of bristles, which are not very strong and slightly decrease in strength anteriorly; antennæ rather small, third joint rounded, very slightly pilose; arista about as long as frons, the pubescence very short; face slightly receding, concave in profile, the cheek short and not over one sixth as high as eye; marginal bristles weak, vibrissa not strong. Mesonotum with four pairs of dorso-centrals, the anterior two pairs slightly weaker than the posterior two pairs; 5-6 rows of setulæ between the anterior dorso-centrals; no distinguishable bristles between the posterior pair of dorso-centrals. Abdomen elongate, narrow; surface hairs rather numerous and soft; hypopygium thick, not elongate nor flattened. Legs normal in shape, their surfaces short-haired; no bristles on mid tibiæ. Costa to the end of fourth vein; inner cross vein at slightly before the end of first vein, and at very slightly before the middle of the discal cell; veins 3-4 divergent on their last sections; last section of fourth vein about 6 times as long as the penultimate section; last section of fifth vein about $1\frac{1}{2}$ times as long as the penultimate section.

Length: 2.25 mm.

Locality: Kosempo. One specimen, November.

This species is very closely allied to *longipennis* Loew, but the color of the frons is very different from that of the typical *longipennis*, and the wings in *brunnifrons* are also not so narrow, while the venation also presents some considerable differences.

8. *Agromyza flavisquama* n. sp.

Female: Black, shining. Proboscis, squamæ and their fringes, and the halteres yellow. Legs black, fore tibiæ, and all the tarsi, except their apices, yellowish. Wings slightly grayish, the veins very distinct, black-brown.

Frons not quite one third the head width, opaque, only the ocellar region and the orbits at the bases of the bristles shining; orbits poorly defined, their inner margin hardly discernable from the central stripe; four pairs of orbital bristles present, which decrease much in length anteriorly, anterior pair only incurved; orbits without hairs in addition to the bristles, the

latter situated on near to the eye margin; antennæ normal in size, the upper surface of the basal joint at just about the middle of profile, second joint with a short apical bristle on the dorsum, third joint slightly elongate, apex rounded, pilosity very short; arista very little thickened at base, pubescence very short, length of arista slightly short of from its base to the base of upper orbital bristle; face concave in profile; cheek linear, not over one tenth the height of the eye, margin with slight hairs, the vibrissa slightly differentiated. Mesonotum with 4 pairs of dorso-centrals, the two anterior pairs distinctly reduced in size; discal setulæ numerous, about 8 rather irregular rows between the anterior dorso-centrals; the pair of bristles between the posterior dorso-centrals distinct. Abdomen ovate, the surface hairy; ovipositor short and broad. Legs stout; the two bristles on the mid tibia strong. Wings slightly elongate, venation as fig. 14.

Length: 3.5 mm.

Locality: Chip-Chip. One specimen, March.

9. *Agromyza niveipennis* n. sp.

Male: Black, slightly shining. Frons opaque, brown-black, the orbits subopaque; face brownish; palpi and proboscis black. Squamæ and the fringes yellowish-white. Legs black, fore tibiæ and the bases of all the tarsi brownish yellow. Wings whitish, the veins vitreous, with the exception of the costa, which is brown. Halteres yellow, knob whitish.

Head rather large, the frons slightly buccate, the face slightly retreating; width of frons one third that of head, orbits distinct, each about equal to one third the width of the central stripe, six pairs of orbital bristles present, which are situated on near to the inner margin, and decrease slightly in length anteriorly, the orbits otherwise almost bare; antennæ of good size, third joint slightly acute at the apex on the upper side, arista about $2\frac{1}{2}$ times as long as the third joint of the antennæ, almost bare, and very thin except at the base; cheek linear at the anterior margin, becoming about twice as high at the posterior margin, where it is not more than one sixth the height of the eye, marginal bristles distinct, the vibrissa weakly differentiated. Mesonotum with 2 strong and 1 weak pairs of dorso-centrals, the pair of bristles between the posterior pair of dorso-centrals strong; discal setulæ numerous, and in the line of the dorso-centrals rather strong. Abdomen broadly ovate; hypopygium very similar to that of *parvicornis* LOEW. Legs strong, the mid tibia with the posterior bristles distinct. Wing with the inner cross vein at the middle of the discal cell; the last section of the fourth vein about $2\frac{1}{2}$ times as long as the penultimate section,

which is about equal in length with the last section of the fifth vein; costa to end of fourth vein.

Length: 2.75 mm.

Female: Similar in coloration to the male, differing only in being rather larger, in having the mesonotum less hairy, and the ovipositor distinctly protruding, and almost identical with that of *parvicornis*.

Locality: Takao, May 3, 1907. One male and one female.

This species is very close to *parvicornis* LOEW, differing chiefly in the structure of the head, the chaetotaxy of the mesonotum and the color of the wings.

10. *Agromyza plebeia* n. sp.

This species is so similar to *niveipennis* that it will be sufficient to indicate merely the points of difference.

The color throughout is more brownish; the orbits have only 5 pairs of bristles; the tarsi are paler in color; the wings are not whitish, but have a slightly yellowish tinge, and their veins are distinct; while in the female the third and fourth veins are more distinctly divergent than in *niveipennis*.

