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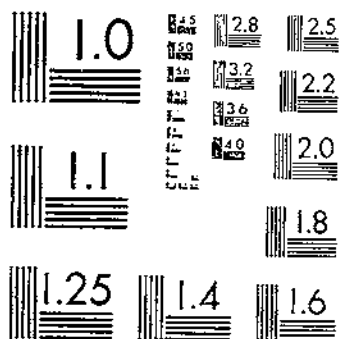
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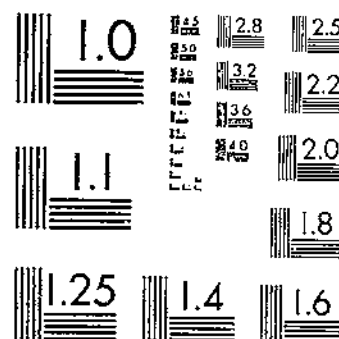
A SECOND REVISION OF THE CHALID FLIES OF THE GENUS HARMOLITA (ISOSOMA)

PHILLIPS, N. J.

1 OF 1



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A



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UNITED STATES DEPARTMENT OF AGRICULTURE  
WASHINGTON, D. C.

A SECOND REVISION OF THE CHALCID FLIES  
OF THE GENUS HARMOLITA (ISOSOMA) OF  
AMERICA NORTH OF MEXICO, WITH  
DESCRIPTIONS OF 20 NEW SPECIES

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INTRODUCTION

The genus *Harmolita* is a group of chalcid flies of very great importance. Species of this genus have caused losses totaling many millions of dollars to the growers of small grains in this country and in Europe. In the United States, there are four species that attack wheat, two that attack rye, and one that attacks barley, besides a number found in cultivated grasses.

The members of this group are rather remarkable in the specificity of their host preferences. Very rarely, indeed, will a species develop in more than one species of host. Occasionally a species may infest two species of plants of the same genus, but the writer has never known a species of *Harmolita* to oviposit in plants of different genera, and the rule is to breed in only one species of host plant.

Ten species have been described since the genus was revised in 1919 by Phillips and Emery,<sup>3</sup> and in the following pages 20 more are described that are new to science. During the course of the present

<sup>1</sup> Retired Dec. 31, 1934.

<sup>2</sup> The author is indebted to A. B. Gahan for helpful advice during the preparation of this bulletin; to J. G. Fratt for making the photographs for the illustrations; and to W. H. Larimer and W. R. Walton for encouragement and help in various ways.

<sup>3</sup> PHILLIPS, W. J., and EMERY, W. T. A REVISION OF THE CHALCID FLIES OF THE GENUS HARMOLITA OF AMERICA NORTH OF MEXICO. U. S. Natl. Mus. Proc. 55: 433-471, illus. 1919.

studies a new structural character has been discovered for the identification of the species belonging to this group. It therefore becomes desirable to make a second revision of the genus, based upon this new character, to include all of the recognized American species.

The new character referred to is the sculpturing both of the ventral aspect of the abdominal petiole and of its point of fusion with the ventral sclerite of the abdomen. To see this sculpturing clearly it is necessary to bleach the entire first abdominal segment (if the propodeum be considered a part of the thorax). This can be readily accomplished by boiling it in a concentrated solution of potassium hydroxide for a few minutes, or until the tissues begin to turn brownish. Then, while the solution is still hot, an equal quantity of hydrogen peroxide is added. This addition hastens the bleaching process. The specimen should be examined occasionally under the microscope and bleaching stopped at the proper time by washing in water. Where permanent mounts are desired, the specimen should be washed in water after bleaching, transferred directly to a bath of 98-percent alcohol, then to carbol-xylol, and finally mounted in balsam.

It cannot be said that this new character is invariable. There is some individual variation within a species, but the general specific pattern is stable. No other specific character that will hold straight through the genus has been recognized. Previously, no single character was known that, in many instances, was not so similar in different species as to become useless for identification when considered alone. To distinguish a species, therefore, a combination of several characters has heretofore been required. The sculpturing of the petiole serves definitely to designate a species, and by it closely or remotely related species are definitely indicated. Of course, very closely related species may occasionally show great similarity in this sculpturing, but careful scrutiny of specimens mounted on microscope slides will make possible their separation. It is a matter of considerable gratification that all of the previously described species meet the test of this new identification character.

