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FRED M. SNYDER

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INTRODUCTION

IN AN EARLIER PAPER (Snyder, 1949) dealing with this group of Muscidae, the species of the genera *Mydaea* and *Xenomydaea* were treated, and their relationship with *Helina* was shown in the key to Nearctic genera of Mydaeini. The present paper deals with the species that will run out to *Helina*, *sensu lato*, in the last couplet of that key. Later, the *Helina lucorum* group and the genus *Hebecnema* Schnabl will be treated.

During the preparation of this paper, the United States National Museum, the Illinois Natural History Survey, the Canadian National Museum, and the American Museum of Natural History kindly allowed me to examine types in their collections. To Dr. H. C. Huckett I am indebted for the loan of material and for the privilege of describing several species in his collection. Herr Oscar

Ringdahl kindly lent several European species and examined North American species which it was thought might be found in Europe. To Dr. C. H. Curran I am deeply grateful for making the collection of the American Museum of Natural History available for study and for many kind and helpful suggestions. To the entomologists in charge of collections of many universities, I am grateful for the opportunity to examine many species of this group. To Dr. C. L. Fluke of the University of Wisconsin I am grateful for kindness and suggestions and the donation of many specimens from his collecting in Colorado.

Unless otherwise noted, holotypes of new species are deposited in the American Museum of Natural History.

DESCRIPTION OF SPECIES

HELINA ROBINEAU-DESVOIDY

Aricia ROBINEAU-DESVOIDY (*nec* Savigny), Mem. Acad. Roy. Soc. France, ser. 2, vol. 2, p. 486. WESTWOOD, 1840, Introduction to the modern classification of insects, vol. 2, p. 141. RONDANI, 1856, Dipterologicae Italicae prodromus, vol. 1, p. 95. BEZZI AND STEIN, 1907, Katalog der Paläarktischen Dipteren, vol. 3, p. 618. COQUILLETT, 1901, Jour. New York Ent. Soc., vol. 9, p. 135.

Helina ROBINEAU-DESVOIDY, 1830, Mem. Acad. Roy. Soc. France, ser. 2, vol. 2, p. 493. COQUILLETT, 1901, Jour. New York Ent. Soc., vol. 9, p. 137. KARL, 1928, Die Tierwelt Deutschlands, vol. 13, p. 65. SÉGUY, 1937, in Wytsman, Genera insectorum, fasc. 205, p. 291.

Mydina ROBINEAU-DESVOIDY, 1830, Mem. Acad. Roy. Soc. France, ser. 2, vol. 2, p. 495. COQUILLETT, 1901, Jour. New York Ent. Soc., vol. 9, p. 139.

Spilogaster MACQUART, 1835, Histoire naturelle des insectes, diptères, vol. 2, p. 293. WESTWOOD, 1840, Introduction to the modern classification of insects, vol. 2, p. 141. COQUILLETT, 1901, Jour. New York Ent. Soc., vol. 9, p. 141.

Aspila RONDANI, 1866, Atti Soc. Italiana Sci. Nat., vol. 9, p. 3; 1844, Dipterologicae Italicae prodromus, vol. 6, p. 65.

Caricea SCHNABL (*nec* Robineau-Desvoidy), 1890, Horae Soc. Ent. Rossicae, vol. 24, p. 265.

Enoplopteryx HENDEL, 1902, Wiener Ent. Zeitg., vol. 21, p. 144.

Spilaria SCHNABL AND DZIEDZICKI, 1911, Nova Acta Abhandl. K. Leopoldinisch-Carolinischen Deutschen Akad. Naturf., vol. 95, p. 108. SÉGUY, in Wytsman, 1937, Genera insectorum, fasc. 205, p. 292.

Arctohelina RINGDAHL, 1929, Ent. Tidskr., vol. 50, p. 11.

Ammittobolia RINGDAHL, 1929, *ibid.*, vol. 50, p. 12.

Aricia was proposed by Robineau-Desvoidy¹ (1830) for nine supposedly new species, but he designated no genotype. Westwood (1840) designated *Musca lardaria* Fabricius as genotype. This type designation is invalid, in my opinion, since Desvoidy failed to include this species as such in *Aricia* and placed it in his genus *Macrosoma*. Subsequent authors have accepted Desvoidy's identification of *lardaria* as correct; hence, *lardaria* cannot be considered as genotype

¹ Dates in parentheses refer to citations in the generic synonymy or in the Bibliography at the end of this paper.

because of the International Congress' ruling of included species. Rondani (1856) next proposed *Musca erratica* Fallén as genotype. This species, or at least the species determined as *erratica* by Robineau-Desvoidy, was placed in the genus *Phaonia* by Robineau-Desvoidy according to Coquillett (1901). However, Bezzi and Stein (1907) consider that *Fellaea erratica* Robineau-Desvoidy (*nec* *Musca erratica* Fallén) might be *Anthomyia lugubris* Meigen which is a *Phaonia*. Coquillett (1901) designated the first species, *Aricia impunctata* Robineau-Desvoidy, as genotype, basing his selection upon Macquart's (1835, pp. 293, 295) statement that *impunctata* equals *Musca impuncta* Fallén.

It thus appears that *Aricia* is a concept which includes *Helina* as herein treated and not *Phaonia*. The name *Aricia* cannot be used, however, since it is preoccupied by *Aricia* Savigny proposed in 1817.

The next available name is *Helina*, proposed a few pages later in the same work by Robineau-Desvoidy. He placed in it seven supposedly new species of which the first, *Helina euphemoides*, is synonymous with *Anthomyia pertusa* Meigen according to Schiner (1862, p. 623). Coquillett (1901) accepted this synonymy as correct and as such designated it as genotype in 1901. Karl (1928) and Séguy (1937) likewise consider this species to be the genotype.

Mydina was proposed for 22 new species by Robineau-Desvoidy in the same paper. The first species, *Helina dispar* Robineau-Desvoidy (= *Musca quadrum* Fabricius) was designated as type by Coquillett in 1901 following the synonymy as given by Macquart (1835, pp. 293, 295). *Mydina* therefore becomes a synonym of *Helina*, since the two genotypes, *pertusa* and *quadrum*, are congeneric, although rather distantly related.

Macquart (1835) proposed the genus *Spilogaster* for 13 species, of which the seventh, *Musca quadrum* Fabricius, was designated as genotype by Westwood (1840). Coquillett (1901) adhered to this designation. *Spilogaster* therefore becomes a synonym of *Helina* and a strict synonym of *Mydina*.

Rondani (1866) described the genus *Aspila* with *Anthomyia allotalla* as type. In 1877 he

- single median anterodorsal bristle; usually 9 to 10 mm. long . . . *obscurata* (Meigen)
12. Sternopleurals 3, situated in a nearly equilateral triangle; hypopygium of male prominent and globular in profile *fletcheri* Malloch
- Sternopleurals 4, or, if 3, then not situated in a nearly equilateral triangle; hypopygium of male not prominent and globular in profile 13
13. Mid tibiae with one or two median ventral bristles *bispinosa* Malloch
- Mid tibiae without one or two median ventral bristles 14
14. Males: With front at narrowest part at least 0.25 of head width; *no females* 15
- Males: with front at narrowest part less than 0.25 of head width; *all females* 16
15. Humeri yellow; contrasting with the darkened thoracic disc; fore tibiae without a median posterior bristle . . *spinilamellata* Malloch
- Humeri concolorous with darkened thoracic disc; fore tibiae with a median posterior bristle *floridensis*, new species
16. Males: Eyes with dense, long hairs. Females: Mid femora without a strong apical or preapical anterior or anterodorsal bristle. . 17
- Males: Eyes without dense, long hairs, occasionally with some short, sparse hairs. Females: Mid femora with either an apical or pre-apical anterior or anterodorsal bristle or both 35
17. With a pair of well-developed presutural acrostical bristles 18
- Without a pair of well-developed presutural acrostical bristles 19
18. Hind femora with a complete row of anteroventrals; and with a row of posteroventral bristles on basal one-half to two-thirds; second antennal segment fulvous
- *orbitaseta* (Stein)
- Hind femora with bristles only on apical one-third; second antennal segment concolorous with third *canadensis*, new species
19. Males 20
- Females 28
20. Apex or more of mid femora and the entire hind femora fulvous to yellow 21
- All femora black, occasionally with a limited apical area of hind femora yellow to fulvous 24
21. Mid femora with two or more distinct, long, blunt-tipped posterior bristles at base . 22
- Mid femora without any blunt posterior bristles at base 23
22. Antennae entirely black; usually more than two posterior basal bristles on mid femora *pectinata* (Johannsen)
- Antennae with root of the third and apex or more of second segment reddish to fulvous; usually not more than two posterior basal bristles on mid femora . . *johnsoni* Malloch
23. Dorsocentrals 2:3; hind tibiae with long ventral hairs or setulae; scutellar setulae descending below level of marginals
- *multiseriata* Malloch
- Dorsocentrals 2:4; hind tibiae without long ventral hairs or setulae; scutellar setulae not descending below level of marginals *canadensis*, new species
24. Hind femora with a complete row of anteroventral bristles and with long, fine, hair-like bristles on basal one-half to three-fourths of posteroventral surface . . . 25
- Hind femora with the anteroventral bristles confined to apical half and with no long, fine, hair-like bristles on basal half to three-fourths of posteroventral surface . . . 26
25. Parafrontals contiguous, the frontal vitta obscured at middle; base of wings not infuscated; dorsocentrals normally 2:4
- *rufitibia* (Stein)
- Parafrontals separated by a distance equal to 1.5 times the diameter of the anterior ocellus; base of wings infuscated; dorsocentrals usually 2:3 *bohemani* (Ringdahl)
26. Scutellar setulae descending below level of marginal bristles; hind tibiae without posteroventral bristles; calyptae bright fulvous; large setulose species, about 10 mm. long *marguerita*, new species
- Scutellar setulae not descending below level of marginals; hind tibiae with posteroventral bristles; calyptae hyaline or pale yellow; smaller, less densely setulose species, less than 10 mm. long 27
27. Parafrontals contiguous, the frontal vitta obscured at middle so that the front is scarcely wider than the diameter of the anterior ocellus; longest arisal hairs distinctly longer than width of third antennal segment
- *griseogaster*, new species
- Parafrontals separated by more than the diameter of the anterior ocellus so that the front is slightly wider than the distance across the posterior ocelli inclusive; longest arisal hairs about 0.8 times as long as width of third antennal segment
- *obscuratoides* (Schnabl)
28. Front with a pair of cruciate bristles; hind tibiae with one or two posterodorsal bristles *cruciata* Snyder
- Front without cruciate bristles; hind tibia posterodorsally bare 29
29. Outer vertical bristles equal in length and strength to postocellar bristles; anterior

- presutural dorsocentral bristle about half as long and strong as the posterior one; scutellum sparsely setulose *floridensis*, new species
- Outer vertical bristles much stronger and longer than the postocellar bristles; anterior presutural dorsocentral bristle about three-fourths or more as long and strong as the posterior one; scutellum more densely setulose 30
30. Mid tibiae with distinct and well-developed median or submedian anterodorsal bristles *bohemani* (Ringdahl)
- Mid tibiae without distinct and well-developed median or submedian anterodorsal bristles 31
31. With a complete row of anteroventral bristles on hind femora, the posteroventral bristles at base distinctly longer than those towards the apex *rufitibia* (Stein)
- With the anteroventral bristles on hind femora confined to apical half, the posteroventral basal bristles only as long as or shorter than those towards apex 32
32. Legs entirely black or with hind tibiae slightly reddish; calyptres deep yellow to orange *marguerita*, new species
- Legs entirely yellow or with only a limited portion of fore and mid femora darkened; calyptres white to pale yellow 33
33. Third antennal segment entirely black 34
- Third antennal segment partially reddish *johnsoni* Malloch
34. Cross veins not infuscated; dorsocentrals 2:3 *multiseriata* Malloch
- Cross veins narrowly but distinctly infuscated; dorsocentrals 2:4 *pectinata* (Johannsen)
35. Thorax with several brown to black spots behind the suture; scutellum with an infuscated spot on each side *uliginosa* (Fallén)
- Thorax without brown to black spots behind suture; scutellum without an infuscated spot on each side 36
36. Hind tibiae with one or more distinct posterodorsal bristles in addition to those at apex 37
- Hind tibiae without distinct posterodorsal bristles except at apex 58
37. Males 38
- Females 50
38. Second to fourth abdominal sternites broader than long and with a lateral row of bristles which are as long as the dorsoventral thickness of the abdomen; apical tarsal segments yellow *lasiosterna* Snyder
- Second to fourth abdominal sternites either longer than broad or without long lateral bristles and yellow apical tarsal segments 39
39. Legs black, at most the hind tibiae slightly reddish to brown 40
- Legs partly yellow, at least the tibiae mostly yellow to fulvous 43
40. Arista bare or with the longest hairs not more than 0.25 times as long as width of third antennal segment 41
- Arista plumose, the longest hairs at least 0.75 times as long as width of third antennal segment 42
41. Hind tibiae with the apical posterodorsal bristle as long as the apical anterodorsal one; with a complete row of long, strong posterodorsal and posteroventral bristles; hind femora without posteroventral hair-like bristles on basal half to three-fourths; pra almost or quite as long as the posterior notopleural bristle; fore tibiae with one or two median posterior bristles *squalens* (Zetterstedt)
- Hind tibiae without an apical posterodorsal bristle or, if present, then less than 0.33 times as long as the anterodorsal one; with only two to four short, posterodorsal bristles and a row of hair-like posteroventral bristles; hind femora with a row of long, bristly hairs on basal half to three-fourths of posteroventral surface; pra short; fore tibiae bare at middle *garretti*, new species
42. Hind femora with a complete row of anteroventral bristles and a row of posteroventral bristles on at least the basal half, all of which are fully as long as the diameter of femora where situated; fore tibiae with a median posterior bristle; mid tibiae without median anterodorsal bristles; dorsocentrals 2:3 *nigrita* Malloch
- Hind femora with only a partial row of anteroventral bristles on apical half and with no posteroventral bristles; fore tibiae usually without a median posterior bristle; mid tibiae usually with a median anterodorsal bristle; dorocentrals 2:4 *duplicata* (Meigen)
43. Palpi fulvous and mid and hind femora mostly or entirely yellow to fulvous 49
- Palpi black to brown and mid and hind femora mostly or entirely black 44
44. Third antennal segment long and narrow, at least 2.75 times as long as the second; hind tibiae with several rows of long hairs on ventral surfaces *consimilata* Malloch
- Third antennal segment normal, at most 2.25 times as long as second; hind tibiae with-

- out rows of long hairs on ventral surfaces 45
45. Hind tibiae with a single long, median anterodorsal bristle which is distinctly longer than others in this series and not quite 0.4 times as long as tibial length; the apical dorsal bristle long and hair-like and at least half as long as hind metatarsus; eyes separated by less than distance across posterior ocelli inclusive . . . *anceps* (Zetterstedt)
Hind tibiae without an unusually long median anterodorsal bristle; the apical dorsal bristle stoutly developed and longish but not hair-like 46
46. Hind femora with a complete row of anteroventral bristles and at least a partial row of posteroventral strong hairs or bristles . . 47
Hind femora with only a few anteroventral bristles on apical half and with no posteroventral bristles . . . *algonquina* Malloch
47. Longest arisal hairs not so long as width of third antennal segment; the posteroventral bristles on hind femora not so long as greatest diameter of femora, the latter infuscated 48
Longest arisal hairs as long as width of third antennal segment; at least one or more of the posteroventral bristles on hind femora as long as greatest femoral diameter; usually apex or more of mid or hind femora fulvous *nigribasis* Malloch
48. Third antennal segment not more than 1.5 times as long as second; second antennal segment black; cheeks one-third of eye height *toga*, new species
Third antennal segment at least 1.66 times as long as second; second antennal segment reddish; cheeks one-fourth of eye height *spuria* Malloch
49. Hind femora with one or more bristles at apex of posteroventral surface which are 0.75 times or more as long as the anteroventral bristles; mid tibiae with one or two anterodorsal bristles; hypopygium yellow to fulvous; frontal vitta at narrowest part distinctly wider than distance across posterior ocelli inclusive *linearis* Malloch
Hind femora without distinct bristles at apex of posteroventral surface, the setulae not over one-fourth as long as the anteroventral ones; mid tibiae without anterodorsal bristles; hypopygium black; frontal vitta at narrowest part at most as wide as distance across posterior ocelli inclusive *abiens* (Stein)
50. Mid tibiae with one or more anterodorsal bristles 51
Mid tibiae without anterodorsal bristles . . 55
51. Hind femora with a complete row of anteroventral bristles, all of which are as long as femoral diameter where situated . . . 53
Hind femora with anteroventral bristles confined to apical half or with a few shorter ones towards base which are shorter than femoral diameter where situated . . . 52
52. Palpi and mid and hind femora yellow; abdomen not spotted . . . *linearis* Malloch
Palpi and mid and hind femora black; abdomen with paired spots on second to fourth visible tergites . *duplicata* (Meigen)
53. Legs entirely black; hind tibiae with a single posterodorsal bristle . . . *nigrita* Malloch
Legs mostly fulvous; hind tibiae with two or more posterodorsal bristles 54
54. Longest arisal hairs as long as width of third antennal segment; mid and hind femora infuscated at base . . . *nigribasis* Malloch
Longest arisal hairs shorter than width of third antennal segment; mid and hind femora entirely fulvous . . . *spuria* Malloch
55. Palpi yellow *abiens* (Stein)
Palpi infuscated 56
56. Hind femora with long, fine posteroventral bristles on basal half; third antennal segment 2.75 or more times as long as second *consimilata* Malloch
Hind femora without posteroventral bristles; third antennal segment not over 2.0 times as long as second 57
57. Hind femora with a complete row of anteroventral bristles; mid femora with two or more ventral bristles on basal half; second antennal segment black *anceps* (Zetterstedt)
Hind femora with only a few bristles on apical half of anteroventral surface; mid femora with a single stout submedian ventral bristle; second antennal segment fulvous *nudibasis*, new species
58. Males 59
Females 68
59. Hind tibiae with several rows of long, fine hairs along almost the entire length of the ventral surfaces, those on the anteroventral surface distinctly longer than tibial diameter; hind femora usually with distinct posteroventral hairs or bristles in addition to the apical setulae; all of the latter are almost or quite as long as femoral diameter 64
Hind tibiae with at most a single row of anteroventral and posteroventral bristle-like setulae, if any are present on anteroventral surface, then they are somewhat hair-like and not longer than the tibial diameter; hind femora never with long posteroventral hairs or bristles except pre-apically . . 60

60. Abdomen unspotted and without dorsal or lateral checkerings; all femora with the possible exception of a limited apical area infuscated; longest arisal hairs distinctly longer than width of third antennal segment *exilis* (Stein)
Abdomen with distinct dark spots or with dorsal and lateral checkerings or both; at least mid or hind femora or both more than half fulvous; longest arisal hairs not more than 0.75 times as long as width of third antennal segment 61
61. Pra over 0.8 times as long and strong as the posterior notopleural bristle; usually some portion of scutellum or humeri or both yellow to fulvous 62
Pra less than 0.66 times as long and strong as the posterior notopleural bristle; thorax entirely black 63
62. Cross veins infuscated; dorsocentrals usually 2:4; base of third antennal segment infuscated *troene* (Walker)
Cross veins not infuscated; dorsocentrals usually 2:3; base of third antennal segment infuscated *humilis* (Stein)
63. Hind tibiae with a single median to submedian anterodorsal bristle *procedens* (Walker)
Hind tibiae with two or more median to submedian anterodorsal bristles *obscurinervis* (Stein)
64. Longest arisal hairs at least 2.0 to 2.5 times as long as greatest arisal diameter; legs mostly yellow to fulvous; scutellum in part, at least, fulvous 65
Longest arisal hairs not over 1.5 times as long as greatest arisal diameter; legs mostly or entirely black; scutellum entirely black 67
65. Dorsocentrals 2:4; posteroventral bristles of hind femora longest at base; wings distinctly brownish hyaline *ute*, new species
Dorsocentrals 2:3; posteroventral bristles of hind femora longest on apical half or less; wings clear to slightly yellowish hyaline 66
66. Humeri and fore coxae infuscated; fore tibiae without a median posterior bristle; front at narrowest part not so wide as distance across posterior ocelli inclusive *keremeosa*, new species
Humeri and fore coxae fulvous; fore tibiae with a median posterior bristle; front at narrowest part distinctly wider than distance across posterior ocelli inclusive *villihumilis*, new species
67. Hind femora with several rows of fine posteroventral hairs on basal one-fourth to one-third which are about 0.75 times as long as femoral diameter; abdominal spots small; species about 6 mm. long *neopociloptera* Malloch
Hind femora posteroventrally bare; abdominal spots large; species at least 8 mm. long *obscuripes* (Zetterstedt)
68. All femora except possibly the apical one-fifth infuscated 69
At most fore and basal half of mid femora infuscated 71
69. Eyes with distinct hairs 30
Eyes without distinct hairs 70
70. Abdomen unspotted; longest arisal hairs at least as long as width of third antennal segment; hind tibiae with two median anterodorsal bristles *exilis* (Stein)
Abdomen with a pair of large dark spots on at least the second and third visible tergites; hind tibiae normally with only one median anterodorsal bristle *obscuripes* (Zetterstedt), *neopociloptera* Malloch
71. Cross veins broadly infuscated 72
Cross veins not or only very indistinctly infuscated 75
72. Hind tibiae with a single median anterodorsal bristle *procedens* (Walker)
Hind tibiae with at least two median anterodorsal bristles 73
73. Palpi yellow; hind femora without posteroventral bristles *troene* (Walker)
Palpi infuscated at least apically; hind femora with several posteroventral bristles 74
74. Sternopleurals 1:2; fore tibiae with a short median anterodorsal bristle; second antennal segment brown to black *obscurinervis* (Stein)
Sternopleurals 2:2; fore tibiae without a median anterodorsal bristle; second antennal segment entirely fulvous *ute*, new species
75. Thorax entirely fulvous; abdomen entirely infuscated, slightly olive green pruinose, unspotted *bicolorata* (Malloch)
Thorax and abdomen unicolorous, or the humeri or scutellum somewhat lighter colored *humilis* (Stein)

Helina rothi Ringdahl

Yetodesia marmorata STEIN (*nec* Zetterstedt), 1888, Ent. Nachr., vol. 14, p. 374.

Mydaea marmorata BEZZI AND STEIN (*nec* Zetterstedt), 1907, Katalog der Paläarktischen Dipteren, vol. 3, p. 642. STEIN, 1914, Arch. Naturgesch., sect. A. vol. 79, no. 8, p. 19; 1916,

ibid., sect. A, vol. 81, no. 10, p. 64. SÉGUY, 1923, Faune de France, Diptera, Anthomyiides, p. 242.

Helina marmorata MALLOCH (*nec* Zetterstedt), 1921, Canadian Ent., vol. 53, p. 104. RINGDAHL, 1924, Ent. Tijds., vol. 45, p. 54. KARL, 1928, Die Tierwelt Deutschlands, vol. 13, pt. 3, p. 80. STACKELBERG, 1933, Mouches parti Européenne U.R.R.S., Leningrad, p. 536.

Helina rothi RINGDAHL, 1939, Opuscula Ent., vol. 4, p. 150.

MALE: Length 8 to 9.5 mm. Head black, grayish pruinulent. Front at narrowest part as wide as anterior ocellus; at same level, the parafrontals half as wide. With about eight strong bristles and some shorter setulae which extend at least 0.75 the distance to the anterior ocellus. Juncture of parafacials and parafrontals 1.25 as long as greatest width of third antennal segment; parafacials narrowed to 0.5 below. Cheeks 0.25 of eye height and equal to length of third antennal segment; with two or three rows of upwardly directed setulae along its lower margin. Eyes with long hairs. Antennae black, the third segment 2.0 times as long as second. Longest hairs on arista 0.5 to 0.75 as long as width of third antennal segment. Palpi black.