Length: 2.5 mm.

Locality: Takao, May 3, 1907. One male and one female.

11. *Agromyza nigrita* n. sp.

Female: Deep black, slightly shining. Apex of proboscis brown. Knob of halteres clear yellow. Legs black, the tibiae slightly brownish. Wings clear, veins black. Squamæ grayish the margins and fringe almost black.

Frons opaque, the orbits distinctly glossy at bases of the bristles; frons about one third the width of the head, parallel-sided; orbits slightly differentiated from the center stripe, rather narrow, each about one fourth as wide as the center stripe; four pairs of strong orbitals present, situated about the middle of the orbits longitudinally, decreasing in size anteriorly, the orbits otherwise bare; frontal triangle not differentiated, ocellar region not shining; antennæ moderate in size, third joint rounded, very indistinctly pilose; arista very little swollen at base, and for a very short distance, bare; length of arista equal to from its base to upper orbital bristle; face slightly retreating; cheek linear, but little higher posteriorly than anteriorly, maginal bristles of moderate strength, vibrissa slightly differentiated. Mesonotum with four pairs of strong dorso-centrals, the anterior two pairs weaker than the posterior two pairs, the pair of bristles between the posterior dorso-centrals distinct, discal setulæ not very close, but strong, about 10 rows between the anterior dorso-centrals. Abdomen short, broad at base

the sides tapering much to the apex; ovipositor projecting, circular in cross section, not elongated. Legs strong, mid tibia with distinct posterior bristles. Wing venation as fig. 12.

Length: 2.75—3.5 mm.

Locality: Pilam, August, 1912.

Paratypes: Takao, April and May, 1912. Three females.

12. *Agromyza latipennis* n. sp.

Male: Black, shining. Apex of proboscis brownish. Halteres yellow, the knobs white. Legs black, the tibiæ and tarsi brownish-black. Squamæ brown, the margins and the fringes dark brown. Wings clear veins black.

Frons slightly less than one third the width of the head, almost parallel-sided, orbits slightly differentiated from the central stripe, glossy at the bases of the bristles, otherwise subopaque; ocellar triangle distinct, glossy; four pairs of orbital bristles present, the two upper pairs backwardly directed the two lower pairs inwardly directed, the bristles decreasing much in length anteriorly, the anterior pair mere hairs, orbits otherwise bare; antennæ above the average in size, third joint rounded at apex, distinctly pilose; arista tapering, rather thick, the pubescence distinct though short; length of arista equal to from its base to upper orbital bristle; face distinctly retreating; cheek linear, slightly higher posteriorly. Mesonotum with 3 pairs of dorso-centrals, the anterior pair weak; cephalad of the anterior pair of bristles there is sometimes a setulose hair stronger than the discal setulæ, which is posterior to the suture; the pair of bristles between the posterior dorso-centrals distinct; discal setulæ rather numerous, about 8 rows between the anterior dorso-centrals. Abdomen short and broad, the surface with rather long brownish hairs; hypopygium glossy black. Legs normal in shape; the two bristles present on the posterior surface of the mid tibia. Wing very broad, veins fine and very distinct: fig. 13.

Length: 1.25 mm.

Locality: Takao, 300 m. alt., March 31, 1907.

Female: Similar to the male in coloration and chætotaxy; the ovipositor is highly glossy, and distinctly protruding. In size slightly larger than the male.

Allotype and paratype: Same data as the type.

13. *Agromyza koshunensis* n. sp.

Male: Black, shining. Frontal lunule white pollinose; center stripe of frons opaque, orbits and ocellar region shining; antennæ and palpi black;

proboscis brown at apex. Squamæ gray, margins and the fringe black-brown. Abdomen brown-black, becoming paler towards the apex. Legs entirely black. Wings clear, veins black, very fine, but distinct. Halteres brownish on stem and outer side of the knob, the greater part of the knob creamy white.

Frons one third the width of the head; three pairs of very strong bristles on the orbits, the fourth, anterior, pair very weak and hair-like; antennæ normal in size, dorsal bristle on second joint very small, third joint rounded; arista slender, almost entirely bare, as long as from its base to the upper orbital bristle; cheek short, barely twice as long as its greatest height, and at that part barely one eighth as high as eye; marginal bristles increasing in size anteriorly, vibrissa strong and well differentiated. Mesonotum with 2 pairs of strong dorso-centrals; the two bristles between the posterior pair of dorso-centrals strong; disc very thickly covered with very short setulæ. Mid tibia with the bristles on the posterior surface strong. Wing with the inner cross vein at one third from base of discal cell and well in front of the end of first vein; last section of fourth vein about one and two third times the length of the penultimate section; last section of fifth vein two thirds as long as the penultimate section; veins 3 and 4 subparallel on their last sections.

Length: 2.75 mm.

Locality: Koshun, October, 1908.

This species has much the habitus of the species belonging to the section with the halteres black, the stout build and the chætotaxy being very similar to that of those species, though the bristles between the posterior dorso-centrals are present in *koshunensis*.

14. *Agromyza obesa* n. sp.