The main points of difference to be noted in identifying a species from slide mounts of the petiole are the following: The height and shape of the petiole; the width and depth of the ridge around it; and the abundance, size, shape, and general arrangement of the various carinae and ridges at the point of fusion of the petiole with the ventral sclerite of the abdomen.

No attempt has been made to describe this sculpturing, but the petiole of the female of each species, with the exception of *agrostidis* and *bromicola*, of which sufficient material is not available, is illustrated from a photograph made of a slide mount (pls. 1-6). The species are thus separated in the key on external characters. When there is doubt about an identification, slide mounts should be made for comparison with the illustrations of the species given herein. The species of the genus *Harmolita* are difficult to delimit, and this new character should be useful to workers in this group.

The key has been included for the identification of the males, as they cannot be identified with certainty from the usual external characters. Besides this, in half of the known species males do not normally occur. The sculpturing of the ventral side of the petiole, at the point where it is fused with the ventral sclerite of the abdomen, has been illustrated (pls. 7-10). This character is not so good in the male as

in the female, but it appears to be better than the other characters. It is hoped that these illustrations will be of value to those who wish to identify males.

The writer has frequently found that the lateral profile of the abdomen in females (figs. 1-4) is useful in identifying a species. Outline (camera-lucida) drawings of the lateral aspects of the abdomen of the females of all available species have therefore been made. Illustrations of the ovipositor and propodeum have not been included, since the new character is much better.

Females of all species observed will oviposit even though males are absent. In some species males do not normally occur. Those species in which males do occur normally produce only males from eggs that are not fertilized, and both sexes are produced in about equal or nearly equal proportions from fertilized eggs.

The genus *Harmolita* still stands as defined by Gahan,<sup>4</sup> except for the species *H. opuntiae*, described by Muesebeck.<sup>5</sup> In regard to his species, Muesebeck says:

[*H. opuntiae*] Differs markedly from all described species of *Harmolita* with which I am familiar and possibly should not be included in this genus. It is apparently more closely related to *Harmolita* than to any other genus of Eurytomidae, however, and owing to the poorly classified condition of the family it seems advisable to describe it here rather than to propose a new generic name for it at this time. The thorax and abdomen are stouter than in *Harmolita*, the cheeks are strikingly swollen, the propodeum is relatively shorter and broader and is abruptly declivous, the head and thorax are unusually densely hairy, the wings are without a marginal fringe, and the marginal vein is not longer than the postmarginal.

To this the writer would add that the abdomen is much broader and much more abruptly truncate or declivous anteriorly, that the petiole differs greatly, and that the ovipositor is very different from that of any species at present included in the genus *Harmolita*.

This species, *opuntiae*, is not the longest but it is by far the stoutest of any of the American species, and even a casual glance would cause the observer to question whether it were congeneric with the others. In agreement with Muesebeck, however, it is perhaps best to leave it in the genus *Harmolita*, at least for the present.

#### KEY FOR IDENTIFICATION OF FEMALES<sup>6</sup>

1. Thorax densely covered with long white hairs, specimens very broad and thick.....*opuntiae* Mues. 2
- Thorax without long white hairs; specimens never very broad and thick..... 2
2. Praescutum without umbilicate punctures..... 3
- Praescutum with at least some umbilicate punctures..... 54
3. Praescutum smoothly reticulate, brownish..... 4
- Praescutum not smoothly reticulate, either rugulose or finely reticulately lineolate; black..... 5

<sup>4</sup> GAHAN, A. B. DESCRIPTIONS OF MISCELLANEOUS NEW REARED PARASITIC HYMENOPTERA. U. S. Natl. Mus. Proc. 61, art. 24, 24 pp., illus. 1922.