Thorax black, grayish pruinulent, very distinctly quadrivittate. Presutural acrostical setulae in about 10 irregular rows. Acrosticals 0:1, dorsocentrals 2:4; pra as long as, or longer than, the anterior notopleural bristles and fully 0.75 as long as the first postsutural dorsocentral; bare at the base of notopleural bristles. Scutellar setulae descending slightly below level of marginals, the ventral surface bare. Sternopleurals 2:2; lateral margin of prosternum and hypopleura in front of spiracle with distinct, hair-like setulae.

Legs entirely black. Fore tibiae occasionally with a median posterior bristle. Mid femora with four or five basal ventral bristles and a few longer, weaker setulae along almost its entire length, the basal anterior row of bristles moderately developed, and with an apical anterodorsal bristle. Mid tibiae with three median posterior bristles. Hind femora with a row of anteroventral bristles on apical half and with a few very weak apical posteroventral bristles. Hind tibiae with two median anterodorsal and about eight median anteroventral bristles, with one or two rows of rather short, closely placed posterior and posteroventral bristle-like setulae on apical

three-fourths which are longest at the middle and become shorter towards apex.

Wings light smoky, hyaline, somewhat darker at base. Costal thorns and setulae undeveloped. Posterior cross vein very slightly infuscated. Calyptrae and halteres yellow.

Abdomen black, distinctly grayish pruinulent, with very distinct dorsal and lateral checkerings; when viewed in certain lights, with a pair of moderately distinct spots on second and third visible tergites. Basal sternite bare; others with two or three pairs of rather long, apical, hair-like bristles; fifth moderately cleft, with a clump of hair-like bristles at base of each process. Hypopygium black.

FEMALE: Length 8 to 9.5 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, distinctly widened anteriorly. Juncture of parafacials and parafrontals about 2.0 times as long as width of third antennal segment; parafacials narrowed to 0.5 this width below and with a distinct spot which reaches from the eyes to base of antennae. Cheeks without the row of upwardly directed setulae. Eyes with hairs shorter and more widely scattered.

Thorax more yellowish gray pruinulent.

Fore tibiae usually with two short median posterior bristles. Mid tibiae with one or two submedian anterodorsal bristles and the hind tibiae usually with two or three anteroventral bristles which are more stoutly developed, the posterior to posteroventral row absent.

Abdomen without the paired spots, but with a moderately distinct dorsocentral vitta and dorsal and lateral checkerings.

SPECIMENS EXAMINED: Twenty males and 32 females from Maine, New Hampshire, New York, Michigan, Wisconsin, Minnesota, Montana, Idaho, California, New Brunswick, and Alberta.

This species has, until recently, been known under the name *marmorata* Zetterstedt. Ringdahl has examined all of Zetterstedt's specimens of *marmorata* now in existence and reports that the males are specimens of *Phaonia consobrina* (Zetterstedt), *Phaonia serva* (Meigen), *Phaonia lugubris* (Meigen), and that one female is *Helina obscurata* (Meigen).

Stein (1902, p. 37) apparently had not seen all of the above specimens when he examined

the Zetterstedt collection, but he believed later (1903, p. 277) that he had found specimens which agreed with Zetterstedt's original descriptions when he used the name *marmorata*.

Malloch, in his key to *Helina*, noted the hairiness of the prosternum and hypopleura and indicated that it might be of generic significance.

If the prosternal hairs are considered of generic significance, then *rothi* might be placed in the genus *Arctohelina* Ringdahl. *Rothi* does not possess the very characteristic apical posterodorsal bristle on the hind tibiae that is present in the genotype, *longicornis* Zetterstedt, and *squalens* Zetterstedt which are placed in *Arctohelina* by Ringdahl. However, I am inclined to place all three species in *Helina*.

Helina flavisquama (Zetterstedt)

Aricia flavisquama ZETTERSTEDT, 1860, Diptera Scandinaviae, vol. 14, p. 6225. STEIN, 1902, Wiener Ent. Zeitg., vol. 21, p. 31.

Mydaea setitibia STEIN, 1914, Arch. Naturgesch., sect. A, vol. 79, no. 8, p. 19; 1916, *ibid.*, sect. A, vol. 81, no. 10, p. 68.

Mydaea flavisquama STEIN, 1916, Arch. Naturgesch., sect. A, vol. 81, no. 10, p. 61.

Helina hylemyioides MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 46, p. 137.

Mydaea flavocalyptrata STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 31.

Helina flavisquama RINGDAHL, 1924, Ent. Tidskr., vol. 45, p. 56.

MALE: Length 8 mm. Head black, grayish pruinulent. Front at narrowest part not quite so wide as distance across posterior ocelli inclusive. Parafrontals contiguous or subcontiguous, at narrowest part about as wide as diameter of anterior ocellus and with seven or eight pairs of bristles and long setulae. Junction of parafacials and parafrontals 1.5 times as long as width of third antennal segment, parafacials only slightly narrower below. Cheeks about 3.0 times as high as greatest width of third antennal segment, with two or three rows of upwardly directed bristles. Antennae and palpi black, third antennal segment 1.8 times as long as second. Longest hairs on arista only slightly longer than its greatest diameter. Eyes distinctly haired.

Thorax black, grayish pruinulent, dis-

tinctly quadrivittate. Presutural acrostical setulae in eight to 10 irregular rows. Acrosticals 0:1-2; dorsocentrals 2:3; pra distinctly longer than either notopleural bristle, almost as long as the bristle behind it; notopleura bare adjacent to base of bristles. Scutellar setulae descending slightly below level of marginals and with numerous fine hairs on the ventral surface. Sternopleurals 1:2.

Legs black. Fore tibiae usually with a median posterior bristle. Mid femora with an almost complete row of long, fine ventral bristles, with a distinct row of shorter anteroventral and anterior ones on the basal half and with two apical anterodorsal bristles. Mid tibiae with two or three median posterior bristles and with a distinct median posteroventral to ventral bristle and occasionally with a weak submedian anterodorsal one. Hind femora somewhat longer and stronger than usual, with a complete row of long anteroventral and posteroventral bristles, which are at least twice as long as diameter of hind femora where situated. Hind tibiae very slightly curved, with two median anterodorsal bristles and a complete row of long and quite closely placed anteroventral, posterior, and posteroventral bristles, the latter two rows of bristles longest.

Wings slightly brownish hyaline, distinctly deep yellow to orange at base. Costal thorn and setulae only slightly developed. Third and fourth veins distinctly divergent at apices. Cross veins distinctly infuscated. Posterior cross vein distinctly curved. Calyptrae and halteres deep yellow to orange.

Abdomen black, yellowish gray pruinulent, with an indistinct dorsocentral vitta and distinct dorsal and lateral checkerings. Basal sternite bare; others with two or three pairs of long apicals; fifth distinctly cleft. Hypopygium black.

FEMALE: Length 8 to 9 mm. Similar to the male, differing in having the front at apex 0.33 of head width, slightly widened anteriorly. Legs more brownish black. Mid tibiae always with a strong median anterodorsal bristle. Mid femora with less numerous ventral bristles. Hind femora with the anteroventral and posteroventral bristles shorter and more widely placed. Hind tibiae with only three or four anteroventral and no posterior and posteroventral bristles.

SPECIMENS EXAMINED: Fifteen males and 25 females from Oregon, Nevada, Montana, New Mexico, Colorado, Alberta, Manitoba, Alaska, and Sweden.

This species shows a wide variation in the color of the abdominal pruinescence, some specimens being yellowish gray while others are bluish gray. A few males, especially the North American ones, possess a weak median anterodorsal bristle on mid tibiae, a character possessed by all females of this and related species. The amount of infuscation along the longitudinal veins and cross veins is also variable. This variation appears in both North American and European specimens, so I doubt that it is a case of confusing distinct North American and European species. While I have not seen the type female of *Helina hylemyioides* Malloch, a careful perusal of the description would indicate that it is probably this species. It has the same scutellar hairs on the ventral surface; short haired or pubescent arista; and distinctly orange-colored wing bases, halteres, and calyptres.

The species should be easily identified by the characters enumerated in the key. As far as I know, it has no close relatives; *fulvisquama* and *luteisquama*, though large and having the elongate form, rather distinctly yellowish wing bases, and calyptres, differ very essentially from it in many structural characters.

***Helina vanderwulpi* (Schnabl)**

? *Anthomyia barpana* WALKER, 1849, List of the specimens of dipterous insects in the . . . British Museum, vol. 4, p. 933. HUCKETT, 1934, Canadian Ent., vol. 46, p. 135.

Aricia vanderwulpi SCHNABL, 1886, Horae Soc. Ent. Rossicae, vol. 20, p. 378; 1888, *ibid.*, vol. 22, p. 482. STROBL, 1893, Verhandl. Zool. Bot. Gesellsch. Wien, vol. 43, p. 215.

Aricia brevis (p.p.) STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 180.

? *Aricia barpana* STEIN, 1901, Zeitschr. Hymen. Dipt., vol. 1, p. 188.

Spilogaster vanderwulpi STEIN, 1903, Wiener Ent. Zeitg., vol. 22, p. 275.

Aricia propinqua STORM, 1895, Skr. K. Norske Vidensk. Selskabs, p. 225.

Mydaea vanderwulpi STEIN, 1914, Arch. Naturgesch., sect. A, vol. 79, no. 8, p. 22; 1916, *ibid.*, sect. A, vol. 81, no. 10, p. 40.

Mydaea brevis (p.p.) STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 26.

Helina brevis MALLOCH, 1921, Canadian Ent., vol. 53, p. 106.

Helina vanderwulpi RINGDAHL, 1924, Ent. Tidskr., vol. 45, p. 54. KARL, 1928, Die Tierwelt Deutschlands, vol. 13, pt. 3, p. 85.

MALE: Length 6 to 8 mm. Head black, grayish pruinose. Front at narrowest part 0.75 to 1.5 times as wide as distance across posterior ocelli inclusive. Frontal vitta at narrowest part 1.0 to 2.0 times as wide as diameter of anterior ocellus. Each parafacial at narrowest part not quite so wide as diameter of anterior ocellus. Parafrontals with strong bristles on apical half and with some shorter setulae which reach to the narrowest part of front. Juncture of parafacials and parafrontals as long as greatest width of third antennal segment; parafacials only slightly narrowed below. Cheeks about 0.33 of eye height and about 3.5 times as high as width of third antennal segment; with a double row of upwardly directed setulae along the ventral margin. Antennae and palpi black, the former extending to or slightly below the lower level of eyes. Longest arisal hairs as long as width of third antennal segment. Eyes with long hairs.

Thorax black, grayish pruinose, distinctly quadrivittate. Presutural acrostical setulae in seven or eight irregular rows. Dorsocentrals 2:4; pra 0.5 to 0.75 as long as posterior notopleural; notopleural without setulae adjacent bristles. Scutellar setulae closely placed and descending below level of marginal bristles, especially at base. Ventral surface of scutellum with numerous fine, pale hairs. Sternopleurals 2:2, the lower anterior one often much weaker than others.

Leg color variable. Fore tibiae with a median posterior bristle. Mid femora with anterior bristles on basal half scarcely developed, a distinct row of four or five ventral bristles on basal half and without apical anterior bristles. Mid tibiae with four median posterior bristles, those on basal half quite slender and hair-like and with a number of very long, slender, posteroventral setulae on basal half which gradually become shorter apically. Hind tibiae with two anterodorsal and three or four median anteroventral bristles.

Wings hyaline, slightly brownish gray at base, at most only the anterior cross vein nar-

rowly infuscated. Costal thorns and setulae slightly developed. Stem vein with one or two setulae on ventral surface opposite humeral cross vein. Other veins bare. Third and fourth veins strongly divergent apically. Calyptrae and halteres yellow.

Abdomen black, brownish gray pruinulent, with paired black rectangular spots on second and third visible tergites and all with slight lateral checkerings. Sternites almost square, with moderately long setulae on the entire surface; fifth only slightly cleft, without distinctive armature. Hypopygium black.

FEMALE: Length 7 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, widened to 0.5 anteriorly. With a row of parafrontal bristles, the posterior two pair outwardly, others inwardly, directed.

Tibiae and apices of femora broadly fulvous. Fore tibiae often with two median posterior bristles. Mid tibiae with two strong, submedian anterodorsal bristles. Hind femora with the anteroventral and posteroventral bristles more bristle-like, not fine and hair-like.

Tergites not so distinctly spotted, but checkerings more distinct.

SPECIMENS EXAMINED: Thirty-nine males and 16 females from Oregon, California, Idaho, Wyoming, Colorado, Utah, South Dakota, Minnesota, Wisconsin, Alberta, Quebec, Alaska, Sweden, Finland, Germany, and Italy.

There is considerable variation in the color of the legs and body pruinescence in the above specimens. Certain males have the legs, except variable portion of mid and hind tibiae, black, while others have the apices of fore femora and apical half or more of mid and hind femora and all tibiae yellow to fulvous; there are all gradations between. The body pruinescence varies from brownish to yellowish gray to gray. I have been unable to find any correlation between leg color and male frontal width.

Some correlation appears to exist between geographical distribution and the leg color; the northern Nearctic and Palearctic specimens have darker legs, while specimens from South Dakota and Nevada have the legs more fulvous.

There is one correlation that may be

worthy of note. Those males that possess a very fine median anterodorsal bristle on mid tibiae are slightly larger in the majority of cases, but within these series the same variation exists in leg color and the frontal width.

Stein (1920, pp. 26, 38, and 40) considered those forms having femora and tibiae largely yellow to be *brevis* Stein, the forms with entirely black legs to be *barpana* Walker, and those with hind tibiae reddish to be *vanderwulpi* Schnabl.

Huckett (1934a, p. 135), after examining Walker's type, reports that *vanderwulpi* Schnabl is a synonym of *barpana*. However, the specimen labeled as a type of *barpana* is a male, while Walker's description states that it is a female with black halteres. For this reason, I have continued to use the name *vanderwulpi* Schnabl. Walker's rather vague description suggests that he may have had his own *nigripennis* at hand when he wrote this description.

I have been unable to locate the male type of *Aricia brevis* Stein. The female specimen from Maplevale, Arkansas, in the Hough collection in the Chicago Natural History Museum may be the "female J. (Ark)" mentioned by Stein. This specimen is in poor condition but is, I believe, identical with *pectinata* Johannsen. If the male is never located, it may be necessary to accept *brevis* as an older name for *pectinata* and to propose a new name for those forms of *vanderwulpi* which have the legs mostly yellowish, if this color character is considered to be of specific value.

Bohemani Ringdahl is quite similar in coloring to the dark form of this species, but the absence of hairs on the ventral surface of the scutellum should separate it from *vanderwulpi*.

There are two other species besides *vanderwulpi*, namely *aldrichi*, new species, and another from China which form a distinct group that might be considered worthy of generic separation on the basis of the hairy ventral surface of scutellum and stem vein. However, *flavisquama* Zetterstedt has ventral scutellar hairs, and the Palearctic *atripes*-group, besides having ventral scutellar hairs, has hairs on the hypopleura and on ventral surface of the node. Thus, if the *vanderwulpi*-group were accorded generic status, the *atripes*-group and *flavisquama* should be given the

same status, which I feel is unnecessary at this time.

Helina aldrichi, new species

MALE: Length 7 to 8 mm. Very similar to *vanderwulpi* Schnabl. Head black, grayish pruinulent. Front at narrowest part about as wide as distance across posterior ocelli inclusive. Frontal vitta at narrowest part 1.25 times as wide as diameter of anterior ocellus. Parafrontals with seven to eight bristles and setulae continued to narrowest part of front. Juncture of parafacials and parafrontals 1.25 times as long as width of third antennal segment, parafacials narrowed to 0.75 of antennal width below. Cheeks 2.75 times as high as width of third antennal segment and with one or two rows of strong, upwardly directed setulae along anterior ventral margin. Eyes hairy. Antennae and palpi black. Third antennal segment 2.0 times as long as second. Longest arisal hairs as long as width of third antennal segment.

Thorax black, sparsely grayish pruinulent, indistinctly quadrivittate. Bristled as in *vanderwulpi*, but there are several setulae adjacent to posterior notopleural bristle.

Legs black, apices of femora and tibiae very narrowly orange to brown. Fore femora normal. Fore tibiae with one or two median posterior bristles. Mid femora with numerous long, slender anteroventral setulae on basal one-fourth and four or five stronger ventral ones on basal half, a row of shorter anterior bristles on basal half, and no apical anterior bristles. Mid tibiae with two strong median anterodorsal and three or four posterior bristles. Hind legs as in *vanderwulpi*.

Wings dark brownish gray hyaline at base, more grayish apically. The longitudinal veins as narrowly infuscated as base of wings. The cross veins no more infuscated than longitudinal. Costal setulae and thorns moderately developed. Stem vein with one or two setulae on ventral surface opposite humeral cross vein. Other veins bare. Third and fourth veins slightly divergent apically. Calyptrae and halteres pale yellow.

Abdomen black, grayish pruinulent, with a pair of moderately large, subsquare black spots on second and third visible tergites and with distinct dorsal and lateral checkerings. The base of each tergite with a narrow, denser

grayish pruinulent band. Basal sternite bare; others without apical bristles but with dense, moderately long, slender setulose bristles; fifth moderately cleft, without distinctive armature. Hypopygium black.

FEMALE: Length 7 to 8 mm. Similar to the male, differing from it in having the front at vertex 0.33 of head width and widened to 0.5 anteriorly. With a complete row of parafrontal bristles, the posterior two outwardly, others inwardly, directed. Cheeks with shorter, upwardly directed setulae.

Thorax more distinctly brownish gray pruinulent and quadrivittate.

Legs black, apices of femora more broadly fulvous and the apical half of mid tibiae and apical three-fourths of hind tibiae broadly reddish brown. Mid femora without the long basal anteroventral setulae but with anterior and ventral bristles on basal half. Hind femora with the anteroventral and posteroventral bristles stouter.

Abdomen more brownish gray pruinulent, without the subsquare black spots and with more distinct checkerings. The second and third sternites with distinct apical bristles.

TYPE MATERIAL: Holotype: Male, Skagway, Alaska, June 4, 1921 (J. M. Aldrich). Allotype: Female, Sylvan Pass, Yellowstone National Park, Wyoming, August 17, 1927, (J. M. Aldrich). Paratypes: Two males, same data as holotype; one female, Tuolumne Meadows, Soda Springs, California, 8600 feet, August 8, 1916 (G. R. Pilate). All types are in the United States National Museum.

The characters mentioned in the key should separate this species from the closely related *vanderwulpi* Schnabl. Certain male specimens of the latter species possess one very weak anterodorsal mid tibial bristle. The more extensively darkened femora and entirely darkened fore tibiae should also help separate the females of *aldrichi* from *vanderwulpi*.

Helina neoborealis, new name

Aricia borealis MALLOCH (nec Zetterstedt), 1919, Rept. Canadian Arctic Expedition, vol. 3, pt. C, p. 64c.

Helina borealis MALLOCH (nec Zetterstedt), 1921, Canadian Ent., vol. 53, p. 109; 1923, North American Fauna, no. 46, p. 189.

MALE: Length 7.5 mm. Head black, silvery

gray pruinulent. Viewed at different angles, the parafacials and parafrontals with golden, and the cheeks with reddish, reflections. Front at narrowest part slightly wider than distance across posterior ocelli. At the same level, the parafrontals about, and the frontal vitta 3.0 times, as wide as diameter of anterior ocellus. Parafrontals with a complete row of long, slender, almost hair-like bristles to vertex. Juncture of parafacials and parafrontals as long as width of third antennal segment, parafacials scarcely narrowed below. The slightly projected cheeks with numerous upwardly directed setulae. Vibrissae are not well differentiated. Cheeks 2.0 times as high as width of third antennal segment. Antennae black, third segment about as long as second. Palpi black. Eyes bare.

Thorax black, shiny, with very sparse gray pruinescence and with four scarcely distinguishable vittae. The clothing setulae long and fine. Presutural acrostical setulae in about six irregular rows. Acrostical bristles 0:2-3; dorsocentrals 2:4; pra very slender, almost 0.75 as long as the posterior notopleural bristle; hairs on notopleura adjacent to both bristles. Scutellar setulae descending onto the sides. Sternopleura with numerous long setulae but with only 1:1 bristles. Posterior spiracle small, almost round.

Legs black. Fore femora normal but with long and dense clothing setulae. Fore tibiae with a row of rather short, fine, posterior setulae and two to four distinct posteroventral to ventral bristles. Mid femora without distinct ventral or posteroventral bristles but with three or four long, slender, anterior bristles at base, and no apical anterior bristles. Mid tibiae with two or three median posterior and three to four posteroventral bristles; with a few very short, posterodorsal, bristle-like setulae on basal half or more. Hind femora with a complete row of anteroventral bristles which are slightly longer and stouter on apical half, those at base about as long as diameter of femora where situated and with a group of fine posterior setulae on basal one-fifth. Hind tibiae with two or three rows of short but distinct anterodorsal and anterior bristles and a row of moderately long posterodorsal bristles on basal half which are longest at the base. Hind tibiae slightly compressed, with the base quite slender and with a distinct ventral

projection which is armed at apex with three or four short but distinct bristles. Mid and hind metatarsus with one or two pairs of moderately stout ventral bristles at base.

Wings slightly brownish hyaline, darker at base. Costal setulae and thorns undeveloped, other veins bare. Third and fourth subparallel at apices, third vein ending almost at the exact wing tip. Cross veins not infuscated. Penultimate section of the fourth vein 0.5 as long as ultimate section. Calyptrae yellow, the margins deep yellow. Halteres entirely black.

Abdomen rather slender and elongate, black, slightly grayish brown pruinulent, with a distinct dorsocentral vitta and without dorsal or lateral checkerings. The tergal bristles not clearly distinguishable from the clothing setulae so that the apical two segments appear to have dense, short bristles. Basal sternite hairy (not clearly visible in the type); others with fine, moderately long clothing setulae and without clearly distinguishable apical bristles. The sternites only slightly longer than broad; fifth subshiny, with a very broad but shallow cleft, with fine setulae of moderate length over the entire discal surfaces of processes. Hypopygium moderately developed, black, subshiny.

Description based on the holotype male from Bernard Harbour, Northwest Territories, in the Canadian National Collection.

Zetterstedt described an *Anthomyza borealis* in 1838 which was placed in *Arctohelina* Ringdahl by Ringdahl along with *Anthomyza longicornis* Zetterstedt, the genotype, in 1931. In 1924 before describing *Arctohelina* he placed *borealis* in *Helina*. However, in 1939, after examination of Zetterstedt's types, Ringdahl considered *borealis* to be the female of *Anthomyia squalens*, which had been described several pages earlier. I do not believe the character used to distinguish *Arctohelina* from *Helina* Robineau-Desvoidy, namely, the long posterodorsal and anteroventral hind tibial bristles, to be of generic value. In any event, it becomes necessary to change the name *borealis* Malloch (*nec* Zetterstedt), since it is a homonym, even though *borealis* Zetterstedt was subsequently discovered to be a synonym of another species. I therefore propose the name *neoborealis* for this species.

Helina laxifrons (Zetterstedt)

Aricia laxifrons ZETTERSTEDT, 1860, Diptera Scandinaviae, vol. 14, p. 6200.

Aricia nigripennis SCHNABL (*nec* Walker), 1888, Horae Soc. Ent. Rossicae, vol. 22, p. 378.

Spilogaster nigricans STEIN (*nec* Robineau-Desvoidy), 1897, Berliner Ent. Zeitschr., vol. 42, p. 198.

Spilogaster laxifrons STEIN, 1902, Wiener Ent. Zeitg., vol. 21, p. 33.

Mydaea tinchipennis STEIN, 1916, Arch. Naturgesch., sect. A, vol. 81, no. 10, p. 69.