Male: Black, shining. Differs in color from the previous species in having the abdomen entirely black, the tarsi of all the legs yellowish, the halteres yellow with white knob, and the wing veins brown.

Differs from *koshunensis* as follows: Orbits with three bristles which are subequal in size; arista with short but distinct pubescence; cheek linear throughout, almost indistinguishable; mesonotum with three distinct dorso-centrals, the size decreasing anteriorly, discal setulæ much less numerous and stronger than in *koshunensis*; abdomen broadly ovate as in that species; legs rather hairy, the bristles on the mid tibia not so strong; the inner cross vein at slightly before the middle of the discal cell and at just below the end of the first vein; the last section of fourth vein is $2\frac{1}{2}$ times

as long as the penultimate section; and the last section of the fifth is about three fifths as long as the penultimate section.

Length: 3 mm.

Locality: Sokotsu, May, 1912. One specimen.

15. *Agromyza obtusa* n. sp.

Male: Glossy black. Frons opaque black, orbits and frontal triangle glossy black, with a slight greenish tinge; frontal lunule white pollinose; antennæ, arista, and palpi, black, proboscis brown at apex. Mesonotum and pleuræ with a blue-green tinge, which at some angles presents a violaceous shade. Abdomen glossy black, the surface metallic, in some lights bronzy, in others with a violaceous tinge on a greenish-blue ground. Legs shining black. Wings clear, veins brown, yellowish at their bases. Squamæ white, fringe concolorous. Halteres black.

Frons very slightly over one third the width of head; frontal triangle broad and well defined, its sides gradually converging anteriorly, and slightly convex; orbits distinct, with slight swellings at the bases of the bristles; 4 pairs of orbitals present, which are very stout and decrease but little in strength anteriorly, the anterior 2 pairs directed inwards, the 2 posterior pairs directed backwards; antennæ of moderate size, second joint with the dorsal bristle distinct, third joint rounded; arista slightly tapering at base of last section, the pubescence distinct, very fine, and not closely placed; eyes pubescent, a small area on the upper surface very distinctly haired; cheek almost linear, slightly higher on the posterior half, marginal hairs very numerous, but not strong, the vibrissa not differentiated. Mesonotum with 2 pairs of strong dorso-centrals, and sometimes a weak pair of setulæ in front of the anterior pair; discal hairs short and closely placed, 8—10 rather irregular rows between the anterior dorso-centrals; no distinct bristles between the posterior dorso-centrals. Abdomen broadly ovate; discal hairs strong and numerous, but not long; hypopygium normal. Legs strong, femora slightly thickened; fore tibia with a short setula on the posterior surface at about the middle; mid tibia with the two posterior setulæ present, but not very strong. Wings of normal breadth; inner cross vein at, or very slightly on either side of, the middle of the discal cell; last section of fourth vein about 3 times as long as the penultimate section; last sections of veins 3 and 4 slightly divergent; last section of fifth vein about three fifths as long as penultimate section.

Length: 2.75—3 mm.

Female: Similar in coloration to the male. Differing as follows: The eyes are very indistinctly pubescent; the orbits have more distinct short

surface hairs than in the male, in addition to the bristles; the ovipositor is much exerted and rather tubular; the wings are slightly broader, and the third and fourth veins more distinctly divergent apically.

Length: 2.75–3.5 mm.

Locality of type: Sokotsu, May, 1912.

Locality of allotype: Takao, April 10, 1907.

Paratypes: Takao, November 8, 1907, and March 31, 1907; Yentempo, May 19, 1907; and Tainan, no date.

16. *Agromyza lasiops* n. sp.

Male: Glossy black. Mesonotum with a slight bronzy luster. Abdomen with a distinct blue-green tinge, in some lights with a slight cupreous luster. Frons black, center stripe opaque, orbits and triangle glossy. Antennæ, palpi, and proboscis black, the latter brown at apex. Legs black. Wings clear, veins black. Squamæ yellow, fringe concolorous. Halteres black.

Frons slightly less than one third the width of head, narrowed but little anteriorly; orbits narrow, width of each at widest part not more than one sixth the width of center stripe at same part; 4 pairs of almost equally strong orbital bristles present, and in addition a few weak hairs near to the eye margin, extending from anterior extremity to upper orbital bristle; lunule large, white pollinose; antennæ inserted slightly below middle of profile, second joint with distinct bristle, third joint rounded, of moderate size; arista tapering, reaching to upper orbital, pubescence fine, but distinct; eye very large, covering almost the entire side of the head, shortly pubescent, but with an area on upper surface which is distinctly hairy; cheek linear, marginal hairs very fine and numerous; vibrissa very weak. Mesonotum with 2 pairs of dorso-centrals; disc very densely covered with short hairs, which are indiscriminately arranged. Abdomen subovate, the surfaces of the segments covered with short hairs which are very closely placed; hypopygium of normal size, with 2 slightly projecting apical lamellæ. Legs strong; fore tibia with a posterior setula at about the middle; mid tibia with 2 rather strong setulæ. Auxiliary vein joining costa, almost fused with first vein near to its apex; inner cross vein at, or slightly beyond, middle of discal cell, and below end of first vein, slightly acute, its lower extremity sloping away from wing base; last section of fourth vein about three times as long as penultimate section; last section of fifth vein two thirds as long as penultimate section; last section of fourth vein slightly undulating, see fig. 11.