<sup>5</sup> MUESEBECK, O. F. W. TWO NEW SPECIES OF PHYTOPHAGOUS EURYTOMIDAE (HYMENOPTERA: CHALCIDOIDEA). Ent. Soc. Wash. Proc. 34: [100]-112. 1932.

<sup>6</sup> It should be noted that in the previous (1919) revision of this genus by Dr. Phillips certain species originally described in *Isosoma* (viz., *hageni* Howard, *bromi* Howard, *californicum* Howard, *abnorme* Ashmead, *montanum* Ashmead, and *nevadense* Ashmead) were excluded from consideration because of the presence of umbilicate punctures on the thorax. These species are again omitted from the present revision, notwithstanding that the redefinition of the genus brings into it species having umbilicate punctures, and several such species are included among those treated. I have examined the types of *californicum*, *montanum*, *abnorme*, and *bromi* and am of the opinion that *californicum* and *montanum* rightfully fall within the genus *Harmolita* as redefined, while *abnorme* and *bromi* fall more properly in *Eurytoma*. The types of *hageni* are in the Museum of Comparative Zoology, Cambridge, Mass., and have not been seen. The description leaves little reason to doubt that it is a true *Harmolita*. The species *nevadense* is based on a male said to be in the collection of the American Entomological Society, Philadelphia, and has not been studied. The long abdominal petiole, long fourth tergite, and pedicled funicle joints mentioned in the description are more indicative of the genus *Eurytoma* than of *Harmolita*.—A. B. GAHAN.

4. Wingless and small; mesothorax slightly longer than prothorax  
*grandis* form *minuta* Riley  
 Winged and large; mesothorax twice as long as prothorax  
*grandis* form *grandis* Riley
5. Praescutum finely reticulate, black..... 6  
 Praescutum rugulose..... 26
6. Propodeum without distinct median groove; occasionally with a groove  
 in *albomaculata*..... 7  
 Propodeum with a distinct median groove..... 12
7. Abdomen usually shorter than head and thorax..... 8  
 Abdomen usually longer than head and thorax..... 11
8. Pronotal spots small..... 9  
 Pronotal spots large..... 10
9. Propodeum rugose; pronotal spots scarcely visible from above  
*agrostidis* How.  
 Propodeum entirely granulose; pronotal spots easily visible from above  
*minuenda*, new species
10. Pronotal spots occupying one-half or less of anterior dorsal margin  
 of pronotum; propodeum rugose and spiracular carinae very  
 weak..... *satini*, new species  
 Pronotal spots occupying one-half to two-thirds of anterior dorsal  
 margin of pronotum; propodeum rugose or granulose and with  
 spiracular carinae prominent..... *albomaculata* Ashm.
11. Spiracular carinae prominent; propodeum rugose and with a central  
 longitudinal carina; scape black..... *websteri* How.  
 Spiracular carinae weak; propodeum rugose in anterior and granulose  
 in posterior region and with no central carina; scape yellowish  
*swezeyi* P. and P.
12. Pronotal spots absent..... 13  
 Pronotal spots present..... 14
13. Scape frequently yellowish brown; only joint 5 of funicle quadrate;  
 all segments of club distinctly defined; anterior face of front  
 coxae densely covered with white hairs..... *stipicola*, new species  
 Scape black; joints 3, 4, and 5 of funicle quadrate; last 2 segments  
 of club not distinctly defined; anterior face of front coxae only  
 sparsely hairy..... *comatae*, new species
14. Pronotal spots minute to large..... 15  
 Pronotal spots very large, almost meeting on anterior margin of  
 pronotum..... 25
15. Pronotal spots minute..... 16  
 Pronotal spots medium to large..... 17
16. First funicle plus ring joint only slightly longer than pedicel; pronotal  
 spots plainly visible from above; abdomen longer than thorax  
*capitula* How.  
 First funicle plus ring joint distinctly longer than pedicel; pronotal  
 spots hardly visible from above; abdomen not longer than thorax  
*poacola* Gahan
17. Abdomen usually slightly longer than head and thorax..... 18  
 Abdomen usually slightly shorter than head and thorax..... 19
18. Rugose laterad of propodeal groove; tibiae testaceous to translucent  
 brown..... *ainsliei*, new species  
 Sometimes granulose laterad of propodeal groove; tibiae black  
*dactylicola* P. and E.  
*poosi*, new species
19. Scape yellow..... 20  
 Scape black..... 21
20. First funicle plus ring joint almost or quite twice as long as pedicel..... 21  
 First funicle plus ring joint slightly to distinctly longer than pedicel..... 23
21. A shield-shaped, granulose area laterad of propodeal groove..... *elymi* French  
 Rugose laterad of propodeal groove and area not shield-shaped..... 22
22. Tibiae usually brown..... *phalaridis* P. and P.  
 Tibiae black..... *maculata* How.
23. First club joint distinctly defined, second and third fused; rugose  
 laterad of propodeal groove..... *utahensis*, new species  
 All club joints not distinctly defined, more or less fused..... 24
24. First funicle plus ring joint very slightly longer than pedicel; distal  
 funicle joints almost quadrate..... *agropyrophila* P. and E.  
 First funicle plus ring joint distinctly longer than pedicel; all funicle  
 joints very distinctly longer than broad..... *albomaculata* Ashm.