Helina nigricans MALLOCH, 1921, Canadian Ent., vol. 53, p. 55. KARL, 1929, Die Tierwelt Deutschlands, vol. 3, no. 3, p. 97.

Helina laxifrons RINGDAHL, 1931, Ent. Tidskr., vol. 52, p. 173; 1939, Opuscula Ent., vol. 4, p. 149.

MALE: Length 5 to 7 mm. Head black, grayish pruinose. Front at narrowest part slightly wider than diameter of anterior ocellus. Parafrontals subcontiguous, with a row of bristles and setulae. Juncture of parafacials and parafrontals not quite so long as narrowest width of third antennal segment, parafacials distinctly narrowed below. Cheeks about 1.5 to 2.0 times as high as greatest width of third antennal segment. Antennae black, third segment about 2.0 times as long as second segment. Longest arisal hairs slightly longer than width of third antennal segment. Palpi black. Eyes with short but distinct hairs.

Thorax black, brownish gray pruinose, distinctly quadrivittate. Presutural acrostical setulae in six to eight irregular rows. Acrosticals 0:1, dorsocentrals 2:3-4; pra scarcely distinguishable from adjacent setulae; with distinct hairs adjacent to base of posterior notopleural bristle. Scutellar setulae descending slightly below level of marginal bristles. Sternopleurals 1:2 or 2:2.

Legs black, occasionally hind tibiae reddish to brownish. Fore tibiae without median bristles. Mid femora with five or six well-developed ventral bristles on basal half and with a row of shorter and more closely placed anterior bristles on basal half and with only the apical anterodorsal bristle. Mid femora with a row of anteroventral bristles on apical half. Hind tibiae with two median anterodorsal and usually three anteroventral bristles.

Cross veins slightly infuscated, about the same color as the clouds along the longitu-

dinal veins; the latter clouds coalesce at wing base to give the wings a smoky color. Costal thorns and setulae moderately well developed. Third and fourth veins slightly divergent at apices.

Abdomen black, distinctly brownish gray pruinose, usually with moderately distinct, paired subtriangular spots on second and third visible tergites. Ventral sternite bare. Others with one or two pairs of moderately distinct apical bristles; fifth only slightly cleft, with one or two weak bristles at base of processes.

FEMALE: Length 7 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, and distinctly widened anteriorly. Eyes less distinctly haired. Thorax more brownish pruinose. Fore tibiae often with a median posterior bristle. Wings more yellowish than brownish. Abdomen not spotted.

SPECIMENS EXAMINED: Fifty males and 17 females from New Hampshire, New York, Massachusetts, Michigan, Wisconsin, Minnesota, Iowa, South Dakota, Montana, Colorado, Washington, Quebec, Alberta, Alaska, Norway, and Germany, including the type of *nigricans* Stein in the Chicago Natural History Museum.

The number of postsutural dorsocentral and sternopleural bristles and the color of the legs vary considerably in this species. The most satisfactory character so far found is the presence of hairs adjacent to the base of the posterior notopleural bristle, a character to be found in only a few other typical *Helina*. An occasional specimen may have only one or two setulae here.

This common species in both North America and Europe has usually been known under the name *tinchipennis* Stein, but Ringdahl in 1939 pointed out, after an examination of the type of Zetterstedt's *laxifrons*, that it is identical with Stein's *tinchipennis*.

Helina spinilamellata Malloch

Helina spinilamellata MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 46, p. 140; 1921, Canadian Ent., vol. 53, p. 106.

MALE: Length 5.25 mm. Head black, densely yellowish gray pruinose. Front at vertex 0.33 of head width or 2.3 times as wide as distance across posterior ocelli inclusive,

widened anteriorly. With a complete row of five or six pairs of parafrontal bristles, the posterior two pairs outwardly, the others inwardly, directed, with setulae laterad to the anterior ones. Juncture of parafacials and parafrontals as long as greatest width of third antennal segment. Second antennal segment yellow, third segment deep seal brown, 2.25 times as long as second. Longest arisal hairs 2.0 times as long as greatest arisal diameter or about 0.5 as long as width of third antennal segment. Palpi yellow. Eyes bare.

Thorax dark brown to black, the humeri and scutellum yellow, disc of thorax grayish brown pruinulent, with four brownish vittae. Presutural acrostical setulae in six to eight irregular rows. Acrosticals 0:1; dorsocentrals 2:3, but there appears to be a weak one between the first and second postsutural pairs so they may be 2:3 or 2:4; pra 0.33 as long as posterior notopleural bristle. Scutellar setulae not descending below level of marginals. Sternopleurals 1:2.

Legs yellow, the tarsi entirely, and the femora mostly, infuscated. Fore tibiae without median bristles. Mid femora as in *troene* Walker. Mid tibiae with three median posterior bristles. Hind femora with five or six anteroventral bristles on apical half. Hind tibiae with two median anterodorsal and anteroventral bristles.

Wings hyaline. Cross veins very narrowly infuscated. Costal setulae and thorns scarcely developed. Third and fourth veins divergent apically. Posterior cross veins curved. Calyptrae and halteres pale yellow.

Abdomen brownish black, the apices of tergites yellowish, the last visible one yellowish on apical half and with a pair of small round brown spots on second and third visible tergites. Basal sternite bare; fifth deeply cleft, with two or three very short but strong bristles and numerous setulae on disc basad of cleft. Hypopygium fulvous.

If the genus *Enoplopteryx* Hendel is maintained, this species and the two following could be placed in it on the basis of the broad front of the male.

Description based on the holotype male from Bozeman, Montana, in the Illinois Natural History Survey Collection.

Helina spinosa (Walker)

Anthomyia spinosa WALKER, 1849, List of the specimens of dipterous insects in the . . . British Museum, vol. 4, p. 926. STEIN, 1901, Zeitschr. Hymen. Dipt., vol. 1, p. 210 (places it in *Coenosia* with a?). HUCKETT, 1934, Canadian Ent., vol. 66, p. 139.

Aricia latifrontata MALLOCH, Trans. Amer. Ent. Soc., vol. 44, p. 270.

Mydae (Enoplopteryx) spinosa STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 40.

Helina latifrontata MALLOCH, 1921, Canadian Ent., vol. 53, p. 106.

MALE: Length 8.5 to 10 mm. Head black, dull brownish gray pruinulent. Front at narrowest part 0.25 of head width or 3.0 times as wide as distance across posterior ocelli inclusive. Frontal vitta velvety black, at narrowest part, 2.0 times as wide as distance across posterior ocelli inclusive and the parafrontals 1.5 times as wide as anterior ocellus. Ocellar triangle shiny black. With a complete row of parafrontal bristles, the posterior two pair outwardly directed and with numerous weak setulae laterad to the other inwardly directed bristles. Juncture of parafacials and parafrontals as long as width of third antennal segment, parafacials narrowed to 0.5 this width below. Cheeks 1.5 to 2.0 times as high as width of third antennal segment. Antennae black, the third segment 2.25 times as long as second. Longest arisal hairs as long as width of third antennal segment. Palpi black. Eyes bare.

Thorax black, slightly shiny, sparsely grayish pruinulent, distinctly quadrivittate. Presutural acrostical setulae in four irregular rows. Acrosticals 0:1; dorsocentrals 2:3 or 2:4; pra 0.75 as long as the bristle behind it and at least as long as, or longer than, first postsutural dorsocentral. Scutellar setulae reaching to, but not below, level of marginals. Sternopleurals 2:2.

Legs black. Fore tibiae without median bristles. Mid femora with three ventral bristles and numerous long setulae on basal three-fourths, anterior series of bristles on basal half only slightly developed and with one apical anterodorsal bristle. Mid tibiae with two median anterodorsal and three or four posterior bristles. Hind femora with a complete row of long anteroventral bristles and a few long posteroventral setulae at

apex. Hind tibiae with two median anterodorsal and an almost complete row of widely separated anteroventral bristles and four or five posterodorsal bristles on basal half.

Wings hyaline, slightly brownish at base. Costal setulae basad thorn and the thorns very well developed. Third and fourth veins divergent at apices. Cross veins not infuscated. Calyptrae yellowish, halteres dark brown.

Abdomen slightly shiny black with weak brownish gray pruinescence. Basal sternite hairy; others slightly longer than broad, with two or three pairs of well-developed apical bristles; fifth only very slightly cleft, without distinctive armature. Hypopygium black.

FEMALE: Length 9 to 11 mm. Similar to the male, differing in having the parafrontals with numerous setulae below the level of the parafrontal bristles. Juncture of parafacials and parafrontals 1.5 times as long as width of third antennal segment, parafacials narrowed to 0.75 below. Cheeks almost 2.0 times as high as width of third antennal segment. The pruinescence on the parafrontals and cheeks lighter gray.

Fore tibiae with one median anterodorsal and posterior bristle. Mid femora with the anterior series of bristles on basal half more well developed.

Description based on 32 males and 17 females from Washington, Montana, New Mexico, Colorado, Idaho, Quebec, British Columbia, Manitoba, and Saskatchewan, including paratypes of *latifrontata* Malloch in the Illinois Natural History Survey Collection.

Males of this species are very easily recognized because of their wide front and rather shiny black color.

The females, on the other hand, are not readily separated from *obscurata* Meigen and *nigripennis* Walker. *Nigripennis* may be separated from the other two by the darker color of the halteres. *Spinosa* and *nigripennis* have the costal setulae much more well developed than in *obscurata*, while *spinosa* differs from *obscurata* and *nigripennis* in having a much more well-developed median anterodorsal bristle on fore tibiae and in having the ventral sensory hairs on the mid tarsi more numerous. Both *nigripennis* and *spinosa* further differ from *obscurata* in being

more grayish pruinescent, while *obscurata* is more brownish pruinescent. Most specimens of *spinosa* are slightly larger than *obscurata* and *nigripennis*.

Helina floridensis, new species

MALE: Length 4.5 mm. Head black, the parafacials and parafrontals grayish pruinescent, cheeks brownish red with sparse gray pruinescence. Front at vertex 0.33 of head width, widened anteriorly. With a complete row of parafrontal bristles, the posterior two pairs outwardly and slightly backwardly directed. Frontal vitta brownish black, with a grayish triangle reaching halfway to antennal base. Juncture of parafacials and parafrontals only slightly longer than greatest diameter of arista, parafacials almost obliterated below. Cheeks 1.25 times as high as width of third antennal segment, with a few fine, upwardly directed setulae along lower margin. Second, and basal one-fourth or more of third, antennal segments fulvous. Third antennal segment 2.5 times as long as second. Aristal hairs confined to basal two-thirds, the longest hairs at least 1.25 times as long as width of third antennal segment. Palpi fulvous. Eyes bare.

Thorax black, densely grayish pruinescent, very distinctly quadrivittate and with a linear spot at base of scutellum which extends onto the mesonotum. Presutural acrostical setulae moderately well developed, about 0.25 as long as posterior pair of presutural dorsocentral bristles and about 0.5 as long as first postsutural pair of dorsocentrals; the longer presutural acrostical setulae are in two irregular rows. Acrosticals 0:1; dorsocentrals 2:3, the first presutural pair not more than 0.5 as long as the others; pra not more than 0.5 as long as the posterior notopleural bristle. Scutellar setulae sparse, not reaching below level of marginals. Sternopleurals 1:2 or 2:2, the lower anterior one very much weaker or absent.

Legs yellow, the coxae, tarsi, and fore femora largely infuscated. Fore tibiae with a median posterior bristle. Mid femora with one or two basal ventral bristles, a row of anterior bristles on basal half but no apicals on any of the anterior surfaces. Mid tibiae with two or three moderately well-developed anteroventral bristles on apical one-third and

with a row of much shorter ones on basal two-thirds, none of which are as long as the diameter of femora where situated. Hind tibiae with two median anterodorsal and one anteroventral bristle on apical one-third.

Wings faintly brownish yellow hyaline. Cross veins not infuscated. Costal setulae and thorns undeveloped. Third and fourth veins parallel at apices. Calyptres white, knobs of halteres dark brown.

Abdomen black, densely grayish pruinose with a very faint blue tinge, a pair of large, round, brown spots on second and third visible tergites and a faint dorsocentral vitta, all of which are often obscured in certain angles by the dorsal and lateral checkings. Basal sternite bare; others without distinct apical bristles; fifth broadly but rather shallowly cleft, without distinct armature. Hypopygium rather small, orange brown.

FEMALE: Length 5 mm. Very similar to the male, differing from it in having the juncture of parafacials and parafrontals almost 0.75 as long as the width of third antennal segment, the parafacials clearly distinguishable below.

Fore femora less distinctly infuscated. Fore tibiae with a short but distinct median anterodorsal setula; hind femoral anteroventral setulae on basal two-thirds more well developed.

TYPE MATERIAL: Holotype: Male, Miami, Florida, May 5, 1915. Allotype: Female, Homestead, Florida, January 14, 1946 (F. M. Snyder). Both in the American Museum of Natural History. Paratypes: Five females, Paradise Key, Florida, March 9, 1918 (C. A. Moser), in United States National Museum.

This species superficially resembles certain *Lispocephala* Pokorny, but may be readily distinguished from all Holarctic species, of that genus at least, by the much longer-haired arista, the upwardly directed lower stigmal bristle, and the bare posteroventral surface of hind tibiae.

Floridensis appears to have no close relatives but resembles *Scantes cardini* Malloch (1936, p. 9) in both sexes in general coloring and by the male's having a wide front. It is at once distinguishable from it by the bare third

wing vein and facial ridges as well as by the head shape.

Helina fulvisquama (Zetterstedt)

Aricia fulvisquama ZETTERSTEDT, 1845, Diptera Scandinaviae, vol. 4, p. 1491. STEIN, 1902, Wiener Ent. Zeitg., vol. 21, p. 31.

Aricia aegripes POKORNY, 1889, Verhandl. Zool. Bot. Gesellsch. Wien, vol. 39, p. 550.

Mydaea fulvisquama STEIN, 1914, Arch. Naturgesch., sect. A, vol. 79, no. 8, p. 20; 1916, *ibid.*, sect. A, vol. 81, no. 10, p. 62.

Helina tuberculata MALLOCH, 1919, Canadian Ent., vol. 51, p. 277; 1920, Trans. Amer. Ent. Soc., vol. 45, p. 138; 1921, Canadian Ent., vol. 53, p. 106.

Helina fulvisquama RINGDAHL, 1924, Ent. Tidskr., vol. 45, p. 56. MALLOCH, 1934, Mem. Carnegie Mus., vol. 12, pt. 2, sect. 4, p. 27.

MALE: Length 9 to 10 mm. Very similar to *luteisquama* Zetterstedt, differing from it in having the juncture of parafacials and parafrontals 1.5 to 2.0 times as wide as greatest width of third antennal segment.

Thorax black, with denser, slightly brownish gray pruinescence and distinctly quadrivittate. Presutural acrostical setulae in five to eight irregular rows.

Mid femora with a slight median anteroventral to ventral swelling which is densely covered with moderately long setulae which are of about the same length as those on the basal half of the anteroventral and ventral surfaces; with five or six strong ventral to posteroventral bristles and with a row of shorter anterior bristles on basal half and with a distinct apical anterior and anterodorsal bristle. Mid tibiae with a distinct tubercle on apical one-third which is armed with setulae which are slightly shorter but stouter than the ventral clothing setulae, with a row of eight to 10 long posterior bristles basad to the tubercle. Hind tibiae with a row of about 15 anteroventral bristles.

Abdominal sternites distinctly longer than broad.

FEMALE: Length 8 to 10 mm. Similar to the male, differing in having the front at vertex 0.33 the head width, distinctly widened anteriorly. The eyes with much shorter and sparser hairs and the cheeks about 0.33 of eye height.

Mid femora without swelling, but with a complete row of distinct ventral bristles and

with two or three apical anterior bristles. Mid tibiae with one or two median antero-dorsal bristles and without the tubercle or long basal posterior bristles. Hind femora long and slender and bowed but not so distinctly as in male. Hind tibiae not so distinctly curved, with only four or five antero-ventral and posteroventral bristles and no posterodorsal row of bristles and without the characteristic clump of setulae at apex of the posterior surface.

Costal thorn not quite so distinct, and the costal setulae more well developed, otherwise as in the male.

Abdomen not spotted but with distinct dorsal and lateral checkerings.

Description based on eight males and 13 females from Alaska, British Columbia, Alberta, Wyoming, Colorado, Finland, Norway, Sweden, and Switzerland, including the allotype of *Helina tuberculata* in the Illinois Natural History Survey Collection.

Helina luteisquama (Zetterstedt)

Aricia luteisquama ZETTERSTEDT, 1845, Diptera Scandinaviae, vol. 4, p. 1492. STEIN, 1902, Wiener Ent. Zeitg., vol. 21, p. 35.

Mydaea luteisquama STEIN, 1914, Arch. Naturgesch., sect. A, vol. 79, no. 8, p. 20; 1916, *ibid.*, sect. A, vol. 81, no. 10, p. 63.

Helina luteisquama RINGDAHL, 1924, Ent. Tidskr., vol. 45, p. 56. MALLOCH, 1931, Mem. Carnegie Mus., vol. 12, pt. 2, sect. 4, p. 27.

MALE: Length 8 to 9 mm. Head black, silvery gray pruinose. Front at narrowest part 1.5 times as wide as diameter of anterior ocellus. Parafrontals at narrowest part not quite 0.5 the diameter of anterior ocellus, and the frontal vitta narrowly complete, at its narrowest part about as wide as the parafacial at the same point. Parafrontals with a row of 10 or more long slender bristles which continue three-fourths the distance to anterior ocellus; the apical two or three and the median one or two are stouter than the others, the remaining ones slender, hair-like, but almost as long as the others. Juncture of parafacials and parafrontals as long as greatest width of third antennal segment, parafacials not narrowed below. Cheeks 0.25 of eye height or 3.0 times as high as width of third antennal segment, with several rows of upwardly directed hairs or setulae along lower

margin. Oral margins slightly protruded. Antennae black, third segment 1.75 times as long as second. Longest arisal hairs not so long as basal arisal diameter. Palpi black. Eyes with dense, short hairs.

Thorax black, faintly grayish pruinose, almost shiny, indistinctly quadrivittate. Pre-sutural acrostical setulae in eight to 10 irregular rows; dorsocentrals 2:3 or 2:4; pra as long as, or longer than, posterior notopleural bristle and at least 0.5 as long as first postsutural dorsocentral bristle. Sternopleurals 1:2. Metathoracic spiracle sparsely haired and about half as large as the supra-spiracular convexity. Scutellar setulae descending slightly below level of marginals.

Legs entirely black. Fore tibiae without median bristles. Mid femora with anterior bristles on basal half weak and with a row of ventral bristles, those on basal half longest and stoutest and with a weak apical antero-dorsal bristle. Mid tibiae with three or four strong median posterior bristles, among which are interspersed some weaker setulae which reach to the base. Hind femora as long as the abdomen, slender and distinctly curved, and with a row of about 10 anteroventral bristles on apical half. Hind tibiae about as long as hind femora, long, slender, and curved, with a series of three to five moderately long, evenly spaced anterodorsal bristles and a row of seven to 10 uniformly short anteroventral bristles and a rather closely placed row of 12 to 18 posterodorsal bristles which are longest at the apex and become gradually shorter towards base, with a group of moderately well-developed, hair-like posterior bristles in three to four irregular rows on apical one-fifth.

Wings very yellow at base, concolorous with the deep yellow calyptrae and halteres. Cross veins slightly infuscated. Costal setulae slightly, the thorns moderately, developed. Third and fourth wing veins slightly divergent at apices.

Abdomen subcylindrical, black, grayish brown pruinose, with a pair of distinct spots on second visible tergite and a less distinct pair on third; in certain specimens these spots are confluent and form an almost equilateral triangle on the tergites; with distinct lateral checkerings. Basal sternite bare; others except fifth distinctly wider than long

and with moderately long clothing setulae. Fifth moderately cleft, without unusual armature. Hypopygium black, subshiny.

Description based on five males from Finland and Sweden, determined by Tiensuu and Ringdahl.

In 1931 Malloch recorded this species in North America from specimens taken on Southhampton Island; it is on this record that the species is included.

***Helina nigripennis* (Walker)**

Anthomyia nigripennis WALKER, 1849, List of the specimens of dipterous insects in the... British Museum, vol. 4, p. 929.

Aricia nitida STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 185.

Spilogaster crepuscularis STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 201.

Spilogaster nigripennis STEIN, 1901, Zeitschr. Hymen. Dipt., vol. 1, p. 203.

Mydaea nigripennis STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 38.

Helina nigripennis MALLOCH, 1921, Canadian Ent., vol. 53, p. 106. HUCKETT, 1934, Canadian Ent., vol. 64, p. 138.

MALE: Length 7.5 to 8.5 mm. Head black, brownish gray pruinose. Front at narrowest part not quite so wide as distance across posterior ocelli inclusive. Frontal vitta complete along its entire length, at narrowest part 1.8 to 2.0 times the diameter of anterior ocellus. Parafrontals at same level 0.5 as wide as anterior ocellus; with a row of bristles and weaker setulae which extend about 0.75 the distance to frontal triangle. Junction of parafacials and parafrontals as long as width of third antennal segment, parafacials scarcely narrowed below. Cheeks 2.5 times as high as width of third antennal segment, with a few weak, upwardly directed setulae along lower margin in front. Antennae and palpi black. Longest arisal hairs about as long as width of third antennal segment. Eyes with short but distinct sparse hairs.

Thorax black, slightly shiny, with sparse brownish pruinescence, indistinctly quadrivittate. Presutural acrostical setulae in six to eight irregular rows. Acrosticals 0:1; dorso-centrals 2:4; pra longer than the anterior notopleural bristle and almost as long as the first postsutural dorsocentral bristle; sometimes with one or two setulae near the

anterior, but none adjacent to base of posterior notopleural bristles. Scutellar setulae descending slightly below level of marginals; sternopleurals 2:2.

Legs black. Fore tibiae without median bristles. Mid femora with an almost complete row of rather short, hair-like ventral bristles and with a similar row of anterior ones on basal half. Mid tibiae with two median posterior bristles. Hind femora with a complete row of anteroventral bristles. Hind tibiae with two median anterodorsal and three or four anteroventral bristles, usually with a few posterodorsal bristles on basal half which are scarcely longer than the diameter of tibiae where situated.

Wings quite distinctly brownish hyaline, almost black at base. Costal setulae and thorns scarcely developed. Third and fourth veins divergent at apices. Cross veins not infuscated. The disc of upper calyptrae slightly brownish and with slightly yellowish margins; the lower calyptrae with whitish disc and deep brownish margins. Halteres dark brown to black, especially at base of knob.

Abdomen slightly elongate, black, distinctly shiny and without or with only very sparse brownish pruinescence. Basal sternite hairy; others with distinct setulae and two or three pairs of well-developed apical bristles; fifth hardly cleft, without distinct bristling. Hypopygium black.

FEMALE: Length 7 to 8.5 mm. Similar to the male, differing from it in having the front at vertex 0.33 of head width, distinctly widened anteriorly.

Thorax not so distinctly shiny and with more distinct brownish pruinescence.

Fore tibiae often with a median posterior bristle. Mid tibiae with two median anterodorsal bristles and the hind tibiae with only one posterodorsal bristle at base.

Wings not so distinctly brownish and not blackened at base. Costal setulae and thorns quite well developed. Lower calyptrae without dark margins, but the halteres are distinctly darkened.

SPECIMENS EXAMINED: Twenty-eight males and 20 females from Washington, California, Colorado, Wyoming, Nevada, Massachusetts, Quebec, Ontario, British Columbia, Manitoba, and the cotypes of *crepuscularis* Stein and *nitida* Stein from Colorado in the

Hough collection at the Chicago Natural History Museum.

See remarks under *Helina spinosa* (Walker).

Helina obscurata (Meigen)

Anthomyia obscurata MEIGEN, 1826, Systematische Beschreibung der bekannten Europäischen zweiflügeligen Insekten, vol. 5, p. 89.