Length: 3.5 mm.

Locality: Kosempo, June.

Female: Similar to the male in color etc. The ovipositor is highly glossy, and protrudes as far as the length of the last abdominal segment. As in the male, the frontal triangle does not reach beyond middle of frons, and is acute at apex. The eyes are only slightly pubescent.

Allotype: Tainan, April, 1912.

Paratypes: Yentempo, Chip-Chip, Tapani and Toyenmongai.

17. *Agromyza producta* n. sp.

Male: Black, distinctly shining. Frons opaque, orbits and frontal triangle glossy; antennæ, arista, face, cheeks, palpi, and proboscis black. Mesonotum with a slight bluish, or greenish, luster. Abdomen glossy black, dorsum with a bluish luster at base, becoming violaceous on apical half; hypopygium black. Wings clear, veins fine, black. Squamæ whitish, fringe concolorous. Halteres brown-black.

Frons slightly over one third the width of head, but little convergent anteriorly; triangle very distinct, elongated, the apex acute, reaching to well beyond the middle; orbits narrow, distinct, each about one fourth as wide as center stripe; 4 pairs of orbital bristles present, the upper about equal in length to one third the eye height, the others slightly decreasing in size anteriorly, no distinguishable orbital hairs present; antennæ inserted slightly below middle of profile, second joint with short, but distinct, dorsal bristle, third joint small, rounded; arista bare, but little swollen at base, as long as from its base to between the 2 upper orbital bristles; cheek about one fourth the height of eye, anterior angle distinctly produced, marginal hairs weak, vibrissa stout, but not long. Mesonotum with 2 pairs of strong dorso-centrals; discal setulæ short, hair-like, very closely placed. Abdomen broadly ovate, surface with numerous short hairs; hypopygium normal. Legs rather slender; mid tibia with the posterior pair of bristles weak and widely separated. Wings normal in shape; inner cross vein at just beyond end of first vein and distinctly, though not greatly, beyond middle of discal cell; last section of fourth vein about 5 times as long as penultimate section; last sections of veins 3 and 4 subparallel; last section of fifth vein two thirds the length of penultimate section.

Length: 1.5 mm.

Type: Pilam, August, 1912.

Female: Similar to the male in color and size. Ovipositor highly glossy, much protruded, tapering, circular in cross section; wings broader than in the male, the inner cross vein more distinctly beyond the middle

of discal cell than in the latter, and the outer cross vein fully as long as the section of fourth vein anterior to it.

Allotype: Tainan, October.

Paratypes: Two females, Tainan, February.

18. *Agromyza piliseta* n. sp.

Male: Glossy greenish black. Frontal triangle and orbits glossy black, center stripe opaque; apex of proboscis brown. Mesonotum with slight indications of grayish dusting. Abdomen with a distinct violaceous tinge on the basal half of the dorsum. Legs glossy black. Wings clear, veins distinct, black. Squamæ whitish yellow, fringe concolorous.

Frons about one third the head width, the sides slightly convergent anteriorly; orbits distinct, their surfaces with slight hairs in addition to the 4 pairs of bristles, the latter only of moderate strength, and decreasing slightly anteriorly; triangle narrow, acute, generally reaching to beyond middle of frons; cheek linear, about one tenth the height of the eye, marginal hairs distinct, vibrissa weakly differentiated. Mesonotum with 2 pairs of dorso-centrals. Abdomen ovate; hypopygium normal. Mid tibia with the posterior bristles distinct. Inner cross vein at middle of discal cell, or very slightly on either side of the middle; last section of fourth vein about 3 times as long as penultimate section; last section of fifth about two thirds as long as penultimate section; veins three and four distinctly divergent on their apical sections.

Length: 2—3 mm.

Female: Similar to the male, except that it is rather larger and more robust, besides having the abdomen more greenish, and with less distinct violaceous color on the dorsum.

Type: Takao, October 26, 1907.

Allotype: Tainan, April, 1912.

Paratypes: Takao, Tainan, and Kosempo, 4 specimens.

19. *Agromyza prolifica* n. sp.

This species is very similar to the foregoing and may be separated from it by the following characters:

The antennæ are slightly larger; the arista is without the distinct pubescence, and appears much thinner and tapering; the cheek is about one sixth the eye height, the marginal hairs are very weak, and the vibrissa is well differentiated; the inner cross vein is at beyond the middle of the discal cell; the last section of the fourth vein is 4 times as long as the

penultimate section; and the size of the specimens averages barely over 2 mm.

Type: Chip-Chip, February.

Paratypes: Chip-Chip; Taiman; and Takao, various dates. Fifty-two specimens.

Some of the examples show considerable variation in the situation of the inner cross vein and rarely it is very slightly beyond the middle of the discal cell. I consider, however, that there is only one species in the series before me, as in some species of this group there is considerable variation.

20. *Agromyza anguliceps* n. sp.