25. Abdomen shorter than head and thorax combined; front tibiae luteo-testaceous: fourth and fifth funicle and first club joints quadrate  
*koebeler*, new species  
 Abdomen equal in length to head and thorax; all tibiae brownish black; none of antennal joints quadrate.....*bromicola* How.
26. Propodeum without distinct, continuous median groove..... 27  
 Propodeum with distinct, continuous median groove..... 30
27. Pronotal spots small to minute, occupying less than half anterior dorsal margin of pronotum; none of funicle joints quadrate..... 28  
 Pronotal spots very large, occupying three-fourths or more of anterior dorsal margin of pronotum; 3 distal funicle joints quadrate; first 2 club joints quadrate.....*pacifica*, new species
28. Pronotal spots minute, visible to hardly visible from above..... 29  
 Pronotal spots small, occupying half or less of anterior dorsal margin of pronotum.....*panici* P. and P.
29. Legs reddish brown.....*hordei* Harris  
 Legs black.....*tritici* Fitch
30. Scape brownish yellow..... 31  
 Scape not brownish yellow..... 32
31. Legs opaque brown to reddish brown; coxae black.....*rufipes* P. and E.  
 Legs translucent brown to reddish brown; coxae light brown  
*flavicoxa*, new species  
 Legs black.....*vaginicola* Doane
32. Abdomen equal in length to head and thorax combined..... 33  
 Abdomen longer than head and thorax combined..... 35
33. Fifth funicle joint almost quadrate to broader than long; abdomen stout..... 34  
 Fifth funicle joint distinctly longer than broad; abdomen slender  
*poophila* P. and E.
34. Fourth funicle joint not quadrate, fifth almost quadrate; tibiae fuscous  
*kingi* Phillips  
 Fourth funicle joint quadrate, fifth broader than long; tibiae reddish brown.....*ovata* P. and E.
35. All tibiae reddish brown to translucent brown..... 36  
 All tibiae not reddish brown to translucent brown..... 38
36. Fifth funicle joint distinctly longer than broad; first funicle joint distinctly longer than pedicel..... 37  
 Fifth funicle joint not distinctly longer than broad; first funicle joint not distinctly longer than pedicel.....*agropyrocola* P. and E.
37. All femora reddish brown to translucent brown.....*dakota*, new species  
 All femora blackish brown.....*hesperus* P. and E.
38. Pronotal spots occupying not more than two-thirds of anterior dorsal margin of pronotum..... 39  
 Pronotal spots occupying three-fourths or more of anterior dorsal margin of pronotum..... 49
39. Pronotal spots small, occupying less than half anterior dorsal margin of pronotum..... 40  
 Pronotal spots large, occupying about two-thirds of anterior dorsal margin of pronotum..... 43
40. All tibiae black..... 41  
 All tibiae not black..... 42
41. Propodeal groove shallow, not clearly margined; none of antennal joints quadrate.....*panici* P. and E.
42. Propodeal groove deep; abdomen very slender and pointed; fifth funicle and first two club joints quadrate.....*festucae* P. and E.  
 Propodeal groove broad and shallow; none of antennal joints quadrate  
*secalis* Fitch
43. Propodeal groove narrow..... 44  
 Propodeal groove broad..... 47
44. Propodeal groove narrow and shallow.....*elymozena* P. and E.  
 Propodeal groove narrow and deep..... 45
45. First funicle plus ring joint longer than pedicel.....*elymivora* P. and E.  
 First funicle plus ring joint equal in length to pedicel..... 46
46. Propodeum usually granulose laterad of groove.....*occidentalis* P. and E.  
 Propodeum rugose laterad of groove.....*gillettei* P. and E.
47. Granulose laterad of groove.....*elymophaga* Phillips  
 Rugose laterad of groove..... 48