Aricia sordidiventris (p.p. female) ZETTERSTEDT, 1945, Diptera Scandinaviae, vol. 4, p. 1416. RINGDAHL, 1939, Opuscula Ent., vol. 4, p. 151.

Aricia obscurata SCHINER, 1862, Fauna Austriaca, Die Fliegen, vol. 1, p. 600.

Aricia charcoviensis SCHNABL, 1888, Horae Soc. Ent. Rossicae, vol. 12, p. 391.

Helina nasoni MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 42, p. 138; 1921, Canadian Ent., vol. 53, p. 106.

Helina obscurata RINGDAHL, 1924, Ent. Tidskr., vol. 45, p. 55.

MALE: Length 7 to 9 mm. Head black, grayish pruinose. Front at narrowest part as wide as distance across posterior ocelli inclusive. Frontal vitta complete, at narrowest part 1.8 to 2.0 times as wide as diameter of anterior ocellus. Parafrontals at same level not quite so wide as anterior ocellus, with a row of bristles and setulae which continue to about narrowest portion of front. Juncture of parafacials and parafrontals 1.5 times as long as greatest width of third antennal segment, parafacials only slightly narrowed below. Cheeks 3.0 times as high as width of third antennal segment, with two or three rows of upwardly directed setulae along lower margin. Antennae black, third segment 2.0 to 2.25 times as long as second. Longest hairs on arista 0.5 the greatest width of third antennal segment. Palpi black. Eyes with short but distinct hairs.

Thorax black, grayish pruinose, with four broad vittae. Bristled as in *nigripennis* Walker.

Legs black. Fore and mid legs bristled as in *rothi* Ringdahl. Hind femora with a complete row of long, quite closely placed anteroventral bristles. Hind tibiae with two median anterodorsal and three or four quite long median anteroventral bristles, with three or four somewhat shorter posterior to posterodorsal bristles on basal half.

Wings brownish hyaline, slightly darkened at base. Costal setulae and thorns quite distinctly divergent at apices. Cross veins

only slightly infuscated, no more so than the slight clouding along the longitudinals. Calyptrae pale yellow; halteres darker yellow to orange.

Abdomen black, bluish to brownish gray pruinose, with a pair of distinct spots on second visible tergite and occasionally with a less distinct pair on the third. With distinct lateral checkerings. Basal sternite hairy; others almost square, only slightly longer than wide and with a number of moderately long setulae and apical bristles; fifth moderately cleft, without distinctive armature.

FEMALE: Length 7 to 9 mm. Similar to the male, differing from it in having the front at vertex 0.33 of head width, distinctly widened anteriorly. Without the very distinct row of upwardly directed setulae along the lower margin of cheeks. Parafacials distinctly narrower below. Eyes almost bare. Fore tibiae with one or two median posterior bristles. Mid tibiae with two median anterodorsal bristles. Hind tibiae with only one basal posterodorsal bristle, the anteroventral row of bristles not so closely placed. Abdomen without distinct spots but with more distinct dorsal and lateral checkerings.

SPECIMENS EXAMINED: Forty-five males and 14 females from Idaho, Minnesota, Wisconsin, Michigan, Illinois, New Brunswick, Ontario, Quebec, Manitoba, Alaska, England, Germany, and Finland, including the holotype of *nasoni* Malloch in the Illinois Natural History Survey Collection.

See remarks under *Helina spinosa* (Walker).

Helina fletcheri Malloch

Helina fletcheri MALLOCH, 1919, Canadian Ent., vol. 51, p. 274; 1921, *ibid.*, vol. 53, p. 106.

MALE: Length 5 mm. Head black, silvery gray pruinose. Front at narrowest part 2.8 times as wide as distance across posterior ocelli inclusive, or 0.2 of head width. At narrowest part, each parafrontal and the frontal vitta almost as wide as distance across posterior ocelli inclusive, or 1.5 times as wide as diameter of anterior ocellus. Front almost parallel sided throughout. The parafrontals with three or four pairs of stout, widely spaced bristles which continue three-fourths the distance to anterior ocellus and with a fine setula on each side opposite the anterior ocellus. Inner vertical bristles as long as

vibrissae, the outer ones half as long. Junction of parafacials and parafrontals 0.75 the width of third antennal segment, parafacials scarcely narrowed below. Cheeks 1.25 times as high as width of third antennal segment. Antennae black, third antennal segment 1.5 times as long as second. Longest arisal hairs scarcely longer than greatest arisal diameter. Palpi black.

Thorax black, with dense gray pruinescence, without clearly distinguishable vittae. Presutural acrostical setulae in two or three irregular rows; dorsocentrals 2:3; pra absent. Scutellar setulae not descending below level of marginals. Sternopleurals 1:2, in nearly an equilateral triangle. Metathoracic spiracle small, round.

Legs black, all femora slightly shorter and stouter than usual. Fore femora normal. Fore tibiae with a median posterior bristle. Mid femora with a complete row of long ventral to posteroventral bristles, all of which are about 1.5 times as long as diameter of femora where situated, and with a row of very much shorter and finer anterior bristles on basal half and with no apical bristles on anterior surfaces. Mid tibiae with two median posterior bristles and a scarcely distinguishable anterodorsal bristle on apical one-third. Hind femora with a row of anteroventral bristles on apical half and a complete row of posteroventral bristles, those on both surfaces fully 1.5 times as long as diameter of femora where situated. Hind tibiae with two median anterodorsal, three anteroventral, and two posterodorsal bristles.

Abdomen rather slender, cylindrical, black, densely grayish pruinose, with a pair of small, round, brown spots on second and third visible tergites. Basal sternite not visible in the specimen, others with distinct apical bristles; fifth with a deep, broad, V-shaped cleft with one or two pairs of moderately long, subapical bristles on processes. Hypopygium black, grayish pruinose, large, almost globular when viewed in profile.

Redescribed from holotype male from Radison, Saskatchewan, Canada, in the Canadian National Collection.

Helina lasiosterna Snyder

Helina lasiosterna SNYDER, 1941, Amer. Mus. Novitates, no. 1134, p. 9.

Two more males of this species from Arizona have been seen in Dr. H. C. Hockett's collection.

Helina cruciata Snyder

Helina cruciata SNYDER, 1941, Amer. Mus. Novitates, no. 1134, p. 9.

The type of *cruciata* was returned to the University of Kansas by Mr. David G. Hall and is not, as originally stated, in the United States National Museum.

Helina bispinosa Malloch

Helina bispinosa MALLOCH, 1920, Trans. Ent. Soc. Amer. vol. 46, p. 142; 1921, Canadian Ent., vol. 53, p. 107.

MALE: Length 6 mm. Head black, yellowish gray pruinose. Front at narrowest part about as wide as distance across posterior ocelli inclusive. Parafrontals at same level as wide as the diameter of anterior ocellus. With six to eight parafrontal bristles and a few accessory setulae which continue midway to ocellar triangle. Junction of parafacials and parafrontals as long as greatest width of third antennal segment, parafacials slightly narrowed below. Cheeks 0.25 of eye height and 2.0 times as high as width of third antennal segment, with one or two rows of weak setulae along lower margin, a few of which are upwardly directed. Antennae black, third segment 1.5 times as long as length of second. Longest arisal hairs distinctly longer than greatest width of third antennal segment. Palpi black. Eyes bare.

Thorax black, densely brownish pruinose, distinctly quadrivittate. Presutural acrostical setulae in six moderately regular rows. Acrosticals 0:1; dorsocentrals 2:4; pra absent or hardly distinguishable from the clothing setulae. Scutellar setulae not descending below level of marginals. Sternopleurals 2:2.

Legs black, the tibiae and a variable portion of hind femora fulvous to yellow. Fore tibiae with a median posterior and a very much shorter anterodorsal bristle. Mid femora with three to five ventral bristles and a row of short anterior bristles on basal half, occasionally with a weak apical anterior to anterodorsal bristle. Mid tibiae with two median posterior, one to three ventral, and one or two anterodorsal bristles. Hind

femora with a complete row of anteroventral and two or three median posteroventral bristles. Hind tibiae with two to three median anterodorsal and anteroventral bristles, and with a posterodorsal bristle on basal one-third to one-half.

Wings hyaline. Cross veins not infuscated. Costal setulae and thorns scarcely developed. Third and fourth wing veins slightly divergent at apices. Calyptrae and halteres pale yellow, the latter somewhat darker.

Abdomen black, densely yellowish brown pruinulent, with a distinct pair of black spots on second and third visible tergites. Basal sternite bare; fifth distinctly cleft, with a distinct bristle in the middle of each process. Hypopygium black.

FEMALE: Length 7 mm. Very similar to the male, differing from it in having the front at vertex 0.33 of head width, slightly widened anteriorly, distinctly brownish pruinulent. Mid tibiae with a stronger median anterodorsal bristle in addition to the median posterior bristle. Hind femora without the median posteroventral bristles. Abdomen less densely brown pruinulent, with distinct spots.

Description based on 14 males and 12 females from California, Washington, Nevada, Utah, Idaho, Montana, Colorado, New Mexico, Illinois, and Manitoba; the Illinois specimen is the holotype in the Illinois Natural History Survey Collection.

The type is slightly teneral and differs from the rest of the type series in having all tibiae yellowish, while in many paratypes, the fore tibiae and the basal half of the mid tibiae are blackened; the type has only one anteroventral bristle on the hind tibiae, while most specimens have three or four; the type likewise has only one posterodorsal bristle on one hind tibia, while the other hind tibia has two. The type has the abdominal spots quite indistinct. In the above series of specimens, certain ones have only one ventral bristle on mid tibiae. Despite these differences, I consider them all to be conspecific.

Ventral bristles on the mid tibiae are rather common in South American *Helina*, but there are only two North American species that possess them; these are *bispinosa* Malloch and *flavisquama* Zetterstedt. These

two species are so entirely different in other respects that there should be no possibility of confusing them.

Helina rufitibia (Stein)

Aricia rufitibia STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 1897.

Mydaea rufitibia STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 39.

Helina rufitibia MALLOCH, 1921, Canadian Ent., vol. 53, p. 105.

MALE: Length 8.5 to 9 mm. Head black, grayish pruinulent. Front at narrowest part as wide as diameter of anterior ocellus. Parafrontals contiguous, with several pairs of well-developed bristles and numerous shorter setulae which continue almost to the ocellar triangle. Juncture of parafacials and parafrontals as long as, or slightly longer than, greatest width of third antennal segment, parafacials distinctly narrowed below. Cheeks 0.25 of head height, about 3.5 times as high as greatest width of third antennal segment, lower margin with two or three rows of upwardly directed short bristles or setulae. Third antennal segment black, the second usually lighter colored. Third antennal segment 2.5 times as long as second. Longest arisal hairs longer than narrowest width of third antennal segment and almost or quite as long as its greatest apical width. Palpi black. Eyes with long hairs.

Thorax black, whitish gray pruinulent, distinctly quadrivittate. Presutural acrostical setulae in about 10 irregular rows. Acrosticals 0:1; dorsocentrals 2:4; pra about 0.5 as long as posterior notopleural bristle. Scutellar setulae descending below level of marginals. Sternopleurals 2:2.

Legs black, but portions of the tibiae and trochanters and a variable apical portion of femora fulvous to reddish. Fore tibiae with one or two median posterior bristles. Mid femora with an almost complete row of ventral bristles, a few shorter anterior ones on basal half, and no apical bristles on the anterior surfaces. Mid tibiae with three or five median posterior bristles. Hind femora with a complete row of anteroventral bristles, those on apical half stouter but those towards base longer and more hair-like, the posteroventral surface with a row of similar long, slender bristles on basal half, the apical

posteroventral bristles very short and scarcely as long as diameter of femora where situated. Hind tibiae with two anterodorsal and three to five posteroventral bristles.

Wings hyaline, very slightly darker at base. Costal setulae and thorns scarcely developed. Third and fourth veins distinctly divergent at apices. Cross veins distinctly infuscated. Calyptrae and halteres pale yellow.

Abdomen black, distinctly grayish pruinulent, with a pair of large, distinct, dark spots on second and third visible tergites and distinct dorsal and lateral checkerings. Basal sternite bare; others with moderately long setulae, seldom with apical bristles; fifth only moderately cleft, without distinctive armature. Hypopygium black.

FEMALE: Length 8.5 to 9 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, distinctly widened anteriorly. Pruinescence more brownish to yellow. Legs less extensively infuscated, usually only fore femora and a variable basal portion of other femora darkened. The bristles on hind femora, while in the same position, are not so long and hair-like. Abdomen more grayish yellow pruinulent, with less obvious spots, and usually with a distinct dorsocentral vitta.

SPECIMENS EXAMINED: Forty-six males and 43 females from New Jersey, New York, Massachusetts, Pennsylvania, Tennessee, Michigan, Indiana, Illinois, Wisconsin, Minnesota, South Dakota, Kansas, Louisiana, Alabama, Utah, Texas, New Mexico, Colorado, Oregon, and Ontario, including cotypes in the United States National Museum and the Chicago Natural History Museum.

This widely distributed species is likely to be confused only with *orbitaseta* Stein and *bohemani* Ringdahl. Occasional specimens of the former have the acrostical bristles only weakly developed, but in these cases the more extensively infuscated femora in *rufitibia* should separate it. *Bohemani* Ringdahl is quite similar, but its almost entirely black legs as well as usually having three post-sutural dorsocentral bristles should separate it. The presence of setulae below the level of the marginal scutellar bristles, especially towards the base, should also help to distinguish *rufitibia* from these two species.

Helina bohemani (Ringdahl)

Mydaea bohemani RINGDAHL, 1916, Ent. Tidskr., vol. 37, p. 235.

Helina bohemani RINGDAHL, 1924, Ent. Tidskr., vol. 45, p. 54.

MALE: Length 7 to 9 mm. Head black, grayish white pruinulent. Front at narrowest part as wide as distance across posterior ocelli inclusive, the parafrontals narrow, the frontal vitta about 2.25 times as wide as the parafrontal and about 2.0 times as wide as diameter of anterior ocellus. With a row of parafrontal bristles continued to anterior ocellus, those on posterior half shorter and more setulose. Junction of parafacials and parafrontals 1.5 times as long as width of third antennal segment, parafacials not noticeably narrower below. Cheeks 3.0 times as high as width of third antennal segment, with several irregular rows of upwardly directed setulae along lower margin. Antennae black, third antennal segment 2.0 times as long as second. Longest arisal hairs 3.0 times as long as greatest arisal diameter or slightly more than 0.5 the width of third antennal segment. Palpi black. Eyes with long hairs.

Thorax black, grayish pruinulent, with four rather indistinct darker vittae; dorso-centrals 2:3 or 2:4. Otherwise as in *rufitibia* Stein.

Legs black, only mid tibiae reddish to fulvous on basal two-thirds to three-fourths. Bristled as in *rufitibia* Stein.

Wings infuscated at base and along longitudinal and cross veins, the membrane grayish hyaline. Costal setulae and thorns moderately developed. Third and fourth veins divergent at apices. Posterior cross vein curved. Calyptrae and halteres yellow.

Abdomen black, with brownish gray pruinescence and with a pair of large, almost confluent, square spots on second and third visible segments and with an indistinct pair of smaller ones on fourth; with lateral checkerings. Basal sternite bare; others with dense, slender clothing setulae; fifth moderately cleft, without distinctive armature.

FEMALE: Length 8 to 9 mm. Similar to the male, differing from it in having the front at vertex 0.44 of head width, widened to 0.5 anteriorly. With a complete row of parafrontal bristles, the posterior two outwardly,

others inwardly, directed and with several rows of well-developed setulae laterad to all of them. Juncture of parafacials and parafrontals 3.0 times as long as width of third antennal segment, parafacials narrowed to 1.5 times this width below. Thorax brownish gray pruinulent. Apices of mid and hind femora and mid tibiae and the entire hind tibiae fulvous. Mid tibiae with two or three median anterodorsal bristles, the setulae on hind femora more bristle-like and less numerous. Wings yellowish hyaline, veins not distinctly infuscated. Abdomen with only distinct dorsal and lateral checkerings.

SPECIMENS EXAMINED: One male and one female, Saane and Ponoj, Finland, determined by Tiensuu in the University of Helsinki Museum; one female, U. S. Eng. Comm. Camp 334, Alaska, July 10, 1921, in the United States National Museum; and one female, June 17, 1919, south fork of the Rio Grande, Colorado, about latitude 37° 36' N., longitude 106° 43' W., 8500 feet elevation, in the American Museum of Natural History.

These are the first North American records of this species, to the best of my knowledge.

The number of postsutural dorsocentral bristles varies. Herr Ringdahl writes that the normal number is three, although the original description mentions four. (See remarks under *rufitibia* Stein.)

Helina orbitaseta (Stein)

Aricia orbitaseta STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 186.

Mydaea orbitaseta STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 39.

Helina orbitaseta MALLOCH, 1921, Canadian Ent., vol. 53, p. 105.

MALE: Length 7 to 9 mm. Head black, gray to grayish brown pruinulent. Cheeks with reddish reflections. Front at narrowest part as wide as diameter of anterior ocellus. Parafrontals contiguous, at narrowest part each 0.5 as wide as diameter of anterior ocellus; with five to seven pairs of bristles and with numerous, much shorter, hair-like setulae continued to narrowest part of front. Juncture of parafacials and parafrontals 2.0 times as long as greatest width of third antennal segment. Cheeks 0.4 of eye height. Antennae black, the second segment orange to fulvous. Longest arisal hairs about 1.5

times as long as greatest width of third antennal segment.

Thorax colored and bristled as in *rufitibia* Stein except there are one or two pairs of presutural acrostical bristles and the clothing setulae on disc and scutellum are more numerous and longer.

Legs fulvous, only the coxae, tarsi, and a variable portion of fore femora and occasionally mid femora infuscated at base. Bristled as in *rufitibia* Stein.

Wings and abdomen similar to *rufitibia* except that the abdominal pruinulences are more brownish.

FEMALE: Length 8 to 10 mm. Similar to the male, differing in having the head at vertex 0.33 of head width and widened to 0.5 anteriorly; with a complete row of parafrontal bristles and lateral setulae. With a darker brown spot at juncture of parafacials and parafrontals which reaches to eyes. The presutural acrostical bristles less well developed and the clothing setulae sparser. The bristles on the hind legs are not so hair-like, especially on basal half of femora.

SPECIMENS EXAMINED: Thirteen males and seven females from Washington, California, Idaho, and Missouri, including cotypes in the United States National Museum and the Chicago Natural History Museum.

There is a European species, *quadrinotata* Meigen, which is very similar to *orbitaseta* which might possibly be found in North America. The male of *orbitaseta* may be separated from it by the narrower front and, in both sexes, by the more extensively infuscated fore femora and more broadly infuscated cross veins. (See also remarks under *rufitibia* Stein.)

Helina pectinata (Johannsen)

Aricia brevis (p.p.) STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 180.

Mydaea (Spilaria) pectinata JOHANNSEN, 1916, Trans. Amer. Ent. Soc., vol. 42, p. 392.

Helina mimetica MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 42, p. 142; 1921, Canadian Ent., vol. 53, p. 108.

Helina pectinata MALLOCH, 1921, Canadian Ent., vol. 53, p. 105.

MALE: Length 8 to 9 mm. Similar in coloring and general habitus to *rufitibia* Stein. Head black, grayish white pruinulent,

cheeks sometimes with reddish reflections. Front at narrowest part 1.5 times as wide as diameter of anterior ocellus, the frontal vitta very narrow but complete along its entire length. Parafrontals with four or five pairs of stout bristles and numerous long setulae which continue halfway to the ocellar triangle. Juncture of parafacials and parafrontals 1.5 times as long as greatest width of third antennal segment, parafacials narrowed to greatest width of third antennal segment below. Cheeks 0.25 of head height, almost as high as length of third antennal segment, with a few fine, upwardly directed setulae along lower margin. Antennae black, third segment 2.0 times as long as second. Longest arisal hairs as long as greatest width of third antennal segment. Palpi black. Eyes with long hairs.

Thorax black with dense, slightly bluish gray pruinescence and four broad vittae. Bristled as in *rufitibia* except that the scutellar setulae do not descend below level of marginals, and the lower anterior sternopleural bristle is much weaker.

Coxae, trochanters, tarsi, and fore and mid femora almost entirely, and hind femora slightly, infuscated, all tibiae and the balance of femora yellowish to orange. Fore tibiae with two to four very long, strong, median posterior bristles on apical half. Mid femora slightly concave at base, with an almost complete row of very long, ventral, blunt-tipped bristles; with a group of five or more similar posterior bristles on basal one-fourth to one-fifth; with a group of closely placed, short, anterior bristles on basal one-third. Mid tibiae usually with a double row of very long, stout, posterior bristles along apical three-fourths. Hind femora with a row of closely placed, long, anteroventral bristles on apical one-half to one-third, and with three or four moderately long, posteroventral bristles at apex. Hind tibiae rather curved, with two strong median anterodorsal bristles and a complete row of very long, closely placed, slightly hair-like anteroventral and posterior to posteroventral bristles.

Wings and abdomen as in *rufitibia*, except that the apical bristles on second to fourth sternites are absent.

FEMALE: Length 8 to 9 mm. Similar in color to male, differing in having the front

at vertex 0.33 of greatest head width, widened anteriorly. Fore legs are much lighter in color, tibiae with two or three median posterior bristles. Mid femora with the anterior row of bristles much stronger and the ventral ones shorter, less numerous, and without a basal posterior group. Mid tibiae with a single row of four to five posterior bristles. Hind tibiae with two or three median anterodorsal and three or four median anteroventral bristles. Abdomen not so distinctly spotted and with more distinct lateral checkerings.

Description based on five males and 15 females from Maine, New Hampshire, New York, Minnesota, Montana, Colorado, Arizona, New Mexico, Quebec, Alberta, and British Columbia, including a paratype of *mimetica* in the Illinois Natural History Survey Collection.

In the Hough collection at the Chicago Natural History Museum there is a female from "Maplevale, Arkansas, 9.26.97" which bears the label "*Aricia brevis* female n. sp." in Stein's handwriting. This specimen is not what has usually been determined as *brevis* by authors but is *pectinata* Johannsen. It is in poor condition, the wing and fore and mid legs on the left side are missing, but it is undoubtedly this species. There are definitely no ventral scutellar setulae present. See remarks under *vanderwulpi* Schnabl.

Helina johnsoni Malloch

Helina johnsoni MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 46, p. 142; 1921, Canadian Ent., vol. 53, p. 108.

? *Mydaea biseriata* STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 29.

MALE: Length 7 to 8 mm. Very similar to *pectinata* Johannsen, differing in having the base of third antennal segment and a very limited portion of second reddish. All femora largely or entirely yellowish. Fore tibiae with only one or occasionally with a second very weak additional median posterior bristle. Usually with only three or four ventral bristles on mid femora and with the basal posteroventral ones shorter and usually not more than four in number. Usually only five posterior bristles on mid tibiae which are in a single irregular series. Hind legs as in *pectinata*. Thorax with much denser yellowish

gray pruinescence and not so distinctly quadrivittate. Abdomen much more yellowish gray pruinose, with very indistinct paired spots and lateral checkerings.

FEMALE: Length 7 to 8 mm. Similar to the male, differs in having the front at vertex 0.33 of head width, distinctly widened anteriorly. Mid femora with only the ventral bristles at base and with the basal anterior row much more stoutly developed. Hind legs as in female of *pectinata*. Abdomen unspotted, with more distinct lateral checkerings.

SPECIMENS EXAMINED: Four males and 17 females from Massachusetts, New York, New Jersey, Maryland, Virginia, Wisconsin, and Nova Scotia, including paratypes in the Illinois Natural History Survey Collection.