Female: Glossy black. Center stripe of frons opaque black; apex of proboscis yellowish. Pleuræ and ventral surface of abdomen subopaque black. Legs glossy black. Wings clear, veins black. Squamæ grayish, fringe brown. Halteres black the stalks brown.

Frons slightly over one third the width of head; orbits distinct, narrow, each equal to less than one fourth the width of central stripe, 4 pairs of orbitals present, which are not strong and decrease slightly in length anteriorly, the anterior pair strongly incurved; a few very short hairs on the orbits in addition to the bristles; triangle distinct, highly glossy, narrow, extending to beyond middle of frons; antennæ inserted well below middle of profile, small, third joint rounded; arista bare, swollen at base, the apical portion very thin, entire length about equal to two thirds that of frons; face concave; frons declivitous; cheek about equal to one eighth the height of eye, very distinctly produced at anterior angle, its anterior extremity being in vertical line with the anterior margin of third antennal joint, marginal hairs weak, vibrissa well differentiated. Mesonotum with 2 pairs of dorso-centrals; disc with numerous short, hairlike setulæ. Abdomen ovate; ovipositor stout; surface of abdomen and ovipositor with numerous hairs. Legs slender; the mid tibial bristles weak but distinct. Inner cross vein at beyond end of first vein and at one third from end of discal cell; last section of fourth vein about 6 times as long as penultimate section; veins 3 and 4 slightly divergent; last section of fifth vein two thirds as long as penultimate section; auxiliary vein complete.

Length: 2 mm.

Type: Taiman, February.

This species belongs to the group in which the male has the vibrissal angle distinctly produced, and the vibrissæ in the form of fasciculi.

21. *Agromyza aliena* n. sp.

Female: Glossy black, becoming more brownish towards apex of abdomen. Center stripe of frons opaque black; frontal lunule brown; cheeks opaque, brownish; apex of proboscis pale brownish. Pleural sutures and below wing base yellowish brown. Legs brown-black. Wings slightly grayish, veins black. Squamæ gray, fringe black-brown. Halteres black-brown, paler on the inner surface.

Frons distinctly over one third the width of head; orbits distinct, each about one fifth as wide as center stripe; 4 pairs of moderate-sized orbital bristles present, which decrease slightly in size anteriorly, the anterior two pairs incurved; several short hairs on orbits, in addition to the bristles; frontal triangle indistinct, only glossy on a very narrow stripe below ocelli; antennæ of moderate size, inserted below middle of profile, dorsal bristle on second joint distinct; third joint slightly longer than broad, rounded at apex; arista swollen at base, tapering, slightly pubescent, its entire length almost equal to that of frons; face concave; cheek about one sixth as high as eye, marginal hairs numerous, vibrissa differentiated. Mesonotum with 3 pairs of dorso-centrals, the anterior pair weak; discal setulæ numerous, but not long, about 10 rows between the dorso-centrals; no strong bristles between the posterior dorso-centrals; the setulæ carried to the posterior margin. Abdomen broadly ovate; surface with distinct hairs, which become bristle-like on the posterior and lateral margins; ovipositor tapering, glossy black. Legs normal in shape; mid tibia with the posterior bristles distinct. Inner cross vein at below end of first vein and at two fifths from apex of discal cell; last section of fourth vein 4 times as long as penultimate section; veins 3 and 4 distinctly divergent; last section of fifth vein two thirds as long as penultimate section.

Length: 2.75 mm.

Type: Sokotsu, May, 1912.

22. *Agromyza setigera* n. sp.

Female: In coloration identical with *varihalterata* except that the halteres are unicolorous black-brown.

Frons slightly less than one third the width of the head; center stripe opaque, orbits shining; each orbit about one fourth the width of center stripe, distinct; 4 pairs of orbital bristles present, the three upper pairs strong, the anterior pair weak, incurved; hairs on orbits weak, but numerous; frontal triangle indistinct, only represented by a narrow glossy stripe below the ocelli; antennæ as in *varihalterata*; cheek short, narrow,

not one-eighth as high as eye; marginal hairs numerous; vibrissa well differentiated. Mesonotum, abdomen, and legs as in *variihalterata*. Wing with the inner cross vein at middle of discal cell and at below end of first vein; last section of fourth vein $3\frac{1}{2}$ times as long as penultimate section; last sections of veins 3 and 4 subparallel; last section of fifth vein over two thirds as long as penultimate section.

Length: 3–3.75 mm.

Type: Tainan, April, 1912.

Paratypes: Tainan, May, 1912; Takao, 300 m., April 18, 1907, two specimens; Koshun, September; Kankau, August, 1912. A female from Takao, April, 1907, has the last sections of the third and fourth veins slightly divergent, but in other respects agrees with the type.

23. *Agromyza variihalterata* n. sp.

Male: Glossy black. Frons, including the triangle, opaque black, the orbits glossy; lunule white pollinose; face and cheeks opaque black; apex of proboscis yellowish. Mesonotum and pleuræ with slight brownish pollinosity. Abdomen with a slight indication of a greenish luster. Legs subopaque black. Wings clear, veins black. Squamæ grayish, margins and fringe black. Halteres black, apex of knob whitish.