48. Fourth funicle joint quadrate, fifth broader than long; legs black, front tibiae testaceous.....*atlantica* P. and E.  
 49. Fifth funicle joint quadrate; legs fuscous to black.....*oregon*, new species  
 49. Funicle joints 3, 4, and 5 quadrate; first two club joints broader than long.....*pacifica*, new species  
 Funicle joints 3, 4, and 5 not quadrate; first two club joints not broader than long..... 50  
 50. Usually rugose laterad of groove..... 51  
 Usually granulate laterad of groove..... 53  
 51. Propodeal groove narrow and shallow; pronotum brownish; fifth funicle and first two club joints quadrate.....*elymophila* P. and E.  
 Propodeal groove of medium width and deep; pronotum not brownish..... 52  
 52. First funicle plus ring joint longer than pedicel; front femora and front and hind tibiae usually translucent brown to reddish brown.....*elymophihora* P. and E.  
 First funicle plus ring joint a little shorter than pedicel; legs black to fuscous; front tibiae testaceous.....*jonesi*, new species  
 53. First funicle plus ring joint longer than pedicel; none of funicle joints quadrate.....*elymicola* P. and E.  
 First funicle plus ring joint scarcely as long as pedicel; pedicel unusually large in comparison to other joints; fifth funicle quadrate.....*stipiphila*, new species  
 54. Pronotal spots absent..... 55  
 Pronotal spots present..... 57  
 55. Club three-jointed, fifth funicle joint quadrate..... 56  
 Club two-jointed, none of funicle joints quadrate.....*phyllostachitis* Gahan  
 56. Femora and middle and hind tibiae black; abdominal petiole about twice the usual length for species of *Harmolita*.....*longipetiolata*, new species  
 Legs usually translucent brown throughout; petiole about usual length.....*stipiphaga*, new species  
 57. Pronotal spots minute, hardly visible dorsally..... 58  
 Pronotal spots plainly visible dorsally..... 62  
 58. Club two-jointed..... 59  
 Club three-jointed..... 61  
 59. Tibiae translucent brown to reddish brown..... 60  
 Tibiae black, except front ones, which are dusky.....*loli* Gahan  
 60. Only the fifth and sixth funicle joints quadrate.....*gahani*, new species  
 Fourth, fifth, and sixth funicle joints quadrate.....*phalaricola* P. and P.  
 61. Abdomen equal in length to head and thorax; scape brownish yellow; fifth funicle joint quadrate; propodeum rugose laterad of groove.....*danthoniae*, new species  
 Abdomen longer than head and thorax; none of funicle joints quadrate; propodeum granulate laterad of groove.....*holci*, new species  
 62. Usually the first and second funicle joints fused, making four-jointed funicle, the two distal joints quadrate; legs black.....*bambusae*, new species  
 Funicle five-jointed; none of funicle joints quadrate; tibiae usually translucent brown to reddish brown.....*cinnae* P. and P.