This species is very similar to *pectinata*, but in the few specimens before me the species can be separated in both sexes by the reddish color of the base of the third antennal segment. In the males, the fore tibiae and mid femora, while showing somewhat similar bristling as regards position, have the bristles shorter and less numerous in *johnsoni* than in *pectinata*. The general lighter color of *johnsoni* will also help to separate it from *pectinata*. An additional character is the slightly lighter orange to brown ground color of the ventral surface and occasionally the extreme apex of the scutellum in *johnsoni*.

Helina canadensis, new species

MALE: Length 9 to 9.5 mm. Very similar to *pectinata* Johannsen and *johnsoni* Malloch, differing from them in having the antennae entirely black. Thorax with a pair of weak presutural acrostical bristles.

The coxae, fore femora, and a very limited portion of the mid femora on basal one-fifth and the tarsi infuscated, rest of the legs fulvous. There are no posterior bristles at base of mid femora, it is not concave and bears no anterior setulae at base, and there are only three or four median posterior bristles on mid tibiae.

TYPE MATERIAL: Holotype: Male, Kent County, Ontario, Rondeau Park, June 28, 1936 (G. Steyskal). Paratypes: Two males, Ithaca, New York; Hemmingsford, Quebec, August 8, 1925 (G. H. Hammond).

Stein described a *Mydaea biseriata* which

may prove to be this species. According to the description, it differs from *canadensis* in having the third antennal segment yellow at base and entirely fulvous legs. There is no mention made of the presence or absence of posterior bristles at base of the mid femora, a character which Stein may or may not have noticed. I have not seen the type, but have questionably considered it as a synonym of *johnsoni* until the type can be examined. It is difficult to believe, however, that Stein would have overlooked or not mentioned the posterior bristles on the mid femora if they were present in *biseriata*.

Helina multiseriata Malloch

Helina multiseriata MALLOCH, 1922, Bull. Brooklyn Ent. Soc., vol. 17, p. 95.

MALE: Length 8 mm. Head black, slightly brownish gray pruinose. Front at narrowest part not quite so wide as distance across posterior ocelli inclusive. The frontal vitta at this level 1.5 times as wide as diameter of anterior ocellus and the parafrontals as wide as the anterior ocellus, with about six pairs of bristles and a few weak setulae continued to narrowest part of front. Juncture of parafacials and parafrontals distinctly protruding, almost 3.0 times as long as narrowest width of third antennal segment, parafacials narrowed to 1.5 third antennal width below. Cheeks slightly higher than width of juncture of parafacials and parafrontals and 0.33 of eye height. The setulae at base of vibrissae shorter and stouter than usual, almost spike-like, and with a few upwardly directed setulae along lower margin. Antennae black, third segment 2.0 times as long as second. Longest arisal hairs longer than width of third antennal segment. Palpi black. Eyes with short but distinct, fine hairs.

Thorax black, brownish pruinose, quadrivittate. Presutural acrostical setulae in five to six rather regular rows. Acrosticals 0:1; dorsocentrals usually 2:3; pra 0.5 as long as posterior notopleural bristle. Scutellum with one or two setulae extending slightly below level of marginals. Sternopleurals 2:2.

Legs yellow, only the tarsi, basal one-fourth of fore femora, fore coxae, and basal half of mid coxae black. Fore tibiae with two median posterior bristles. Mid femora with two to four short but very stout ventral

bristles and only a few hair-like anterior setulae on basal half, no apical bristles on anterior surfaces. Mid tibiae with three or four median posterior bristles. Hind femora with four or five closely placed anteroventral bristles on apical one-third to one-half and a few shorter and more slender posteroventral bristles on apical one-fourth. Hind tibiae with three to five anterodorsal bristles and several rows of long, hair-like setulae on anteroventral, ventral, posteroventral, and posterior surfaces and a row of much shorter, more well-developed median posterodorsal setulae, most of which are as long as, or longer than, diameter of tibiae where situated.

Wings yellowish hyaline, especially at base. Cross veins slightly infuscated. Costal setulae and thorns scarcely developed. Third and fourth veins strongly divergent at apices. Calyptrae and halteres yellow.

Abdomen black, yellowish brown pruinose, with a pair of large but rather indistinct brown spots on second and third visible tergites. Basal sternite bare; others with a pair of apical bristles; fifth moderately cleft, without distinctive armature. Hypopygium brownish to black.

FEMALE: Length 7.5 mm. Similar to the male, differing from it in having the front at vertex 0.40 of head width, widened anteriorly. With a complete row of parafrontal bristles and lateral setulae. Thorax with the pruinescence more grayish brown. Only the basal one-fifth of fore femora infuscated. Fore tibiae with one median posterior bristle. Mid femora with the anterior row of bristles more well developed. Hind tibiae with two median anterodorsal and four to five anteroventral bristles, the other surfaces bare.

SPECIMENS EXAMINED: Four males and six females from Washington, Idaho, Montana, and Utah.

Helina marguerita, new species

MALE: Length 10 mm. Head black, yellowish gray pruinose, the cheeks and frontal vitta velvety black, the former with slight brownish reflections. Parafrontals subcontiguous; the front at narrowest part 2.0 times as wide as diameter of anterior ocellus. With a row of parafrontal bristles reaching to narrowest part of front. Junction of para-

frontals and parafrontals 2.0 times as long as width of third antennal segment, parafrontals distinctly narrowed below. Cheeks 3.75 times as high as width of third antennal segment and about 0.33 of eye height, with a row of upwardly directed bristles along lower margin on anterior half. Antennae black, third antennal segment 2.0 times as long as second. Longest arisal hairs fully as long as width of third antennal segment. Palpi black. Eyes with long hairs.

Thorax black, slightly shiny, with very sparse grayish pruinescence, distinctly quadrivittate. Clothing setulae long and abundant, the presutural acrostical setulae in 10 to 12 irregular rows. Acrosticals 0:1; dorso-centrals 2:4; pra 0.33 to 0.5 as long as posterior notopleural bristle. Sternopleurals 2:2. Scutellar setulae descending below level of marginals.

Legs entirely black, the clothing setulae slightly longer than usual but not longer than diameter of any portion of femora or tibiae where situated. Fore tibiae with or without a median posterior bristle (one on one side, none on the other). Mid femora with five ventral bristles on basal half and without any anterior bristles at base or apex. Mid tibiae with three to five median posterior bristles. Hind femora with a row of long anteroventral bristles on apical one-third to one-half, the apical posteroventral setulae slightly longer than usual. Hind tibiae with two median anterodorsal bristles and five or six anteroventral bristle-like setulae on apical three-fourths.

Wings brownish yellow hyaline, especially at base; cross veins moderately infuscated. Costal thorn moderately, the setulae scarcely, developed. Third and fourth wing veins divergent apically. Calyptrae and halteres bright fulvous.

Abdomen black, with rather dense, yellowish gray pruinescence. With a pair of large but faint brownish spots on second and third visible tergites and with distinct dorsal and lateral checkerings. The apices of sternites and a very limited area adjoining tergites brownish yellow in ground color. Basal sternite bare; the second with numerous long bristles; others without distinctive armature. Hypopygium black.

FEMALE: Length 10 mm. Similar to the

male. Differs from it in having more golden pruinescence and more extensive brownish reflections. The front at vertex 0.28 of head width, widened to 0.5 anteriorly; with a complete row of strong parafrontal bristles and lateral setulae. The ocellar and vertical bristles long and strong. Juncture of parafacials and parafrontals not so distinctly narrowed below but with a brownish spot from base of antennae to eye.

Fore tibiae with one or two median posterior bristles; mid femora with a very weak apical anterodorsal setula. Wings more hyaline. Second abdominal sternite with only a single pair of long bristles and apices of sternites not so broadly yellowish.

TYPE MATERIAL: Holotype: Male, Preston, Washington, May 22, 1932 (C. H. Martin). Allotype: Female, Olympia, Washington, May 28, 1932 (C. H. Martin). Paratype: Female, Battle Harbor, Labrador, July 30–August 4. Holotype and allotype in H. C. Hockett's collection.

Helina griseogaster, new species

MALE: Length 6.5 mm. Head black, silvery gray pruinose, the cheeks with slightly reddish reflections. Front at narrowest part only as wide as diameter of anterior ocellus. Parafrontals with a row of bristles and setulae reaching almost to middle of narrowest portion of front. Juncture of parafacials and parafrontals 1.5 times as long as width of third antennal segment, parafacials only slightly narrower below. Cheeks 0.25 of eye height, almost 3.0 times as high as width of third antennal segment, with one or two rows of fine, upwardly directed setulae along the entire ventral margin. Antennae black, third segment 1.75 times as long as second. Longest arisal hairs slightly longer than width of third antennal segment. Palpi black. Eyes with long hairs.

Thorax blue, slate gray pruinose, distinctly quadrivittate. Presutural acrostical setulae in seven or eight irregular rows. Acrosticals 0:1; dorsocentrals 2:4; pra very fine, not more than 0.5 as long as posterior notopleural bristle. A few scutellar setulae descend slightly below level of marginals. Sternopleurals 2:2.

Legs black, hind tibiae slightly brownish red. Fore tibiae with a median posterior bristle. Mid femora with three or four ventral

bristles on basal one-third to one-half, a row of shorter and finer anterior setulae on basal half and with a weak apical anterior bristle. Mid tibiae with three median posterior bristles. Hind femora with six to eight long anteroventral bristles on apical one-third. Hind tibiae with three median anteroventral, five anterior to anteroventral bristles on apical two-thirds and eight to nine posteroventral setulae.

Wings slightly brownish hyaline, especially along costal margin. Cross veins and the longitudinal veins at base slightly darker. Costal thorns and setulae not developed. Third and fourth vein divergent apically. Calyptrae and halteres pale yellow, disc of the former white.

Abdomen black, with dense bluish gray pruinescence, a pair of large, dark spots on second and third visible tergites and indistinct dorsal and lateral checkerings. Basal sternite bare; others with a pair of moderately strong apical bristles; fifth moderately cleft, without distinctive armature.

HOLOTYPE: Male, Lake City, Colorado, 8700 feet elevation, August 6–15, 1936 (C. L. Fluke).

Helina obscuratoides (Schnabl)

Aricia obscuratoides SCHNABL, 1886, Horae Soc. Ent. Rossicae, vol. 20, p. 347; 1888, *ibid.*, vol. 22, p. 459.

Quadrula obscuratidea PANDELLÉ, 1898, Rev. Ent. France, vol. 18, p. 59.

Spilogaster obscuratoides STEIN, 1903, Wiener Ent. Zeitg., vol. 22, p. 274.

Mydaea obscuratoides STEIN, 1916, Arch. Naturgesch., sect. A, vol. 81, no. 10, p. 65.

Helina obscuratoides RINGDAHL, 1924, Ent. Tidskr., vol. 45, p. 39. KARL, 1928, Die Tierwelt Deutschlands, vol. 13, pt. 3, p. 81.

MALE: Length 8 to 9 mm. Head black, brownish gray pruinose. Front at narrowest part as wide as distance across posterior ocelli inclusive. Parafacials very narrow, scarcely as wide as diameter of anterior ocellus. Frontal vitta at narrowest fully 2.0 times as wide as diameter of anterior ocellus. With six to eight strong parafrontal bristles and with numerous setulae which are continued to ocellar triangle. Ocellar triangle with numerous long setulae which are almost three-fourths the length of the anterior ocellar bristles. Juncture of parafacials and para-

frontals almost as long as length of third antennal segment, a little over 2.0 times its greatest width, parafacials slightly narrowed below. Cheeks about 0.2 as high as the dorso-central height of head or 3.0 times as high as width of third antennal segment. Antennae black, third segment 1.5 times as long as second. Longest hairs on arista about 2.0 times as long as its greatest diameter. Palpi black. Eyes distinctly hairy.

Thorax black, slightly grayish pruinose, indistinctly quadrivittate. Presutural acrostical setulae in seven or eight irregular rows. Acrosticals 0:1; dorsocentrals 2:4; pra about 0.50 as long as the bristle behind it and 0.25 the length of the posterior notopleural bristle. Scutellar setulae quite numerous and descending slightly below level of marginal bristles. Sternopleurals 2:2.

Legs black. Fore tibiae with a median posterior bristle. Mid femora with only a weakly developed row of anterior and a row of four or five strong ventral bristles on basal half and one or two subapical anterodorsal bristles, when there are two, the more apical one is much weaker. Mid tibiae with two or three median posterior bristles. Hind tibiae with two median anterodorsal, a series of five to eight anteroventral, and seven to nine weaker posteroventral bristles on apical three-fourths.

Wings faintly brownish hyaline. Third and fourth veins distinctly divergent at apices. Posterior cross vein rather strongly curved. Calypterae and halteres pale yellow.

Abdomen black, brownish gray pruinose, with a distinct pair of spots on each of the visible tergites. Hypopygium black.

SPECIMENS EXAMINED: One male, Germany, determined by Stein; one male, Ervin, South Dakota, in the United States National Museum, and two males, Edmonton, Alberta, in H. C. Huckett collection.

The North American specimens agree almost perfectly with the European specimen determined by Stein, except that in the German specimen the pra is about 0.5 as long as the bristle behind it and 0.75 as long as posterior notopleural bristle and is without quite as numerous accessory parafrontal setulae. Herr O. Ringdahl has kindly examined the Berlin and South Dakota specimens and considers them conspecific.

Helina squalens (Zetterstedt)

Anthomyza squalens ZETTERSTEDT, 1838, Insecta Lapponica, p. 669 (female).

Anthomyza borealis ZETTERSTEDT, 1835, Insecta Lapponica, p. 679 (male).

Aricia squalens ZETTERSTEDT, 1845, Diptera Scandinaviae, vol. 4, p. 1445.

Aricia borealis ZETTERSTEDT, 1845, Diptera Scandinaviae, vol. 4, p. 1478.

Spilogaster borealis STEIN, 1892, Ent. Nachr., vol. 18, p. 325.

Helina borealis RINGDAHL, 1924, Ent. Tidskr., vol. 44, p. 57.

Arctohelina borealis RINGDAHL, 1931, Skr. Naturskyd., vol. 18, p. 15.

Arctohelina squalens RINGDAHL, 1939, Opuscula Ent., vol. 4, p. 143.

MALE: Length 6 mm. Head black, grayish pruinose; cheeks with reddish reflections. Front at narrowest part as wide as distance across posterior ocelli inclusive. At the same level, the frontal vitta about twice, and each parafrontal almost as wide as, diameter of anterior ocellus. Juncture of parafacials and parafrontals slightly longer than width of third antennal segment, parafacials narrowed to its width below. Cheeks 0.25 of eye height, or 2.0 times as high as width of third antennal segment, with a row of fine, upwardly directed setulae along lower margin. Antennae black; third segment 1.5 times as long as second. Arista with longest hairs not so long as its greatest diameter. Palpi black. Eyes with short, sparse hairs.

Thorax black, grayish pruinose, quadrivittate. Presutural acrostical setulae in five to seven irregular rows. Acrosticals 0:1; dorsocentrals 2:3; pra as long as, or slightly longer than, posterior notopleural bristle. With at most one or two scutellar setulae reaching slightly below level of marginals. Sternopleurals 2:2.

Legs black, the hind tibiae slightly brownish to reddish. Fore tibiae with two median posterior bristles. Mid femora with a row of ventral bristles, clothing setulae rather long, no anterior bristles at base, but with a very weak, apical, anterodorsal setula. Mid tibiae with three median posterior and two weaker posteroventral bristles. Hind femora with six to eight very long anterodorsal bristles on apical half, the longest fully twice as long as diameter of femora where situated and with three or four long posteroventral bristles on

apical one-fifth. Hind tibiae with two median anterodorsal bristles and a row of very long anteroventral and posterodorsal bristles, the median four or five in each series at least half as long as hind tibiae, the apical posterodorsal bristle as well developed as apical mid-dorsal one.

Wings yellowish to slightly brownish hyaline. Cross veins no more infuscated than longitudinals. Costal setulae and thorns slightly developed. All veins bare. Third and fourth veins slightly divergent apically. Posterior cross vein slightly S-shaped. Calyptrae white, margins pale yellow. Halteres orange.

Abdomen black, densely gray pruinose, with a pair of very large, subtriangular, almost confluent spots on second and third visible tergites and a narrow dorsocentral gray pruinose vitta, with distinct lateral and indistinct dorsal checkerings. Basal sternite bare; others with moderately distinctive armature. Hypopygium black.

Description based on three males from Finland, Sweden, and Thunder River, Quebec, June 10, 1920 (W. J. Brown).

Ringdahl has placed this species in his genus *Arctohelina* on the basis of the long posterodorsal bristle on hind tibiae. The genotype of *longicornis* Zetterstedt, while possessing long posterodorsal hind tibial bristles, differs in having prosternal hairs which *squalens* lacks. If this latter character is used as a generic character, then *squalens* Zetterstedt could not be included in *Arctohelina*.

Helina garretti, new species

MALE: Length 6.25 mm. Head black, silvery gray pruinose, the cheeks and frontal vitta with brownish to reddish reflections. Front at narrowest part 1.66 times as wide as distance across posterior ocelli inclusive, and 0.125 of head width. Each parafrontal 1.75 to 2.0 times as wide as diameter of anterior ocellus and with a complete row of slender bristles which reach to level of anterior ocellus. Juncture of parafacials and parafrontals as long as width of third antennal segment, parafacials scarcely narrowed below. Cheeks about 2.0 times as high as width of third antennal segment and 0.25 of eye height, with a row of upwardly curved bristles along lower margin. Antennae black, third segment 1.6 times as long as second.

Arista almost bare, the longest hairs not more than 0.5 as long as the rather thickened base of arista. Palpi black. Eyes bare.

Thorax black, grayish pruinose, quadrivittate. Presutural acrostical setulae rather sparse, in three or four irregular rows. Acrosticals 0:1; dorsocentrals 2:3; pra scarcely distinguishable from clothing setulae. Sternopleurals 1:2 or with a very slightly developed lower anterior one. Hypopleura and sternites bare.

Legs entirely black. Fore tibiae without median bristles. Mid femora with an almost complete row of ventral bristles and a short apical anterior bristle. Mid tibiae with very weakly developed median anterodorsal bristle and three or four much more well-developed median posterior bristles. Hind femora with a complete row of long, slender, almost hair-like anteroventral, ventral, and posteroventral bristles, those on apical half of anteroventral surface stouter but scarcely longer than those on basal half. Hind tibiae with a row of fine anteroventral and posteroventral bristle-like setulae and with three or four median anterodorsal and posterodorsal bristles.

Wings hyaline, slightly yellowish brown, the cross veins slightly infuscated. The posterior one almost straight. Third and fourth longitudinal veins subparallel, but slightly deflected posteriorly. Costal setulae and the thorn scarcely developed. Calyptrae concolorous with wings. Halteres yellow.

Abdomen black, slightly yellowish gray pruinose, with a pair of large, almost square brownish black spots on second and third visible tergites and a pair of very much smaller and less distinct ones on first and fourth tergites. Basal sternite bare. Hypopygium black.

HOLOTYPE: Male, Cranbrook, British Columbia, May 11, 1922 (C. B. D. Garrett), in the Canadian National Collection.

Helina nigrita Malloch

Helina nigrita MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 46, p. 139.

Helina nigrite MALLOCH, 1921, Canadian Ent., vol. 53, p. 105.

MALE: Length 7 to 8 mm. Head black, silvery gray pruinose. Front at narrowest part slightly wider than the distance across

posterior ocelli inclusive. Frontal vitta complete along its entire length, at its narrowest part as wide as each parafacial at the same level; parafrontals slightly wider than the diameter of the anterior ocellus. Parafrontals with a row of seven or eight moderately long bristles and shorter setulae which reach slightly posteriorly to the anterior ocellus. Juncture of parafacials and parafrontals as long as width of third antennal segment, parafacials slightly narrower below. Cheeks 2.0 times as high as width of third antennal segment and with a few upwardly directed setulae along the lower margin. Antennae black, third segment 1.5 to 1.66 as long as second. Longest arisal hairs as long as width of third antennal segment. Palpi black. Eyes bare.

Thorax black, densely grayish pruinose and distinctly quadrivittate. Presutural acrostical setulae in four rather regular rows, the outer ones slightly more well developed. Acrosticals 0:1; dorsocentrals 2:3, occasionally with a very weak additional one between the first and second pair of postsutural ones; pra very short, not more than 0.25 as long as the bristle behind it and scarcely 0.5 as long as posterior notopleural bristle. Scutellar setulae not descending below level of marginals. Sternopleurals 2:2.

Legs black. Fore tibiae with a median posterior and one or two much weaker anterodorsal bristles. Mid femora with a row of long ventral bristles on basal three-fourths, the basal anterior row scarcely developed, and with a short apical anterodorsal bristle. Mid tibiae with three long median posterior bristles. Hind femora with a complete row of anteroventral and a row of shorter posteroventral bristles on basal half. Hind tibiae with three median anterodorsal and two or three anteroventral bristles on apical half, one to four shorter median posterior bristles and with one or two short posterodorsal bristles on basal one-third.

Wings hyaline, very slightly smoky, most noticeable at base. Costal setulae basad to the thorns moderately long, about half as long as the thorns, the setulae beyond somewhat shorter. Third and fourth veins divergent at apices. Cross veins not infuscated. Calyptres and halteres pale yellow.

Abdomen black, densely yellowish gray pruinose, with a pair of spots on second

visible tergite, a much weaker pair on third and with very indistinct lateral checkerings. Basal sternite bare or with one or two weak hairs; others without distinct apical bristles. Fifth sternite distinctly cleft, and when viewed in profile usually downwardly projecting; without distinctive armature. Hypopygium black.

FEMALE: Length 7 to 8 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, not noticeably widened anteriorly, the pruinescence more yellowish gray. Juncture of parafacials and parafrontals 2.0 times as long as width of third antennal segment, and narrowed to about its width below. Cheeks with less numerous upwardly directed setulae.

Fore tibiae with the median bristles of almost equal length. Mid femora with only three or four ventral bristles confined to the basal half, the basal anterior row much more well developed and reaching to about apical three-fourths. Mid tibiae with two or three median anterodorsal and three or four median posterodorsal bristles. Hind tibiae as in male, except that there are no posterior bristles and there is usually only one posterodorsal bristle.

Thorax more densely brownish gray pruinose and the abdomen without distinct spots or lateral checkerings.

SPECIMENS EXAMINED: Thirteen males and six females from Montana, Colorado, New Mexico, North Dakota, Saskatchewan and Manitoba, including the holotype, in the Illinois Natural History Survey Collection.

Helina uliginosa (Fallén)

Musca uliginosa FALLÉN, 1825, Muscides, p. 81.

Anthomyia uliginosa MEIGEN, 1826, Systematische Beschreibung der bekannten Europäischen zweiflügeligen Insekten, vol. 5, p. 121.

Rohrella punctata ROBINEAU-DESVOIDY, 1830, Mem. Acad. Roy. Soc. France, vol. 2, p. 492.

Anthomyia flavicoxa ZETTERSTEDT, 1860, Diptera Scandinaviae, vol. 14, p. 6277.

Mydaea uliginosa SÉGUY, 1923, Faune de France, Diptera, Anthomyiides, p. 247.

Helina uliginosa MALLOCH, 1921, Canadian Ent., vol. 53, p. 106. RINGDAHL, 1924, Ent. Tidskr., vol. 45, p. 59.

MALE: Length 6 to 7 mm. Head black, silvery gray pruinose. Front at narrowest part about 1.5 times as wide as distance

across posterior ocelli inclusive. The frontal vitta at narrowest part 2.0 to 2.5 times as wide as diameter of anterior ocellus, only slightly widened anteriorly. Parafrontals at narrowest, slightly wider than diameter of anterior ocellus, with four to six pairs of moderately strong bristles, which reach about three-fourths the distance to anterior ocellus, and with a few accessory setulae. Juncture of parafacials and parafrontals almost as long as width of third antennal segment, parafacials slightly narrowed below. Cheeks 1.5 times as high as width of third antennal segment. Second and base of third antennal segments fulvous, remainder black. Third antennal segment 1.5 to 2.0 times as long as second, not reaching the lower margin of eyes. Longest arisal hairs about as long as width of third antennal segment. Palpi yellow to dark brown. Eyes bare.