Frons one third as wide as head; orbits distinct, each about one third as wide as center stripe, 4 pairs of moderate-sized orbital bristles present, which decrease slightly in strength anteriorly, the anterior pair incurved, orbits otherwise bare; frontal triangle not discernable; antennæ normal in size, inserted below middle of profile, second joint with short dorsal bristle, third joint rounded; arista almost bare, tapering, almost as long as frons; cheek short and narrow, not more than one-eighth as high as eye, marginal hairs distinct, vibrissa well differentiated. Mesonotum with 2 pairs of dorso-centrals, otherwise as in *aliena*, except that the setulæ are not carried as far posteriorly. Abdomen ovate; lamellæ of hypopygium elongated, their length equal to that of the last abdominal segment; hairs on abdomen not so conspicuous as in *aliena*. Legs rather slender; fore tibia with a setula on the posterior surface at about the middle; mid tibial bristles longer than in allied species, the upper one being much longer than the diameter of the tibia. Inner cross vein at before the end of first vein and at one third from base of discal cell; last section of fourth vein about $2\frac{1}{2}$ times as long as penultimate section; last sections of veins 3 and 4 gradually divergent; last section of fifth vein three fourths as long as penultimate section; auxiliary vein complete.

Length: 2.75 mm.

Type: Koshun, March.

24. *Agromyza Sauteri* n. sp.

Male: Black, subopaque, abdomen slightly more shining than the thorax. Wings slightly brownish, veins very distinct, slightly thickened, fuscous black. Squamæ, their fringes, and the halteres black-brown.

Frons at vertex over one half the head width, slightly narrowed anteriorly; orbits broad, each over one third the width of center stripe, distinct, 4 pairs of hair-like orbitals present (on one side 5) which do not decrease much in size anteriorly, and are with the exception of the upper pair incurved; hairs on orbits distinct and rather long; frontal triangle poorly defined, subtriangular; antennæ below the normal in size, upper margin of basal joint above middle of profile, third joint rounded; arista thickened on its basal third, almost bare, its entire length about $2\frac{1}{2}$ times as long as antenna, and equal to anterior breadth of frons; face receding; frons buccate, very distinctly visible on its entire length above eyes when viewed laterally; cheek about one fifth the eye height, marginal hairs distinct, vibrissa differentiated. Mesonotum with 2 pairs of dorso-centrals, which are subequal in length; disc with rather long setulæ, which do not extend much beyond the transverse line of the anterior dorso-centrals. Abdomen subovate, surface with numerous hairs; hypopygium normal. Legs normal; mid tibia with the posterior bristles present, but weak. Inner cross vein at just beyond end of first vein and at one third from apex of discal cell; last section of fourth vein 5 times as long as penultimate section; last section of fifth vein subequal with penultimate section; sixth vein reaching three-fourths of the length to wing margin.

Length: 2.5 mm.

Type: Chip-Chip. February.

25. *Agromyza subfusca* n. sp.

Male: Black, shining, abdomen glossy. Frons opaque, triangle not glossy, barely shining. Legs shining black, fore tarsi brownish. Wings slightly grayish, veins thick, fuscous black. Squamæ pale brown, fringes brown. Halteres with black knob and pale stem.

Frons at vertex over one third the width of head, slightly narrowed anteriorly; orbits barely differentiated, opaque except at bases of the bristles; 4 pairs of orbitals present, the 2 upper pairs strong, the 2 lower pairs weaker and incurved; orbital hairs sparse and short; frontal triangle elongate, reaching to slightly beyond middle of frons; viewed from the side the frons is narrowly visible above the eyes; antennæ small, inserted at middle of profile, third joint rounded; arista swollen at base, slightly

pubescent, its entire length about equal to 4 times that of antenna, and nearly twice as long as width of frons at anterior margin; cheek about one sixth as high as eye, marginal hairs rather strong, upcurved above, vibrissa differentiated; face almost straight. Mesonotum with 2 pairs of dorso-centrals, the anterior pair weaker than the posterior pair; discal setulæ weaker than in *Sauteri*, and carried almost to the posterior margin of disc. Abdomen broader than in *Sauteri*. Legs strong; mid tibia with the posterior setulæ weak. Inner cross vein at below end of first vein and at middle of discal cell; last section of fourth vein $3\frac{1}{2}$ times as long as penultimate section; veins 3 and 4 slightly divergent at apices; last section of fifth vein very slightly shorter than penultimate section; sixth vein reaching over three fourths to wing margin.

Length: 2.5 mm.

Type: Pilam, August, 1912.

A single example from Tainan, April, 1912, in which the outer cross vein is absent on one wing, appears to belong to this species.

26. *Agromyza atomella* n. sp.

Male: Glossy black. Frontal stripe opaque. Squamæ brown, fringe blackish. Wings clear, veins black.