Thorax black, yellowish gray pruinulent, scutellum slightly yellowish in ground color. Mesonotum with a pair of dark brown spots behind the suture adjacent to the anterior intra-alar and a somewhat larger spot extending from the second supra-alar to the anterior margin of the post-alar callosity. Scutellum with a darkened spot at base of disc on both sides. Presutural acrostical setulae in four almost regular rows. Acrosticals 0:1; dorsocentrals 2:3; pra minute or absent. Sternopleurals 2:2.

Legs yellow, only the tarsi and a variable portion of the posterodorsal surface of fore femora and apices of mid and hind femora darkened. Fore tibiae bare at middle. Mid femora with a row of anterior bristles on basal half and an apical anterior bristle, with four to six basal ventral bristles. Mid tibiae with two or three median posterior bristles. Hind femora with an almost complete row of anteroventral bristles which are much longer and stronger on apical half. Hind tibiae with two anterodorsal and usually one anteroventral median to submedian bristles.

Wings slightly yellowish hyaline. Cross veins narrowly infuscated. Costal thorns and setulae scarcely developed. Third and fourth veins subparallel at apices. Calyptrae hyaline. Halteres yellow.

Abdomen yellow, the apical two segments somewhat darkened. Second and third and sometimes the fourth visible tergites with

distinct large, paired spots and a distinct interrupted dorsocentral vitta. Basal sternite bare; others longer than wide, with a well-developed pair of apical bristles; fifth moderately cleft, the processes with a number of moderately dense, short setulae over the disc. Hypopygium yellow to brown.

FEMALE: Length 6 to 8 mm. Similar to the male, differing in having the front at vertex 0.3 of head width, distinctly widened anteriorly. The thoracic markings similar but not quite so large. The humeri slightly yellowish. Abdominal markings not so dark and the abdomen usually unicolorous throughout. Fore tibiae with a median posterior bristle.

SPECIMENS EXAMINED: Sixteen males and 15 females from Massachusetts, New Jersey, Maryland, Wisconsin, Minnesota, South Dakota, Missouri, Illinois, France, Germany, Finland, and Formosa.

Some of the specimens from northern Europe possess hairs at the base of the posterior notopleural bristle and have darker palpi but do not otherwise differ to any great extent from specimens from southern Europe and North America and Formosa. The distinctive thoracic markings should at once distinguish it from any other species known to occur in North America.

Helina exilis (Stein)

Mydaea exilis STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 30.

MALE: Length 5.5 mm. Head black, grayish pruinulent. Front at narrowest part almost or quite as wide as distance across posterior ocelli inclusive. Frontal vitta black, slightly grayish pruinulent, at narrowest part 1.5 to 2.0 times as wide as diameter of anterior ocellus. At the same level, each parafrontal 0.5 as wide, with four or five well-developed bristles on apical half and with three or four much weaker setulae which reach almost to the anterior ocellus. Juncture of parafacials and parafrontals 0.75 as long as the greatest width of third antennal segment, parafacials narrowed below to a distance equal to the greatest diameter of arista. Cheeks 1.5 times as high as width of third antennal segment. Antennae black, the second segment slightly yellowish at apex on inner surface; third 2.0 times as long as second. Longest arisal hairs slightly longer than

width of third antennal segment. Palpi black. Eyes bare or with only a few scarcely visible, very short hairs.

Thorax black, densely yellowish gray pruinose with four faint, narrow, brownish vittae. Presutural acrostical setulae in seven or eight irregular rows. Acrosticals 0:1; dorsocentrals 2:3; pra scarcely developed, not more than 0.33 as long as posterior notopleural bristle. Scutellar setulae sparse, not descending below level of marginals. Sternopleurals 1:2.

Legs black, only the tibiae slightly reddish to dark brown. Fore tibiae with or without a median posterior bristle. Mid femora with three or four ventral bristles and four or five very weak anterior bristles on basal half and with a scarcely developed apical anterodorsal bristle. Mid tibiae with two median posterior bristles. Hind femora with four or five anteroventral bristles on apical half. Hind tibiae with three median anterodorsal and anteroventral bristles and with one or two slightly less well-developed median posterior bristles.

Wings slightly yellowish hyaline, more yellowish at base. Cross veins very narrowly infuscated. Costal setulae scarcely developed, the thorns distinct. Penultimate section of fourth veins 0.4 as long as ultimate. Third and fourth veins subparallel at apices. Posterior cross vein straight. Calyptrae and halteres yellow.

Abdomen black, densely yellowish gray pruinose, when seen from above and at the sides, with a very narrow dorsocentral vitta, but without paired spots or checkings. Basal sternite bare; others only slightly longer than broad and with a pair of well-developed bristles at apices; fifth distinctly cleft, with one well-developed bristle at base of processes on inner margin, the margins slightly yellowish.

FEMALE: Length 6.5 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, distinctly widened anteriorly. With five parafrontal bristles, and with two or three rows of very short setulae. The pruinoscence over the entire head slightly more brownish gray. Fore tibiae with one or two conspicuously weak median anterodorsal bristles. Hind femora with all the bristles much more well developed. Hind tibiae with no posterior bristles or setulae. Wings much

more yellowish hyaline at base. Costal setulae and thorns more well developed. Abdomen black, more yellowish gray pruinose and without the dorsocentral vitta, or any markings.

SPECIMENS EXAMINED: Seven males and 12 females from Massachusetts, New York, Michigan, Wisconsin, and Quebec, including the holotype in the Zoological Museum of the University of Berlin.

The type has the front slightly wider than in the rest of this series but not enough so to warrant considering the above series to be a different species. One female has a median anterodorsal bristle on the mid tibia on one side, and aside from a slight variability in extent of infuscation on the apical third of the hind femora in the females the series is quite homogeneous.

Helina duplicata (Meigen)

Musca quadrula FALLÉN (*nec* Fabricius), 1825, *Muscides*, p. 80.

Anthomyia duplicata MEIGEN, 1826, *Systematische Beschreibung der bekannten Europäischen zweiflügeligen Insekten*, vol. 5, p. 92.

? *Mydina nigripes* ROBINEAU-DESVOIDY, 1830, *Mem. Acad. Roy. Soc. France*, vol. 2, p. 498.

? *Mydina vernalis* ROBINEAU-DESVOIDY, 1830, *Mem. Acad. Roy. Soc. France*, vol. 2, p. 498.

? *Mydina fuliginosa* ROBINEAU-DESVOIDY, 1830, *Mem. Acad. Roy. Soc. France*, vol. 2, p. 498.

? *Mydina pellucida* ROBINEAU-DESVOIDY, 1830, *Mem. Acad. Roy. Soc. France*, vol. 2, p. 500.

Anthomyia dispar WALKER (*nec* Fallén), 1853, *List of the specimens of dipterous insects in the . . . British Museum*, suppl., vol. 2, p. 123.

? *Anthomyia infixa* WALKER, 1853, *List of the specimens of dipterous insects in the . . . British Museum*, suppl., vol. 2, p. 123.

Spilogaster duplicata SCHINER, 1862, *Fauna Austriaca, Die Fliegen*, vol. 1, p. 607. RONDANI, 1866, *Atti Soc. Italiana Sci. Nat.*, vol. 9, p. 117. MEADE, 1881, *Ent. Monthly Mag.*, vol. 18, p. 63. STEIN, 1889, *Ent. Nachr.*, vol. 15, p. 119; 1897, *Berliner Ent. Zeitschr.*, vol. 42, p. 199.

Quadrula menechma PANDELLÉ, 1889, *Rev. Ent. France*, vol. 17, p. 55.

Helina duplicata MALLOCH, 1921, *Canadian Ent.*, vol. 53, p. 106. RINGDAHL, 1924, *Ent. Tidskr.*, vol. 45, p. 63.

MALE: Length 5 to 5.6 mm. Head black, grayish pruinose. Front at narrowest part about 2.0 times as wide as diameter of anterior ocellus, parafrontals subcontiguous or

contiguous, each at its narrowest part not quite so wide as diameter of anterior ocellus. With four or five well-developed parafrontal bristles and shorter setulae which reach to the narrowest part of the front. Juncture of parafacials and parafrontals as long as width of third antennal segment, parafacials only slightly narrowed below. Cheeks 2.0 times as high as width of third antennal segment, with a few upwardly directed setulae along lower margin. Antennae black, third segment 1.75 times as long as second. Longest arisal hairs almost or quite as long as narrowest width of third antennal segment. Palpi black. Eyes bare.

Thorax black, grayish pruinose, distinctly quadrivittate. Scutellum often with a small central brown spot at base. Presutural acrostical setulae in four rather regular rows. Acrosticals 0:1; dorsocentrals 2:4; praescarcely developed, not more than 0.25 as long as posterior notopleural bristle. Scutellar setulae reaching only to level of marginal bristles. Sternopleurals 2:2.

Legs black, often with the tibiae, especially the mid and hind pairs, dark red to brown. Fore femora normal. Fore tibiae without median bristles. Mid femora with a row of six or seven anterior and ventral bristles on basal half and with a distinct apical anterodorsal bristle. Mid tibiae usually with one or two short anterodorsal setulae or bristles and with two median posterior bristles. Hind femora with a row of six to eight anteroventral bristles on apical half. Hind tibiae usually with three anteroventral and anterodorsal bristles and with a distinct posterodorsal bristle on basal one-fourth and occasionally with an additional median setula.

Wings hyaline. Cross veins at most scarcely infuscated. Costal setulae and thorns moderately developed. Third and fourth veins subparallel. Calyptres pale, halteres yellow.

Abdomen black, yellowish gray pruinose, with a distinct pair of spots on second and third visible tergites, the clothing setulae slightly longer than usual. Basal sternite bare; others with scarcely developed apical bristles; fifth moderately cleft, without distinctive armature. Hypopygium black.

FEMALE: Length 5 to 7 mm. Similar to the male, differing in having the front at vertex slightly more than 0.4 of head width, slightly

widened anteriorly; the pruinose slightly more yellowish gray. Juncture of parafacials and parafrontals 1.5 times as long as third antennal segment and parafacials narrowed to about its width below. Thoracic pruinose slightly more yellowish gray, and the vittae more yellowish. Mid and hind tibiae and a very limited portion of mid and hind femora usually yellowish. Mid tibiae with one median anterodorsal and two median posterior bristles. Costal setulae slightly more well developed. Abdomen with spots more round, brownish and distinct, the clothing setulae not longer than usual. Fourth visible tergite often with a slightly darkened median basal spot.

SPECIMENS EXAMINED: Ninety-six males and 35 females from Washington, Idaho, Colorado, Montana, Wisconsin, Michigan, Alberta, Ontario, British Columbia, Alaska, England, Germany, and Finland.

The color of the mid and hind tibiae, mid tibial anterodorsal bristles or setulae, and the width of the frontal vitta in the male vary within this series of specimens. In some cases, the mid and hind tibiae are slightly reddish to brownish, while in others they are entirely black. The mid tibiae usually have at least one short median anterodorsal setula, but in certain specimens there is none and in others there are two stronger ones. In most specimens, the parafrontals are contiguous, but some have the frontal vitta at narrowest part about 0.25 as wide as diameter of anterior ocellus. There is no correlation between these characters. The difference in color is so slight, and as the bristling character on mid tibiae is not constant, i.e., some specimens have two bristles on one side and none on the other or have two or one, and as the very slight width of frontal vitta may vary, owing to the age of the fly before capture or drying, all of these specimens are considered to be one species.

Helina consimilata Malloch

Helina consimilata MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 46, p. 144; 1921, Canadian Ent., vol. 53, p. 106.

MALE: Length 5 mm. Head black, densely silvery gray pruinose. Front at narrowest part not quite so wide as distance across posterior ocelli inclusive. Parafrontals contigu-

ous, 1.5 times as wide as diameter of anterior ocellus, with three or four pairs of well-developed bristles and one or two weaker setulae. Juncture of parafacials and parafrontals 1.25 times as long as greatest width of the narrow third antennal segment, parafacials distinctly narrowed below. Cheeks as high as width of third antennal segment. Antennae black, second antennal segment slightly brownish, with a small yellowish area on dorsum. Third antennal segment at least 3.0 times as long as second, narrower than usual. Longest hairs on arista 2.0 times as long as its greatest diameter and 0.5 of greatest width of third antennal segment. Palpi black. Eyes bare.

Thorax black, slightly yellowish gray pruinulent, very indistinctly quadrivittate. Presutural acrostical setulae in four regular rows, the outer row most well developed; acrosticals 0:1; dorsocentrals 2:3; pra not more than 0.5 as long as posterior notopleural bristle. Scutellar setulae reaching to but not below level of marginals. Sternopleurals 1:2.

Legs black, knees and tibiae yellow. Fore tibiae with a weak median posterior bristle. Mid femora with an almost complete row of rather long, weak, ventral bristles, an apical anterior bristle and a row of less well-developed anterior bristles on basal half. Mid tibiae with two or three median posterior bristles. Hind femora with a row of seven or eight well-developed anteroventral bristles on apical three-fourths, the other ventral surfaces with several rows of long, hair-like setulae which are as long as, or slightly longer than, diameter of hind femora where situated. Hind tibiae with one to three median anterodorsal bristles, one posterodorsal bristle on basal one-fourth, a row of four or five less well-developed anteroventral bristles, and with several rows of numerous, irregular placed, long, hair-like ventral and posteroventral setulae which are about as long as, or slightly longer than, diameter of tibiae where situated.

Wings slightly yellowish hyaline. Costal setulae and thorns slightly developed. Posterior cross vein very slightly infuscated. Third and fourth veins subparallel. Calyptres almost white, halteres yellow.

Abdomen black, yellowish gray pruinulent, with a pair of subtriangular spots on

second and third visible tergites. Basal sternite bare; others longer than broad, with a pair of moderately well-developed apical bristles; fifth slightly cleft, without distinctive armature. Hypopygium black.

FEMALE: Length 4.5 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, wider anteriorly. Parafrontals 0.25 of frontal vitta width, with a complete row of bristles, the posterior two pair outwardly, the others inwardly, directed and with numerous setulae laterad to the inwardly directed ones. Juncture of parafacials and parafrontals 1.5 times as long as width of third antennal segment, parafacials narrowed to 0.33 its width below. When viewed in profile, the front distinctly protruding. Cheeks 1.25 times as high as width of third antennal segment. Second antennal segment with a narrow, light-colored area at apex of inner dorsal surface. The antennae about 0.5 as long as fore tibiae.

Pra only slightly longer.

Legs black, only a very limited portion of femora and tibiae yellow, the base of mid tibiae slightly infuscated. Fore femora with normal bristling, but the bristles in the usual rows less numerous and more widely spaced. Fore tibiae with one or two short anterodorsal setulae and a long median posterior bristle. Mid femora with two or three ventral bristles on basal one-third and a row of distinct shorter anterior bristles on basal one-half, with a distinct apical anterior bristle. Mid tibiae with three median posterior bristles. Hind femora with a row of anteroventral bristles on apical three-fourths and with a few much weaker posteroventral bristles on basal one-fourth. Hind tibiae with one median anterodorsal, three anteroventral bristles, and a short but distinct posterodorsal bristle on basal one-third. On one tibia there is a similar median bristle in addition to the basal one.

Abdomen black, pale yellowish gray pruinulent, unmarked and without checkerings. Basal sternite bare; others with two pairs of short but distinct apical bristles.

Description based on two males and one female from Massachusetts, Wisconsin, and Michigan, including the holotype in the Illinois Natural History Survey Collection.

The very elongate third antennal segment,

which is at least 3.0 times as long as the second, should at once distinguish this species in both sexes from any other closely related species occurring in North America. The male may at once be distinguished by fine, moderately long, hair-like setulae on the ventral surface of hind femora and tibiae.

***Helina anceps* (Zetterstedt)**

Musca modesta (p.p.) MEIGEN, 1925, Systematische Beschreibung der bekannten Europäischen zweiflügeligen Insekten, vol. 5, p. 89, p. 119.

Musca subpunctata var. *beta* FALLÉN, 1926, Muscides, p. 80.

Anthomyza anceps ZETTERSTEDT, 1838, Insecta Lapponica, p. 689. WALKER, 1853, List of the specimens of dipterous insects in the . . . British Museum, suppl. vol. 2, p. 132.

Spilogaster caseia RONDANI, 1866, Atti Soc. Italiana Sci. Nat., vol. 9, p. 115; 1877, Dipterologicae Italicae prodromus, vol. 6, p. 97.

Helina anceps RINGDAHL, 1924, Ent. Tidskr., vol. 45, p. 65. KARL, 1928, Die Tierwelt Deutschlands, vol. 13, pt. 3, p. 85. STACKLEBERG, 1933, Mouches parti Européenne U.R.S.S., Leningrad, p. 536.

Enoplopteryx anceps MALLOCH, 1921, Canadian Ent., vol. 53, p. 105 (footnote).

MALE: Length 6 to 7 mm. Head black, grayish pruinose. Front at narrowest part about as wide as diameter of anterior ocellus. Parafrontals contiguous or subcontiguous, with six or seven pairs of bristles and setulae which become gradually shorter and hair-like posteriorly and reach halfway to the anterior ocellus. Juncture of parafacials and parafrontals as long as width of third antennal segment, parafacials much narrowed below. Cheeks 2.5 times as high as width of third antennal segment, with a few upwardly directed setulae along lower margin. Antennae black, third segment 2.0 times as long as second. Longest arisal hairs as long as width of third antennal segment. Palpi black. Eyes bare.

Thorax densely grayish pruinose, narrowly quadrivittate. Presutural acrostical setulae in four rather regular rows; acrosticals 0:1; dorsocentrals usually 2:4; pra short, 0:33 as long as posterior notopleural bristle. Scutellar setulae not descending below level of marginals. Sternopleurals 2:2.

Legs black, the knees, mid and hind tibiae yellow. Fore tibiae with a posterior and

often with a very short, median anterodorsal bristle. Mid femora with three or four ventral bristles on basal one-fourth to one-third, a row of shorter anterior ones on basal half and a weak apical anterodorsal bristle. Mid tibiae with two or three median posterior bristles. Hind femora with a complete row of anteroventral bristles, which are longest on apical half, and a row of short posteroventral setulae. Hind tibiae with three or four anterodorsal bristles, the median one 0.4 as long as length of hind tibiae and about as long as hind metatarsus; two or three slender median anteroventral bristles, the anterodorsal to posterodorsal clothing setulae quite long, the apical dorsal bristle very long and hair-like and usually with a moderately distinct posterodorsal bristle on basal fourth.

Wings pale brownish hyaline. Cross veins scarcely infuscated. Costal setulae scarcely developed, the thorns quite distinct. Ventral surface of node and stem vein opposite humeral cross vein with short hairs or setulae. Other veins bare, Third and fourth veins subdivergent at apices. Calyptrae and halteres pale.

Abdomen black, with dense, slightly brownish gray pruinescence, a pair of small, round spots on second and a smaller and less distinct pair on third visible tergites. Basal sternite bare; others without long apical bristles; fifth distinctly cleft, with two or three short, stout bristles on disc of each process.

FEMALE: Length 7 mm. Similar to the male, differing from it in having the front at vertex 0.33 of head width, scarcely widened anteriorly. With a complete row of parafrontal bristles, the posterior two outwardly directed. Only coxae, trochanters, tarsi, fore femora, and basal third or less of mid and hind femora infuscated, rest yellow. Hind tibiae without the unusually long anterodorsal bristle, clothing setulae normal and the apical dorsal bristle much shorter but stouter. Costal setulae basad to thorns much more well developed. Abdominal spots smaller.

Description based on 23 males and four females from England, Germany, France, Sweden, and Finland, determined by Wainwright, Karl, Vinneneuve, Ringdahl, and Tiensuu, respectively.

Stein (1904, p. 449) recorded the female of

this species as occurring in Georgia in the United States. I have seen no North American specimens but have included it on the basis of his record.

Helina nudibasis, new species

FEMALE: Length 7 mm. Head black, grayish pruinulent. Front at vertex 0.375 of head width, slightly widened anteriorly. With a complete row of five strong bristles and one or two weaker setulose parafrontal bristles, the posterior two outwardly, the others inwardly, directed and with a few setulae laterad to the anterior ones. Juncture of parafacials and parafrontals almost 2.0 as long as greatest width of third antennal segment, parafacials narrowed to antennal width below. Cheeks 2.75 times as high as width of third antennal segment, ventral margin without upwardly directed setulae. First and second antennal segments orange brown, third black, 1.5 times as long as second. Longest arisal hairs 0.5 to 0.66 as long as width of third antennal segment. Palpi black. Eyes bare.

Thorax black with rather dense grayish pruinescence and four narrow but distinct brown vittae. Presutural acrostical setulae in about three irregular rows, rather sparse; acrosticals 0:1; dorsocentrals 2:3; pra absent. Scutellar setulae not reaching level of marginals. Sternopleurals 2:2.

Coxae, tarsi, and variable portions of anterior surfaces of fore femora infuscated, a very narrow apical portion of fore tarsi and rest of legs fulvous. Fore tibiae with a strong median posterior bristle and weak anterodorsal setula. Mid femora with a very distinct median ventral bristle 1.3 times as long as diameter of femora where situated and with one or two very weak setulae basad and apicad to this bristle, none of which are more than 0.33 of greatest femoral diameter, with a row of short anterior bristles on basal one-half and with an apical anterior to anterodorsal bristle. Mid tibiae with three median posterior bristles. Hind femora with two widely spaced anteroventral bristles on apical half which are longer than diameter of femora where situated and with one or two very much shorter and weaker intermediate setulae which are scarcely longer than the clothing setulae. Hind tibiae with one strong

and one weak median anterodorsal bristle, three anteroventral bristles on apical half which become gradually shorter towards the middle, and a posterodorsal bristle on basal one-fourth.

Wings slightly yellowish gray hyaline, especially noticeable at base. Anterior cross vein not infuscated, the posterior one very faintly so. Costal thorns slightly, the setulae scarcely, developed. Third and fourth veins subparallel at apices. Penultimate section of fourth vein one-half as long as ultimate. Posterior cross vein straight. Margins of calyptres pale yellow, discs white. Halteres slightly reddish yellow.

Abdomen black, with rather dense, very slightly yellowish gray pruinescence, a pair of round, brown pruinulent spots on second and third visible tergites and a median brown vitta on fourth. The larger bristles and setulae on the latter tergite inserted in small, brown spots. Basal sternite bare; others without well-developed apical bristles.

HOLOTYPE: Female, Rio Ruidoso, about 8500 feet, White Mountains, New Mexico, 8-6 (C.H.T. Townsend), in the United States National Museum.

This species is quite similar to the Mexican *canoe* Snyder but is distinguished from it by the shorter length of juncture of parafacials and parafrontals, the fulvous brown first two antennal segments, the more yellowish gray body pruinescence as well as the bristling of mid and hind femora.

Helina algonquina Malloch

Helina algonquina MALLOCH, 1922, Bull. Brooklyn Ent. Soc., vol. 17, p. 96. BRIMLEY, 1938, Insects of North Carolina, p. 373.

MALE: Length 5.5 to 6 mm. Head black, grayish pruinulent. Front at narrowest part as wide as distance across posterior ocelli inclusive. Frontal vitta at narrowest 1.5 times as wide as diameter of anterior ocellus, the parafrontals 0.75 as wide, the four to five pairs of bristles reaching halfway to anterior ocellus. Juncture of parafacials and parafrontals as long as greatest width of third antennal segment, parafacials narrowed to 0.5 its width below. Cheeks 0.33 of eye height or 2.25 times the greatest width of third antennal segment. Antennae black, third segment 1.5 to 1.6 times as long as second. Longest

aristal hairs almost as long as width of third antennal segment. Palpi black. Eyes bare.

Thorax black, brownish pruinulent, quadrivittate. Presutural acrostical setulae in two rather regular rows. Acrosticals 0:1, dorso-centrals 2:3-4; pra very short or absent. Scutellar setulae sparse, not reaching level of marginals. Sternopleurals 2:2, the lower anterior one weak and often hair-like.

Legs black, only the knees and tibiae yellowish, fore tibiae often infuscated on apical half. Fore tibiae with a median posterior bristle. Mid femora with two to four basal ventral bristles and a row of short but well-developed anterior bristles on basal half and an apical anterodorsal bristle. Mid tibiae with three median posterior bristles. Hind femora with four or five anteroventral bristles on apical half. Hind tibiae with two to three median anterodorsal, one or two anteroventral bristles and a few weak posterior setulae and a weak posterodorsal submedian setula.

Wings slightly yellowish hyaline. Cross veins very slightly infuscated. Costal setulae and thorns scarcely developed. Third and fourth veins parallel at apices. Calyptrae and halteres pale yellow.

Abdomen black, yellowish brown pruinulent, with a moderately distinct pair of brown spots on second and third visible tergites, and all the bristles and setulae inserted in small, round, brown spots. Basal sternite bare; others with two or three pairs of very weak apical bristles; fifth moderately cleft, without distinctive armature. Hypopygium black.

Description based on four males from Illinois, North Carolina, and Florida, including the holotype in the Illinois Natural History Survey Collection.

The species recorded in the North Carolina list as *alogonquina* is this species. In writing the label, I inadvertently added an extra "o." The female is unknown to me, but I suspect it will be very similar to *nudibasis*, new species.

***Helina nigribasis* Malloch**

Helina nigribasis MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 46, p. 143; 1921, Canadian Ent., vol. 53, p. 106.

Mydaea copiosa STEIN (*nec* Van der Wulp), 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 41.

MALE: Length 7 mm. Head black, silvery gray pruinulent. Front at narrowest part 2.0 times as wide as diameter of anterior ocellus. Parafrontals contiguous, at narrowest part each as wide as diameter of anterior ocellus, with a row of about six or seven bristles and a few long setulae which reach to the contiguous portion. Juncture of parafacials and parafrontals 1.25 times as long as greatest width of third antennal segment, parafacials narrowed to 0.5 to 0.7 its width. Cheeks 0.25 of eye height, almost as high as length of third antennal segment, with a single row of weak setulae along lower margin, some of which are upwardly directed. Antennae black, distinctly grayish pruinulent, especially along the inner border of second segment, third segment 1.75 times as long as second. Longest aristal hairs 2.5 times as long as greatest aristal diameter or not quite so long as width of third antennal segment. Palpi orange to black. Eyes bare.

Thorax black, densely yellowish gray pruinulent, distinctly quadrivittate. Presutural acrostical setulae in two or three rather regular rows. Bristled as in *obscurinervis* Stein.

Legs infuscated, tibiae and a variable portion of hind femora yellow to orange. Fore tibiae with or without a median posterior bristle. Mid femora with four to six ventral bristles on basal half and a row of shorter anterior ones on basal half, with one apical anterodorsal bristle. Mid tibiae with three or four median posterior and occasionally with a very weak median anterodorsal bristle. Hind femora with a complete row of long anteroventral and posterodorsal bristles and a few rather long, hair-like setulae at base of posterior surface. Hind tibiae with two or three median anterodorsal, anteroventral, and posterodorsal bristles and often with one or two somewhat shorter posterior ones.

Wings hyaline, slightly yellowish. Costal setulae and thorns scarcely developed. Third and fourth veins subparallel at apices. Cross veins only indistinctly infuscated. Calyptrae almost whitish, halteres yellow.

Abdomen black, yellowish gray pruinulent, with a pair of quite distinct light brown spots on second, third, and sometimes fourth visible tergites. Many of the larger bristles inserted in small, dark spots. Basal sternite

bare; others with a pair of moderately long apical bristles which are only slightly longer and stronger than some of the clothing setulae; fifth distinctly cleft, without distinctive armature. Hypopygium black.

FEMALE: Length 7 mm. Similar to the male, differs in having the front at vertex 0.25 to 0.30 of head width, distinctly widened anteriorly. Fore tibiae with one or two median anterodorsal and posterior bristles. Mid tibiae with one median anterodorsal bristle. Hind femora with the posteroventral bristle short and confined to base. Hind tibiae with one median anterodorsal bristle. Apical portion of fourth tergite often lighter yellow than the rest.

SPECIMENS EXAMINED: Sixteen males and 19 females from Wisconsin, Ohio, Illinois, Indiana, Virginia, and Maryland, including the type series in the Illinois Natural History Survey collection and a specimen from Columbus, Ohio, determined as *copiosa* by Stein.

This species is very closely related to the European *calceata* Rondani and is separated from it only with difficulty. In *nigribasis* there are a number of long bristles at the apex of posteroventral surface of hind femora which are absent in *calceata*. The male front of *nigribasis* is not quite so wide as the distance across posterior celli, and in *calceata* it is slightly wider. The abdominal pruinescence of the latter species is distinctly grayish, in *nigribasis* it is more yellowish. The majority of specimens of *nigribasis* have three post-sutural dorsocentral bristles, while in *calceata* there are usually four. However, in the type series of *nigribasis*, there are specimens which have three on one side and four on the other.

Stein recorded *copiosa* Van der Wulp as occurring in Ohio, but upon comparison of the specimens he had in hand with the holotype of *nigribasis* and with a female cotype of *copiosa* Van der Wulp in the Illinois Natural History Survey Collection, I am convinced that his specimens were *nigribasis*.

Helina spuria Malloch

Helina spuria MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 46, p. 144; 1921, Canadian Ent., vol. 53, p. 107.

MALE: Length 6 to 7.5 mm. Very similar to *nigribasis* Malloch, differing from it in

having the head with less silvery pruinescence, second antennal segment reddish to brownish. The parafrontals narrowly separated. Longest arisal hairs not more than 0.33 as long as width of third antennal segment.

Usually the lower anterior sternopleural bristle is very short and fine or absent.

Legs except apices of femora infuscated and with the posteroventral bristles on hind femora much shorter, not more than 0.75 as long as femoral diameter where situated.

Cross veins more extensively infuscated.

Abdomen with larger spots and with a faint dorsocentral vitta.

FEMALE: Length 7.5 mm. Similar to the male, differing from it in having the front at vertex 0.28 of head width, widened to 0.5 anteriorly, with a complete row of parafrontal bristles and with only a few scattered lateral setulae. Ocellar and vertical bristles long and strong. Legs except coxae and tarsi fulvous.

SPECIMENS EXAMINED: Three males and two females from California, Oregon, and Colorado.

Helina linearis Malloch

Helina linearis MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 46, p. 46; 1921, Canadian Ent., vol. 53, p. 106.

MALE: Length 8 mm. Head black, grayish pruinescent, distinctly shiny; cheeks with slight brownish reflections. Front at narrowest part 1.5 times as wide as distance across posterior ocelli inclusive. Frontal vitta at narrowest as wide as distance across posterior inclusive and the parafrontals 1.5 times the diameter of anterior ocellus. Parafrontals with only two or three strong bristles and with three or four weaker setulae which reach two-fifths the distance to the ocellar triangle. Juncture of parafacials and parafrontals 1.25 times as long as width of third antennal segment, parafacials narrowed to 0.75 this width below. Cheeks 1.5 times as high as greatest width of third antennal segment. Second antennal segment orange to very deep brown, third infuscated; third segment 1.5 times as long as second. Longest arisal hairs slightly longer than width of third antennal segment. Palpi yellow. Eyes bare.

Thorax black, grayish pruinescent, indistinctly quadrivittate. Presutural acrostical setulae in four to six moderately irregular

rows; acrosticals 0:1; dorsocentrals 2:3; pra about 0.25 as long as posterior notopleural bristle; scutellar setulae not descending below level of marginals. Sternopleurals 1:2.

Legs yellow, coxae, tarsi, and occasionally a limited area at base of fore femora infuscated. Fore tibiae with one or two strong median posterior and one or two shorter and weaker median anterodorsal bristles. Mid femora with one or two ventral bristles at base, with the basal anterior row hardly distinguishable, and one apical anterior to anterodorsal bristle. Mid tibiae usually with one anterodorsal bristle on apical half and three median posterior bristles. Hind femora with three or four anteroventral and two or three shorter apical posteroventral bristles. Hind tibiae with three median anterodorsal bristles and an almost complete row of shorter anteroventral bristles, a distinct posterodorsal bristle on basal one-fourth to one-third and with a few scattered short median posterior bristles or setulae.

Wings pale yellow hyaline. Cross veins scarcely infuscated. Costal setulae and thorns well developed. Third and fourth veins subparallel to slightly divergent. Calyptrae and halteres pale yellow.

Abdomen rather long and narrow, black, slightly yellowish gray pruinose, unspotted, strongly bristled. Fifth tergite with the apex narrowly orange. Basal sternite bare or with a few weak hairs; others with one or two pairs of well-developed apicals; fifth distinctly cleft, processes orange in ground color, with one or two pairs of moderately stout bristles at center of disc. Hypopygium yellow to orange.

FEMALE: Length 8 mm. Similar to the male, differing in having the front at vertex 0.28 of head width, distinctly widened anteriorly. Fore femora more extensively infuscated, and the anterodorsal bristles slightly more well developed. Mid tibiae usually with two anterodorsal bristles. Hind tibiae without well-developed posterior bristles and the anteroventral series less numerous.

Description based on eight males and four females from Washington, Montana, Minnesota, Wisconsin, Illinois, and Ontario, including the holotype in the Illinois Natural History Survey Collection.

This species is most closely related to the

European *spinicosta* Zetterstedt, from which it is distinguished by the much narrower front, more yellowish palpi and antennae, and the more yellow femora. The long bristling on the two species is very similar, though *linearis* has a few more bristles in the various rows on hind tibiae.

Helina abiens (Stein)

Spilogaster abiens STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 193.

Mydaea abiens STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 38.

Helina abiens MALLOCH, 1921, Canadian Ent., vol. 53, p. 107.

MALE: Length 7 mm. Head black, silvery gray pruinose. Front at narrowest part as wide as distance across posterior ocelli inclusive. Parafrontals at narrowest slightly wider than diameter of anterior ocellus, with six to eight bristles and a few accessory setulae reaching to ocellar triangle. Juncture of parafacials and parafrontals as long as width of third antennal segment, parafacials distinctly narrowed below. Cheeks 2.0 times as high as width of third antennal segment. Second antennal segment brown to reddish, the base of the third to about level of insertion of arista reddish, rest of third black. Third antennal segment 2.0 times as long as second. Longest arisal hairs almost as long as width of third antennal segment.

Thorax black, brownish gray pruinose, very indistinctly quadrivittate. Presutural acrostical setulae in two rather regular rows; 0:1; dorsocentrals 2:3; pra minute or absent. Scutellar setulae not descending below level of marginals. Sternopleurals 2:2.

Legs yellow to orange, coxae, basal three-fourths of fore femora infuscated. Fore tibiae with a median posterior bristle. Mid femora with a few ventral, and a row of shorter anterior, bristles on basal half; a very weak apical anterior to anterodorsal bristle. Mid tibiae with two median posterior bristles. Hind femora with an almost complete row of widely separated anteroventral bristles, those on apical half distinctly longer, and those on basal half distinctly shorter, than the diameter of femora where situated. Hind tibiae with two or three median anterodorsal and anteroventral bristles, with a distinct posterodorsal bristle on basal one-half to

one-third; with a few very short, weak, posterior setulae at middle which are scarcely distinguishable from the clothing setulae.

Wings slightly yellowish hyaline. Cross veins scarcely infuscated. Costal setulae and thorns scarcely developed. Third and fourth veins subparallel at apices. Halteres and calypterae pale yellow.

Abdomen black, yellowish gray pruinulent, with a pair of small, round, indistinct brown spots on second and third visible tergites. Basal sternite bare; others with a series of rather long lateral and apical bristles and setulae; fifth distinctly cleft, with a short, moderately stout bristle in the middle of the processes and a few longer and more slender apical bristles. Hypopygium black.

FEMALE: Length 7 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, slightly widened anteriorly, more yellowish to brownish dusted. Base of antennae more extensively light colored. Fore tibiae with one or two short, weak, median anterodorsal bristles. Hind tibiae without weak posterior setulae. Cross veins more infuscated. Abdomen unspotted.

SPECIMENS EXAMINED: Fifteen males and 10 females from Massachusetts, Pennsylvania, North Carolina, Michigan, Wisconsin, and Minnesota.

Helina troene (Walker)

Anthomyia troene WALKER, 1849, List of the specimens of dipterous insects in the . . . British Museum, vol. 4, p. 936. STEIN, 1901, Zeitschr. Hymen. Dipt., vol. 1, p. 201.

Anthomyia lysinoe WALKER, 1849, List of the specimens of dipterous insects in the . . . British Museum, vol. 4, p. 938. STEIN, 1901, Zeitschr. Hymen. Dipt., vol. 1, p. 215.

Spilogaster fulviventris BIGOT, 1885, Ann. Soc. Ent. France, ser. 6, vol. 5, p. 291. STEIN, 1907, Zeitschr. Hymen. Dipt., vol. 7, p. 275.

Spilogaster amoeba STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 190.

Spilogaster pubiceps STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 194.

Helina lysinoe MALLOCH, 1918, Trans. Amer. Ent. Soc., vol. 44, p. 272; 1921, Canadian Ent., vol. 53, p. 106.

Mydaea varia STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 26.

Helina troene HUCKETT, 1934, Canadian Ent., vol. 66, p. 137, 140.

MALE: Length 7 to 8 mm. Head black, grayish pruinulent. Front at narrowest part scarcely wider than diameter of anterior ocellus. Parafrontals contiguous or subcontiguous, with about five or six pairs of bristles and a few setulae which do not continue past the narrowest portion. Juncture of parafacials and parafrontals about 0.75 as long as width of third antennal segment, parafacials narrowed to 0.5 its width below. Cheeks 1.5 to 2.0 times as high as width of third antennal segment, with a single row of short, upwardly directed setulae. Second antennal segment and often the base of the third fulvous, rest infuscated; third segment 2.0 times as long as second. Longest arisal hairs about as long as greatest arisal diameter. Palpi yellow. Eyes bare.

Thorax variably colored, disc yellow to black, distinctly quadrivittate, scutellum and humeri fulvous. Presutural acrostical setulae in four to five irregular rows; acrosticals 0:1; dorsocentrals usually 2:4; pra about 0.5 to 0.75 as long as posterior notopleural bristle. Scutellar setulae not descending below level of marginals. Sternopleurals 1:2; occasionally with a very weak lower anterior one.

Legs except tarsi yellow, occasionally fore and mid coxae and fore femora infuscated. Fore tibiae with or without a median posterior bristle. Mid femora with three to five ventral bristles at base and with a row of much shorter and more numerous, closely placed anterior bristles on basal half; usually with an apical anterior and anterodorsal bristle. Mid tibiae with two or three median posterior bristles. Hind femora with a row of well-developed anteroventral bristles on apical two-thirds to one-half which are slightly longer towards apex. Hind tibiae with two median anterodorsal and three to seven anteroventral bristles.

Wings hyaline, slightly yellowish. Costal setulae and thorns scarcely developed. Third and fourth veins subparallel or very slightly divergent at apices. Cross veins infuscated. Calypterae and halteres pale yellow.

Abdomen yellow to black, whitish to brownish pruinulent; a distinct pair of dark spots on second and third visible tergites and often with an interrupted dorsocentral vitta. Basal sternite bare; others with one or two short apical bristles; fifth with a clump

of short bristles at base of processes. Hypopygium brownish to yellowish.

FEMALE: Length 7 to 8 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, slightly widened anteriorly. Juncture of parafacials and parafrontals slightly longer than width of third antennal segment, distinctly narrowed below. Cheeks without the upwardly curved setulae. Fore tibiae nearly always with a median posterior bristle. Abdomen unspotted, often with the apical portions of the tergites lighter colored at apices, especially in those forms having a slightly brownish abdomen.

SPECIMENS EXAMINED: Seventy-two males and 61 females from Maine, New Hampshire, New York, Connecticut, New Jersey, Massachusetts, North Carolina, Ohio, Indiana, Michigan, Wisconsin, Minnesota, Montana, Idaho, Utah, Nevada, Arizona, California, Oregon, Washington, Quebec, and Ontario, including cotypes of *pubiceps*, *amoeba*, and *varia* from collections of the Chicago Natural History Museum, Zoological Museum of the University of Berlin, and the United States National Museum.

A distinct series of forms can be seen, from those having an entirely yellow thorax and abdomen to those that are mostly black. There does not seem to be much correlation between locality and coloring, although there is a tendency for the western forms to be lighter colored and the extreme northern and high altitude specimens to be darker.

If subspecific names are used, the name *fulviventris* Bigot, with *varia* Stein as a synonym, would be applicable to the entirely yellow form, while the name *lysinoe* Walker, with *amoeba* Stein as a synonym, would be applicable to those forms having the thorax grayish and the humeri, scutellum, and base of abdomen yellowish, while the name *troene* Walker, the oldest one for this species, with *pubiceps* Stein as a synonym, would be applicable to those forms that have the thorax and abdomen almost entirely dark brown to black.

There is remarkably little variation in structure and leg bristling in this entire series, the most variable character being the presence or absence of the median posterior fore tibial bristle in the male. There is a tendency for the entirely fulvous forms (*fulviventris*) to

have less infuscated cross veins, especially in teneral specimens, and to have 2:3 dorsocentrals; these characters are not constant enough to warrant considering it to be more than a subspecies, in my opinion.

Helina humilis (Stein)

Mydaea humilis STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 32.

MALE: Length 7 mm. Head black, brownish gray pruinulent, cheeks with brownish red reflections. Front at narrowest part 1.5 times as wide as diameter of anterior ocellus. Parafrontals contiguous, with five or six pairs of bristles which reach to the contiguous part. Juncture of parafacials and parafrontals 0.5 as long as width of third antennal segment, parafacials slightly narrowed below. Cheeks 1.5 times as high as width of third antennal segment. Second antennal segment orange brown, third infuscated, 2.0 times as long as second. Longest hairs on arista almost 0.5 as long as width of third antennal segment. Palpi yellowish brown, slightly infuscated at apices. Eyes bare.

Thorax black, brownish gray pruinulent, scutellum largely yellow, especially on sides and ventral surface. Presutural acrostical setulae in five to six irregular rows; acrosticals 0:1; dorsocentrals 2:3; pra almost or quite as long as posterior notopleural bristle. Scutellar setulae not descending below level of marginals. Sternopleurals 1:2, occasionally with an additional fine, weak, lower anterior one.

Legs yellow, coxae, tarsi, and a variable portion of fore femora darkened. Fore tibiae with a median posterior bristle. Mid femora with about four strong ventral, and a moderately developed row of anterior bristles on basal half; usually with an apical anterior and anterodorsal bristle. Mid tibiae with two median posterior bristles. Hind femora with four to six apical anteroventral bristles which are only slightly longer than diameter of femora where situated, and often with two or three much shorter basal bristles. Hind tibiae usually with one and occasionally with one or two additional weaker anterodorsal and three or four median anteroventral bristles and a few very weak, scarcely discernible posterior setulae.

Wings distinctly yellowish hyaline, es-

pecially at base. Costal setulae and thorns scarcely developed. Third and fourth veins slightly divergent at apices. Cross veins not infuscated. Calyptrae and halteres distinctly yellowish.

Abdomen black, yellowish gray pruinose with a pair of small, indistinct spots on second visible tergite. Basal sternite bare; others with one or two pairs of strong subapical bristles; fifth quite distinctly cleft, with a clump of three or four quite well-developed short bristles at base of each process. Hypopygium slightly brownish.

FEMALE: Length 7 mm. Similar to the male, differing from it in having the front at vertex 0.33 to 0.4 of head width, slightly widened anteriorly. Juncture of parafacials and parafrontals distinctly longer than width of third antennal segment, and parafacials distinctly narrowed below. Scutellum darker. Cross veins slightly infuscated.

SPECIMENS EXAMINED: Eleven males and two females from British Columbia, Washington, Oregon, Arizona, and Colorado.

The specimens exhibit a wide variation in scutellar coloring. In some specimens, it is entirely yellow, while in others there is only a very limited yellowish area on the extreme base of the ventral surface. The color of the palpi and second antennal segment also varies. In all cases, the second antennal segment is lighter colored than the third, but may be very deep brown instead of light orange. The color of the palpi in many cases is almost black.

Helina procedens (Walker)

Aricia procedens WALKER, 1860, Trans. Ent. Soc. London, vol. 5, p. 315. STEIN, 1901, Zeitschr. Hymen. Dipt., vol. 1, p. 205.

Spilogaster uniseta STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 192.

Mydaea uniseta STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 40.

Helina uniseta MALLOCH, 1921, Canadian Ent., vol. 53, p. 106.

Helina procedens HUCKETT, 1934, Canadian Ent., vol. 66, p. 138.

MALE: Length 8 to 9 mm. Head black, grayish pruinose, cheeks with slight reddish to brownish reflections. Front at narrowest part as wide as distance across posterior ocelli inclusive. The frontal vitta distinct along its whole length, at narrowest part

0.75 to 1.25 times as wide as diameter of anterior ocellus. Parafrontals at narrowest 0.75 as wide as anterior ocellus. Juncture of parafacials and parafrontals 0.75 as long as width of third antennal segment, parafacials slightly narrowed below. Cheeks 1.5 times as high as width of third antennal segment, with a row of very fine, upwardly directed setulae along lower margins. Second antennal segment and sometimes the base of third on ventral surface orange to dark brown. Third antennal segment 2.25 times as long as second. Longest arisal hairs scarcely longer than greatest arisal diameter. Palpi dark brown to black. Eyes bare.

Thorax black, brownish gray pruinose, rather distinctly quadrivittate. When viewed from behind, the scutellum with a quite distinct dorsocentral line which extends forward a short distance onto the disc of the thorax. Presutural acrostical setulae in four rather regular rows, the outer ones more well developed, and a distinct row of prescutellar acrostical bristles; dorsocentrals 2:4; pra not more than half as long as posterior notopleural bristles. Scutellar setulae not descending below level of marginals. Sternopleurals 2:2, the lower anterior one somewhat weaker.

Coxae, tarsi, fore femora, and a variable basal portion of mid and hind femora infuscated, rest of legs fulvous. Fore tibiae with a median posterior bristle. Mid femora with very short ventral bristles on basal half, a series of moderately well-developed anterior bristles on basal half and one or two apical anterior and anterodorsal bristles. Mid tibiae with two median posterior bristles. Hind femora with five or six anteroventral bristles on apical one-third. Hind tibiae with one strong median anterodorsal bristle, about four or five anteroventral bristles, and an irregular series of short, fine, hair-like posteroventral setulae on apical half.

Wings hyaline, with slight yellowish tinge. Costal setulae and thorns scarcely developed. Third and fourth veins subparallel at apices. Cross veins broadly infuscated. Calyptrae and halteres white to pale yellow.

Abdomen black, with dense yellow to brownish gray pruinescence, with a pair of large, subtriangular brown spots on second and third visible tergites, and occasionally with a faint, very narrow median vitta. Basal

sternite usually with a few hairs; others with a pair of strong apical bristles; fifth distinctly cleft, with a clump of closely placed, moderately long, stoutly developed setulae at base of each process. Hypopygium slightly brownish.

FEMALE: Length 8 to 9 mm. Similar to the male, differing in having the front at vertex 0.25 to 0.28 of head width, distinctly widened anteriorly. Cheeks without upwardly directed setulae. Femora almost entirely yellow. Hind tibiae without the short posteroventral setulae and often with only two or three anteroventral setulae. Abdominal spots not quite so distinct, more round and without a trace of a median vitta.