Frons one-third the width of head, convergent anteriorly; orbits distinct, narrow, 4 pairs of orbitals present, the upper 2 pairs moderately strong, the lower 2 pairs weaker, incurved; hairs on orbits weak; frontal triangle broad, reaching to middle of frons; antennæ normal in size; arista as long as length of frons; cheek about one sixth as high as eye, marginal hairs weak, vibrissa slightly differentiated. Mesonotum with 2 strong pairs of dorso-centrals; discal setulæ of moderate strength. Abdomen broadly ovate. Mid tibiæ with the posterior setulæ weak. Inner cross vein at one third from apex of discal cell and at slightly beyond end of first vein; veins 3 and 4 subparallel on apical sections; last section of fifth vein about three fourths as long as penultimate section.

Length: 1—1.75 mm.

Type: Pilam, August, 1912.

Paratypes: Tainan; Takao; Pilam; Anping. Twenty specimens.

This species is variable in the situation of the cross vein, and the course of the third and fourth veins, which are sometimes divergent on their apical sections.

27. *Agromyza nigrisquama* n. sp.

This species is very similar to the above, but differs in being comparatively larger, 2.5–2.75 mm, the wings are more elongated, with the cross veins more consistently approximated, the cheek about one-third the height of the eye, and in its more robust form.

Type: Tainan, April, 1912.

Paratypes: Tainan, Takao, and Chip-Chip. Twenty-two specimens.

OCHTHIPHILINAE.

Leucopis apicalis n. sp.

Male: Black, densely covered with silvery pollen. Frons brownish, covered with silvery pollen; antennæ and arista yellow, the latter darkened apically, and the former brownish at base; palpi brown-black; proboscis yellow at apex. Mesonotum in too poor a condition in specimens to say definitely if striped, but from the fact that the setulæ are arranged in rows I infer that it should have at least distinguishable vittæ. Basal segment of abdomen without spots, second and succeeding segments with a narrow median and very small lateral black spots. Legs yellow, coxæ brownish, femora, except bases and apices, black, middle of all tibiæ brownish, apical tarsal joint on all legs brown. Wings milk-white, veins almost colorless.

Frons one-third the width of head; antennæ of moderate size, third joint as long as broad, upper apical margin slightly angulate, lower apical margin rounded; arista not longer than anterior width of frons, basal joints elongated, occupying one-third of the entire length, swollen; cheek barely one third the height of eye. Mesonotum with normal hairing. Hypopygium rather large and knob-like. Legs strong, without bristles. Inner cross vein at beyond the end of first vein and slightly less than one-third from apex of discal cell; last section of fourth vein about 5 times as long as penultimate section; veins 3 and 4 convergent at apices; last section of fifth vein $1\frac{1}{2}$ times as long as outer cross vein.

Length: 2–2.5 mm.

Type: Tainan, February.

Paratype: Same data.

Female: Similar to the male in color and structure except that the ovipositor is inconspicuous, and the inner cross vein is situated nearer to the middle of the discal cell.

Allotype: Same data as type.

Cryptochætum grandicorne RONDANI.

Bull. Soc. Ent. Ital., 1875, p. 172.

A single example of this species, Polisha, December.

PHYTOMYZINAE.

Napomyza atrata n. sp.

Female: Glossy black. Frons opaque, frontal triangle and orbits glossy black; antennæ, palpi, and proboscis black, the apex of the latter brownish. Legs brownish-black, shining, tarsi yellowish. Wings slightly brownish, veins deep brown, fourth vein from the cross vein to its apex indistinct. Squamæ grayish, fringes brown. Halteres whitish yellow.

Frons distinctly less than one-third the width of head, orbits narrow, each about one-fourth as wide as center stripe, well differentiated; 4 pairs of orbitals present, the upper pair very strong, the others decreasing rapidly in size anteriorly, the front pair being reduced to mere hairs, orbits otherwise bare; triangle small, reaching very little beyond the anterior ocellus, but well defined; antennæ small, third joint rounded; arista almost bare, slender, its length equal to that of frons; cheek linear, slightly broadened posteriorly, marginal hairs weak, vibrissa slightly differentiated. Mesonotum with 2 pairs of strong dorso-centrals, and generally a weak, anterior pair; discal setulæ numerous, about ten rows between the dorso-centrals. Abdomen ovate, surface with short hairs; ovipositor short, slightly spatulate at apex, very similar in shape to that of *Agromyza parvicornis* Loew. Legs of moderate strength; mid tibiæ with 2 very weak posterior setulæ, as in most species of *Agromyza*. Wing venation as fig 10.

Length: 3 mm.

Type: Kosempo, November.

Male: Similar in coloration to the female, except that the tarsi are paler, and the wings are almost clear. In both the males before me the size is about 1.75 mm. and there is a yellow central organ to the hypopygium, which is very distinctly protruded. In one example the venation is similar to that of the female, while in the other the large cross vein is distinctly in front of the small one.

Allotype: Takao, October 24, 1907.

Paratype: Tainan, May, 1912.

This species has much the habitus of some of the species in the genus *Agromyza*, especially of the *parvicornis* group, and is very different from the type species of *Napomyza*, which is slender in build, and resembles thus the

species in *Phytomyza*, the great majority of which are slender species. I have located *atrata* in *Napomyza*, simply on account of its venation, which is, I am confident, not a reliable guide to the natural affinities of the species in this family, but which is the most readily appreciable, and, at present, the one most in use.

Phytomyza FALLÉN.

Table of species.