SPECIMENS EXAMINED: Thirty-two males and 40 females from Vermont, Massachusetts, Connecticut, New York, New Jersey, Maryland, Michigan, Illinois, Wisconsin, Minnesota, Montana, Colorado, Idaho, New Mexico, California, Oregon, Washington, British Columbia, Quebec, and Ontario, including the cotypes of *uniseta* Stein in the Chicago Natural History Museum and the United States National Museum.

The amount of infuscation on the femora is quite variable; some male specimens have only a very limited basal area of the fore pair infuscated, while others have the mid and hind femora basally infuscated as well. The second antennal segment may be much darker in some specimens. Occasionally some females have one or two anteroventral bristles at the base of hind femora.

Helina obscurinervis (Stein)

Spilogaster obscurinervis STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 199.

Mydaea obscurinervis STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 26.

Helina obscurinervis MALLOCH, 1921, Canadian Ent., vol. 53, p. 107.

MALE: Length 5.5 to 7 mm. Head black, grayish pruinulent. Front at narrowest part as wide as distance across posterior ocelli inconclusive. At narrowest, the frontal vitta and parafrontals of equal width, equal to the diameter of anterior ocellus; with several pairs of strong parafrontal bristles and one or two pairs of setulae which do not reach to the narrowest part of front. Junction of para-

frontals and parafrontals 0.75 as long as width of third antennal segment, parafacials almost obliterated below. Cheeks 1.5 times as high as width of third antennal segment. Third antennal segment infuscated, second somewhat lighter colored, the third segment 2.0 times as long as second. Longest hairs on arista almost twice as long as its greatest diameter and almost 0.5 as long as width of third antennal segment. Palpi light brown to black. Eyes bare.

Thorax black, grayish pruinulent, with four brown vittae. Presutural acrostical setulae in four rather regular rows, the outer row slightly longer; acrosticals 0:1; dorso-centrals 2:3, occasionally with a weaker one between the first and second postsutural pair; pra very short, not more than 0.25 as long as bristle behind it, and 0.33 as long as posterior notopleural bristle. Scutellar setulae not descending below level of marginals. Sternopleurals 1:2.

Legs black, the tibiae and apices of femora fulvous. Fore tibiae with a median posterior and often a short, weak, median anterodorsal bristle. Mid femora with three or four basal ventral bristles, the basal anterior row scarcely developed, and with an apical anterior bristle. Mid tibiae with two or three median posterior bristles. Hind femora with a row of long, anteroventral bristles on apical half and with a few much shorter bristles on basal half which are not so long as diameter of femora where situated. Hind tibiae with two strong median anterodorsal and about six much weaker anteroventral bristles on apical one-half to two-thirds and with a row of similar weak median posterior bristles.

Wings hyaline, slightly yellowish. Costal setulae scarcely developed, the thorns moderately distinct. Third and fourth veins parallel at apices. Cross veins very broadly infuscated, especially the anterior one. Calyptrae and halteres pale yellow, the latter somewhat darker.

Abdomen grayish brown pruinulent, with a pair of large, dark spots on second and a much weaker pair on apical half of third visible tergite; fourth with a trace of a dorso-central vitta, many of the larger bristles inserted into small, dark spots, with a trace of lateral checkerings. Basal sternite hairy or bare; others with a pair of distinct apical

bristles; fifth distinctly cleft, without distinctive armature. Hypopygium brownish to black.

FEMALE: Length 5.5 to 7 mm. Similar to the male, differing in having the front at vertex 0.33 of head width, distinctly widened anteriorly. Parafacials not obliterated below. Thorax more brownish pruinose. Femora not so extensively infuscated, fore tibiae with a stronger median anterodorsal bristle and hind tibiae without the posterior to posterodorsal bristles. Hind femora often with one or two median ventral bristles. Abdomen not so distinctly spotted but with a more distinct dorsocentral vitta. The apex of the fourth visible tergite very slightly yellowish.

Description based on 92 males and 37 females from Massachusetts, Virginia, North Carolina, Indiana, Illinois, Michigan, Wisconsin, Florida, and Louisiana, including a cotype in the Chicago Natural History Museum.

Helina ute, new species

MALE: Length 8 mm. Head black, grayish pruinose. Cheeks with slight brownish reflections. Front at narrowest part scarcely wider than diameter of anterior ocellus. The parafrontals contiguous on almost the entire posterior half of front and with five or six pairs of well-developed bristles on anterior half. Juncture of parafacials and parafrontals 0.75 as long as width of third antennal segment, narrowed below to a distance equal to greatest diameter of arista. Cheeks 1.5 times as high as width of third antennal segment, with a row of short, slender, upwardly curved bristles along lower margin. Antennae and palpi black, extreme base of palpi and second antennal segment brownish fulvous. Third antennal segment 2.0 times as long as second. Longest arisal hairs 0.66 as long as narrowest width and 0.5 as long as greatest width of third antennal segment. Eyes bare.

Thorax black, the scutellum brownish, densely grayish brown pruinose, distinctly quadrivittate. Presutural acrostical setulae in eight to 10 irregular rows; acrosticals 0:1; dorsocentrals 2:4; pra about 0.75 as long as the short posterior notopleural bristles. Sternopleurals 2:2, the lower anterior one weak; scutellar setulae not descending below level of marginals.

Coxae, tarsi, and most of fore femora infuscated, rest of legs fulvous. Fore tibiae with or without a very short, median, posterior, hair-like bristle. Mid femora with a row of anterior and ventral bristles on basal two-thirds and an apical anterodorsal bristle. Mid tibiae with three median posterior bristles. Hind femora with several rows of long, fine hairs on basal half of ventral surfaces, and with the row on anteroventral surface continuous; with a row of stouter bristles on apical half, apical posteroventral setulae shorter than basal ones. Hind tibiae with ventral surfaces covered with several rows of fine hairs which are about as long as tibial diameter and with two or three closely placed anterodorsal bristles which may be distinguished from the longer clothing setulae.

Wings distinctly brownish hyaline. Cross veins broadly infuscated. Costal setulae and thorns scarcely developed. Third and fourth veins slightly divergent apically. Posterior cross vein moderately curved. Calyptrae and halteres brownish yellow.

Abdomen black, with dense grayish brown pruinose and with a pair of medium-sized spots on second and third visible tergites and with faint lateral checkerings. Basal sternite bare; with a pair of moderately well-developed apical bristles on second to fourth sternites; fifth without distinctive armature. Hypopygium black.

FEMALE: Length 6 mm. Similar to the male. Front at vertex 0.36 of greatest head width, widened to 0.38 anteriorly. With a complete row of parafrontal bristles and with numerous short setulae laterad. With a darker spot on parafacials below juncture with parafrontals. The upwardly directed setulae on cheeks minute or absent. Humeri and scutellum fulvous. Fore femora and coxae not so extensively infuscated. The median posterior bristle on fore tibiae, if present, stouter. Mid femora with three ventral bristles near base. Hind femora with about seven to nine stouter, widely spaced anteroventral bristles and a few rather hair-like posteroventral bristles at base. Hind tibiae with two median anterodorsal and three or four anteroventral bristles. Hind legs without long hair-like setulae.

TYPE MATERIAL: Holotype: Male, Card Canyon, Utah, Logan Canyon, July 24, 1938 (W. P. Nye). Allotype; Female, "Bvr"

Creek, Logan Canyon, Utah, July 26-30, 1940 (D. G. Hall). Paratype: Male, Aspen Grove Camp, Mt. Timpanogos, Utah County, Utah, 6800 feet elevation, "7-5-40" (C. Lynn Hayward).

Helina villihumilis, new species

MALE: Length 6 to 7 mm. Head black, brownish gray pruinulent, the cheeks with indistinct reddish reflections. Front at narrowest part slightly wider than distance across posterior ocelli inclusive. Parafrontals narrowly separated, each parafrontal 1.5 times as wide as diameter of anterior ocellus and with four to six pairs of slender parafrontal bristles and setulae reaching to narrowest part of front. Juncture of parafacials and parafrontals as long as width of third antennal segment, parafacials scarcely narrowed to 0.75 its width below. Cheeks 2.25 times as high as width of third antennal segment. Second antennal segment and a limited spot in middle of third on inner surface orange, remainder infuscated; third segment 1.8 times as long as second. Arisal hairs very fine and closely placed, the longest 2.0 times as long as greatest arisal diameter and not more than 0.40 the width of third antennal segment. Palpi orange, apical one-seventh slightly infuscated. Eyes bare.

Thorax black, brownish gray pruinulent, quadrivittate; the humeri and scutellum except base of the disc above, fulvous. Presutural acrostical setulae in four rather regular rows; acrosticals 0:1, dorsocentrals 2:3; pra 0.33 as long as posterior notopleural bristle. Scutellar setulae not descending below level of marginals. Sternopleurals 2:2.

Legs yellow, tarsi black except for apices of first to fourth tarsal segments which are narrowly yellowed. Fore tibiae with a median posterior bristle. Mid femora with three or four ventral bristles and a row of shorter anterior bristles on basal half and a distinct apical anterodorsal bristle. Mid tibiae with two or three median posterior bristles. Hind femora with a group of eight or nine closely placed anteroventral bristles and a clump of long ventral or posteroventral hairs on the apical half. Hind tibiae with a strong median anterodorsal bristle and a few smaller, more setulose ones basad to and beyond it, the ventral surfaces with several rows of long,

fine hairs which are longest at middle and become shorter apically; the longest are at least one-fourth as long as length of the hind tibiae, and with a group of short posterodorsal setulae at middle.

Wings hyaline, slightly yellowish at bases. Cross veins narrowly infuscated. Costal thorns and setulae not distinct. Third and fourth veins slightly divergent apically. Calypterae and halteres pale.

Abdomen black, grayish brown pruinulent, with a pair of small brown spots on second and third visible tergites. Basal sternite bare; others with a pair of apical bristles; fifth as in *humilis* except processes are yellow. Hypopygium orange.

TYPE MATERIAL: Holotype: Male, Lane's Road Camp, in the United States National Museum. Paratype: Male, Keremeos, British Columbia, July 11, 1923 (C. B. Garrett), in the Canadian National Collection.

Helina keremeosa, new species

MALE: Length 6.5 mm. Very similar to *villihumilis*, new species, differing from it in having the parafacials and parafrontals silvery gray pruinulent. Front at narrowest part 0.75 as wide as distance across posterior ocelli inclusive and with the parafrontals contiguous, each one as wide as diameter of anterior ocellus. Third antennal segment entirely black, arisal hairs not so fine nor so closely placed, but as long as in *villihumilis*.

Humeri dark, concolorous with rest of thorax but margins and ventral surface of scutellum fulvous. Outer row of presutural acrostical setulae more well developed than inner row. Sternopleurals 1:2, or, when 2:2, the lower anterior one is very weak.

Coxae and fore femora mostly infuscated, rest of legs colored as in *villihumilis*. Fore tibiae without a median bristle. Mid tibiae with two median posterior bristles. Hind tibiae with a single median anterodorsal bristle.

Abdomen more grayish pruinulent and with large spots on second and third visible tergites. Processes of fifth sternite infuscated. Hypopygium brownish to black.

HOLOTYPE: Male, Keremeos, British Columbia, June 20, 1923 (C. B. Garrett), in the Canadian National Collection.

Helina obscuripes (Zetterstedt)

? *Helina nigripes* ROBINEAU-DESVOIDY, 1830, Mem. Acad. Roy. Soc. France, vol. 2, p. 499.

Anthomyia obscuripes ZETTERSTEDT, 1845, Diptera Scandinaviae, vol. 4, p. 1678.

Spilogaster cothurnata RONDANI, 1866, Atti Soc. Italiana Sci. Nat., vol. 9, p. 116. STEIN, 1897, Berliner Ent. Zeitschr., vol. 42, p. 197.

Mydaea obscuripes STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 39.

Helina cothurnata MALLOCH, 1921, Canadian Ent., vol. 53, p. 62. KARL, 1928, Die Tierwelt Deutschlands, vol. 13, pt. 3, p. 87.

MALE: Length 7 mm. Head black, silvery gray pruinulent. Front at narrowest part not quite so wide as distance across posterior ocelli inclusive. Parafrontals at narrowest not quite so wide as diameter of anterior ocellus, narrowly separated so that the frontal vitta is narrowly complete. Junction of parafacials and parafrontals about as long as width of third antennal segment, parafacials slightly narrower below. Cheeks about 1.5 times as high as width of third antennal segment. Antennae black, apex of second antennal segment slightly brownish to orange. Third antennal segment extending slightly below lower level of eyes. Longest arisal hairs about as long as greatest arisal diameter. Palpi black. Eyes bare.

Thorax black, grayish pruinulent, indistinctly quadrivittate. Presutural acrostical setulae in four rather regular rows, the outer ones somewhat longer than the inner ones; acrosticals 0:1; dorsocentrals 2:3; pra about 0.5 as long as posterior notopleural bristle. Scutellar setulae long, fairly numerous, not descending below level of marginals. Sternopleurals 2:2, the lower anterior one much weaker and conceivably could be absent.

Legs black, only the tibiae somewhat brownish to orange. Fore tibiae without a median bristle. Mid femora with an almost complete row of fine ventral bristles which are longest on the basal two-thirds. Mid tibiae with two or three median posterior bristles. Hind femora with a complete row of anterior bristles and a series of five or six moderately long anteroventral bristles on apical one-third, which become more hair-like towards the base, the ventral surfaces provided with moderately long, hair-like setulae which are densest at the base and gradually become

shorter and more regularly placed towards apex. Hind tibiae with a median anterodorsal bristle and a series of four or more anteroventral and posteroventral setulae on apical half.

Wings slightly brownish hyaline. Costal thorns slightly developed. Third and fourth veins subparallel at apices. Cross veins distinctly infuscated. Calyptrae white. Halteres yellowish.

Abdomen black, grayish pruinulent, with a pair of distinct subtriangular spots on each of the visible tergites, those on the last sometimes indistinct or absent. Basal sternite bare; others with clothing setulae a little longer than usual, about 0.5 as long as the strong apical pair of bristles; fifth moderately cleft, without distinctive armature. Hypopygium black.

FEMALE: Length 5 mm. Similar to the male, differing in having the front at vertex 0.33 of head width. The hair-like setulae on hind femora are not so conspicuous, although there is a series of four or five moderately long, ventral hair-like setulae on basal half. Hind tibiae with only three anteroventral bristles and no posteroventral bristles. Abdomen more yellowish gray pruinulent, and paired markings not so distinct.

SPECIMENS EXAMINED: Two males and five females from Germany determined by Karl, and one male and one female from Moscow, Idaho, and Stanford University, California, determined by Stein.

Helina neopociloptera Malloch

Aricia pociloptera MALLOCH (*nec* Schiner), 1918, Trans. Amer. Ent. Soc., vol. 44, p. 271.

Helina neopociloptera MALLOCH, 1920, Trans. Amer. Ent. Soc., vol. 46, p. 139; 1921, Canadian Ent., vol. 53, p. 109.

MALE: Length 5 to 6 mm. This species is very similar to *obscuripes* Zetterstedt, and I rather doubt if it is specifically distinct. It was originally described from a female, and as the females are practically impossible to separate with any degree of certainty, the question may never be settled satisfactorily.

The male, which I associate with the female described as *neopociloptera*, differs from European specimens of *obscuripes* only in having less dense thoracic pruinulence and

slightly longer posteroventral and posterior setulae on hind tibiae.

The female cannot be separated from *obscuripes*.

Discussion based on six males and 12 females from Quebec, Ontario, Alberta, New Hampshire, Wisconsin, Montana, and New Mexico, including a paratype in the Illinois Natural History Survey Collection.

Helina bicolorata (Malloch)

Aricia bicolorata MALLOCH, 1919, Proc. California Acad. Sci., ser. 4, vol. 9, p. 253.

Mydaea aperta STEIN, 1920, Arch. Naturgesch., sect. A, vol. 84, no. 9, p. 28.

Helina bicolorata MALLOCH, 1921, Canadian Ent., vol. 53, p. 108.

FEMALE: Length 7 to 8 mm. Head black, grayish pruinose, cheeks with slight reddish reflections. Juncture of parafacials and parafrontals, when viewed in profile, with a transverse, dark spot. Front at vertex 0.33 of head width, distinctly widened anteriorly. With a complete row of parafrontal bristles, the posterior two pairs outwardly directed. Juncture of parafacials and parafrontals slightly longer than greatest width of third antennal segment, parafacials distinctly narrowed below. Cheeks about as high as width of third antennal segment. Second antennal segment yellow to brown, especially noticeable at apex; third black, 2.0 times as long as second. Longest arisal hairs about 0.5 as long as width of third antennal segment, at most three times as long as greatest arisal diameter. Palpi yellowish to brown, slightly infuscated on apical half. Eyes bare.

Thorax fulvous whitish pruinose, indistinctly quadrivittate. Presutural acrostical setulae in six to eight irregular rows; acrosticals 0:1; dorsocentrals 2:3; pra 0.75 as long as posterior notopleural bristle. Sternopleurals 1:2, occasionally with a very weak lower anterior one.

Legs fulvous, the tarsi darkened. Fore tibiae with a median posterior bristle. Mid femora with a row of short anterior bristles on basal half, two to four ventral bristles on basal half and an apical anterior bristle. Mid tibiae with two or three median posterior bristles. Hind femora with three or four anteroventral bristles on apical half and occasionally with some very short, weak, ventral

bristles on basal one-fifth. Hind tibiae with one or two anterodorsal and two to four median anteroventral bristles.

Wings yellowish hyaline. Costal thorns and setulae slightly developed. Third and fourth veins subparallel at apices. Cross veins not infuscated. Calyptrae and halteres yellow.

Abdomen black, yellowish green pruinose. Basal sternite bare; others distinctly longer than broad, with a moderately well-developed pair of apical bristles. Visible portions of ovipositor light brown.

SPECIMENS EXAMINED: Sixteen females from Washington, Oregon, and California.

It is strange that this widely distributed West Coast species is known only in the female sex. I have not seen the type of *aperta* Stein, but the specimens agree so well with his description that I have little hesitation in placing *aperta* in synonymy with *bicolorata*.

The fulvous thorax and legs and darkened abdomen should at once distinguish this species from any other North American *Helina*. Certain specimens of *troene* Walker, especially the lighter-colored forms described as *fulviventris* by Bigot, are the only ones that are likely to be confused with *bicolorata*. It may be distinguished from *troene* by the longer-haired arista and the darkened third antennal segment, as well as the non-infuscated cross veins.

Helina toga, new species

MALE: Length 6.5 mm. Head black, densely silvery gray pruinose. Front at narrowest part a little wider than distance across posterior ocelli inclusive. Frontal vitta at narrowest 1.5 times as wide as diameter of anterior ocellus. Parafrontals at same level, very slightly narrowed, with four pairs of bristles which reach to the middle of the front. Juncture of parafacials and parafrontals 1.5 times as long as width of the rather broad third antennal segment and almost as long as the short third antennal segment; parafacials narrowed to its width below. Cheeks 0.33 of eye height, almost as high as length of antennae, with a few upwardly directed setulae on lower margin, which is slightly retreating. Antennae black, third segment scarcely longer than second. Antennae not reaching to opposite lower level of eyes. Longest hairs on arista twice

as long as its greatest diameter. Vibrissal angles slightly convergent, the front slightly projecting. Palpi black. Eyes bare.

Thorax black, brownish gray pruinose, distinctly quadrivittate. Presutural acrostical setulae in four irregular rows; acrosticals 0:1; dorsocentrals 2:3; pra minute or absent. Scutellar setulae not descending below level of marginals. Sternopleurals 2:2, the lower anterior one weaker.

Legs black, a very limited apical portion of femora and entire tibiae yellowish. Fore tibiae with a median posterior bristle and a weaker one towards base. Mid femora with three or four basal ventral bristles, a row of weaker and more closely placed anterior bristles on basal half and an apical anterior bristle. Mid tibiae with four median posterior bristles. Hind femora with six or seven anteroventral bristles, which are widely spaced and extend along its entire length, and with four or five very much weaker ventral to posteroventral bristles on basal half. Hind tibiae with four to five median anterodorsal, two or three anteroventral, and four median posterodorsal bristles.

Wings hyaline, slightly yellow at base. Costal setulae and thorns yellow. Third and fourth veins slightly divergent apically. Cross veins narrowly infuscated. Calyptres and halteres pale yellow.

Abdomen black, densely grayish pruinose, with a pair of round, brown, velvety spots on second and third visible tergites, the pruinoscence between them slightly

yellowish; the fourth tergite with a pair of similar spots which are almost confluent, so that there appears to be almost a transverse brownish band on this segment in the middle. Basal sternite bare; others with moderately long setulae and a pair of well-developed apical bristles; fifth, when viewed in profile, slightly downwardly projecting, very deeply cleft and with numerous, long, spine-like setulae on the basal half of the disc of processes. Hypopygium black.

HOLOTYPE: Male, Mackinaw County, Michigan, July 5, 1937 (R. R. Dreisbach).

The very short third antennal segment and the slightly projecting front, as well as the convergent vibrissal angles, should distinguish this species from any other occurring in North America.

SPECIES NOT SEEN OR INCLUDED

Helina oregonensis (Malloch)

Aricia oregonensis MALLOCH, 1919, Proc. California Acad. Sci., ser. 4, vol. 9, p. 253.

Helina oregonensis MALLOCH, 1920, Canadian Ent., vol. 53, p. 107.

Until I can examine the type of this species, I am unable to identify or include it. I have seen specimens of *humilis* Stein, *villihumilis*, new species, *keremeosa*, new species, and *ute*, new species, identified as *oregonensis* by various workers. Dr. Mont Cazier compared them with the type of *oregonensis*, however, and does not consider them to be conspecific. He noted that it appeared to be closest to *keremeosa*.

BIBLIOGRAPHY

- HUCKETT, H. C.
 1934a. Notes on Francis Walker's type-specimens of North American anthomyid flies in the British Museum (Muscidae, Diptera). Canadian Ent., vol. 66, pp. 132-140.
 1934b. A revision of the North American species belonging to the genus *Coenosia* Meigen and related genera (Diptera, Muscidae), part I. Trans. Amer. Ent. Soc., vol. 60, pp. 57-118.
- MACQUART, J.
 1835. Histoire naturelle des insectes, diptères. Paris, vol. 2, 703 pp.
- MALLOCH, J. R.
 1921. Exotic Muscaridae (Diptera) III. Ann. Mag. Nat. Hist., ser. 9, vol. 8, pp. 225-239.
 1936. A new genus and species of Muscidae from Puerto Rico. Proc. Ent. Soc. Washington, vol. 38, no. 1, pp. 9-10.
- SCHINER, J. R.
 1862. Fauna Austriaca, Die Fliegen (Diptera). Vienna, vol. 1, lxxx+674 pp.
- SNYDER, FRED M.
 1949. Review of Nearctic *Mydaea*, *sensu stricto*, and *Xenomydaea* (Diptera, Muscidae). Amer. Mus. Novitates, no. 1401, pp. 1-38.
- STEIN, P.
 1902. Die Zetterstedt'schen, Holmgren'schen u. Boheman'schen Anthomyidentypen des Stockholmer Museums. Wiener Ent. Zeitg., vol. 21, pp. 29-66.
 1903. Einige Mittheilungen über *Trichopeza longicornis* Mg. *Ibid.*, vol. 22, pp. 225-228.
 1904. Die Amerikanischen Anthomyiden. Ann. Hist. Nat. Mus. Natl. Hungarici, vol. 2, pp. 414-495.
 1920. Nordamerikanische Anthomyiden. Arch. Naturgesch., sect. A, vol. 84, no. 9, pp. 1-106.
- STROBL, G.
 1893. Die Anthomyinen Steiermarks. Abhandl. Zool. Bot. Gesellsch. Wien, vol. 43, pp. 213-276.