- | | |
|--|--------------------------|
| 1. Acrostichals absent. | <i>subaffinis</i> n. sp. |
| — Acrostichals present. | 2. |
| 2. Glossy black species; mesonotum with three pairs of dorso-centrals, the anterior pair very weak; antennæ with the third joint produced into a short thorn-like point at apex on the upper side; small, robust species. | |
| | <i>spicata</i> n. sp. |
| — Black species, the thorax with dense gray pollen, abdomen shining black, with narrow pale yellow posterior margins to the segments; 4 strong pairs of dorso-centrals on mesonotum; antennæ without an acute apex to third joint; larger, slender species. | <i>affinis</i> FALLÉN. |

Phytomyza affinis FALLÉN.

Dipt. Suec. Phytomyz. 3. 3. (1813).

A single specimen of this widely distributed species from Taihoku, April, 1912.

Phytomyza spicata n. sp.

Female: Glossy black. Frons, with the exception of the triangle and orbits, opaque black; apex of proboscis yellowish; palpi black. Legs entirely black. Wings clear, yellowish at base, veins 1, 2 and 3 brown-black. Squamæ and halteres whitish.

Frons slightly less than one-third the width of head; orbits distinct, each about one-third the width of center stripe, 3 pairs of orbitals present, the upper pair strong, the others rapidly decreasing in length anteriorly and incurved; triangle well defined, broad, reaching to middle of frons; head, in profile, with frons declivitous, face concave; antennæ inserted below middle of profile, small, third joint slightly longer than broad, its apex on upper side produced into a slight tooth; arista tapering, not much swollen at base, nearly bare, its length about equal to that of frons; cheek short, about one-third as high as eye, marginal hairs weak, vibrissa well differentiated; eye narrowed anteriorly, not round. Mesonotum with 3 pairs of dorso-centrals, the anterior pair well behind the suture, and very

weak; discal setulæ weak, about 8 irregular rows between anterior dorso-centrals. Abdomen ovate; ovipositor stout. Legs slender; tibiæ without setulæ. Second costal division $1\frac{1}{2}$ times as long as first; third, one-third as long as first; apex of costa at end of third vein and as far from apex of wing, measuring round the margin of wing, as the length of first costal division; fourth vein ending at wing tip.

Length: 1.25 mm.

Type: Tainan, May, 1912.

Paratype: Takao, April 23, 1907.

Phytomyza subaffinis n. sp.

Female: Black. Head yellow; ocellar region, antennæ, and arista black; palpi brownish. Entire thorax densely covered with gray pollen. Abdomen glossy black with the dorsum slightly gray dusted, and the posterior margins of the segments narrowly yellow. Legs black, knees narrowly yellow. Wings slightly grayish, veins distinct, brownish, fourth slightly less conspicuous than fifth, first and third very distinct, though not thickened. Squamæ and their fringes grayish. Halteres pale yellow.

Frons two-fifths the head width; orbits distinct, each about one half as wide as center stripe; three pairs of orbitals present, which decrease in length anteriorly, and in addition to these there are a few hairs nearer to the eye margin; antennæ of moderate size, third joint rounded; arista thickened, tapering to slightly beyond middle, bare, its length equal to that of frons; cheek one-third as high as eye, marginal hairs distinct, vibrissa well differentiated. Mesonotum with 4 pairs of strong dorso-centrals, which do not decrease much in length anteriorly; disc between the dorso-centrals bare, or rarely with one or two scattered setulæ; no bristles between the posterior dorso-centrals. Abdomen elongate, surface with a few short hairs; ovipositor stout, as long as the last segment. Legs slender; tibiæ unarmed. Wings more elongate than in *spicata*, but the costal divisions similar.

Length: 1.75—2.5 mm.

Type: Chip-Chip, February.

Paratypes: Taihoku, April, 1912; Chip-Chip, February, 1912, 3 specimens; Tainan, February.

Male: Similar to the female in color and chaetotaxy. The hypopygium is large and rather prominent, its form very similar to that of the species in *Agromyza*.

Allotype: Tainan, February.

EXPLANATION OF FIGURES.

Plate IX.

- Fig. 1. *Phyllomyza dilatata*, Head.
" 2. *Phyllomyza luteipalpis*, Head.
" 3. *Phyllomyza nudipalpis*, Head.
" 4. *Agromyza frontella*, Wing.
" 5. *Agromyza subpusilla*, Wing.
" 6. *Agromyza subpusilla*, Head.
" 7. *Agromyza flavofemorata*, Head.
" 8. *Agromyza frontella*, Head.
" 9. *Pseudorhincocessa spinipes*, Wing.
" 10. *Napomyza atrata*, Wing.

Plate X.

- Fig. 11. *Agromyza lasiops*, Wing.
" 12. *Agromyza nigrata*, Wing.
" 13. *Agromyza latipennis*, Wing.
" 14. *Agromyza flavisquama*, Wing.
" 15. *Agromyza flavofemorata*, Wing.
" 16. *Phyllomyza nudipalpis*, Wing.
" 17. *Phyllomyza dilatata*, Wing.
" 18. *Phyllomyza luteipalpis*, Wing
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