## DESCRIPTIONS OF NEW SPECIES

## HARMOLITA MINUENDA, new species

(Pl. 1 and fig. 1)

*Female*.—Perhaps smallest of the American species; length 2 to 2.4 mm. Abdomen slightly shorter than head and thorax combined. Antennae fuscous; scape same length as pedicel, ring joint, and first funicle joint combined; pedicel slightly shorter than first funicle and ring joint combined; first funicle joint distinctly narrower than pedicel; the two distal funicle joints the broadest and approximately quadrate. (The club in the type specimen is abnormally compressed and appears to be very much broader than the preceding segments, whereas, if it had not collapsed, the first two segments would have been approximately quadrate. They appear now to be much broader than long.) The three club joints seem to be fused with no very

distinct lines delimiting them. Praescutum and pronotum reticulate, very smooth and without broad shallow impressions or umbilicate punctures; scutellum with a few small, shallow impressions; pronotal spots dull and small, occupying less than half anterior dorsal margin of the pronotum; propodeum without a groove, sometimes with a beginning of a groove anteriorly, entire propodeum, except spiracular area, granulose; spiracular area well defined, polished, shining. Legs fuscous, tarsi and knees lighter and basal portion of femora darker. Wings extending beyond tip of abdomen; veins testaceous; marginal vein longer than postmarginal and the latter about same length as stigmal; stigmal knob very small and not easily seen. Abdomen very slender and pointed.

*Type locality*.—Minot, N. Dak.

*Type*.—Catalog no. 50770, United States National Museum.

Male unknown.

Described from 2 complete and 2 fragmentary females bearing labels with the following data: "Reared from *Elymus*, Minot, N. Dak., C. N. Ainslie collector, Webster no. 13728." These specimens are deposited in the United States National Museum.

#### HARMOLITA SATIVI, new species

(Pl. 1 and fig. 1)

*Female*.—Length 2.8 mm; abdomen, including petiole, 1.3 mm; thorax 1.2 mm, thorax and head 1.45 mm. Antennae black; first funicle joint plus ring joint plainly longer than pedicel (in fact, apparently longer without ring joint), all funicle joints distinctly longer than broad; club three-jointed, apparently no broader than funicle and the segments all longer than broad, first joint distinct, second and third joints indistinctly separated. Praescutum and pronotum reticulately lineolate and without broad, shallow impressions; scutellum with broad, shallow impressions; pronotal spots dull, large but occupying a little less than one-half anterior dorsal margin of prothorax; propodeum without distinct groove; central portion, where groove would ordinarily be, about as elevated as any other portion of this area, some aspects seeming to show a slight, margined, narrow groove, with many distinct cross carinae; propodeum quite rugose; spiracular carinae very weak, spiracular area rugose and scarcely to be identified as such but resembling remainder of propodeum in rugosity. Legs black except tarsi, knees, and distal tip of tibiae, which are testaceous. Wings extending slightly beyond tip of abdomen, hyaline; marginal vein longer than postmarginal, postmarginal and stigmal about same length; veins dirty light brown or somewhat testaceous. Abdomen conic-ovate and stout, very slightly shorter than head and thorax combined; segment 2 about equal to 3 and 4 combined; segments 3, 4, and 5 about equal in length, although 3 may be slightly longer; 6 shortest, and 7 about as long as 3.

*Type locality*.—Sparta, Ill.

*Type*.—Catalog no. 50768, United States National Museum.

Male unknown.

Described from one female. The larva from which this female developed was found by F. F. Dicke while dissecting galls of *H. tritici* to get data on parasitization and mortality. The material was collected at Sparta, Ill., by A. F. Satterthwait in March 1931.

The cell in which this larva was found was not the usual type of cell formed by *H. tritici*, neither did the larva resemble the larvae of that species. The cell was in the wall of the stem.

Mr. Satterthwait has made collections from the same field at Sparta several times since but no more specimens could be secured. This species, in all probability, occurred in considerable abundance a good many years ago. The writer recalls a conversation with the late F. M. Webster, sometime between 1905 and 1913, in which the latter stated that he had found 5 or 6 larvae of *H. grandis* in one internode of wheat when infestations were heavy. The writer questioned the statement, pointing out that larvae of *H. grandis* occupied the center of the stem and were found just at the node. Webster stated that the larvae were arranged one above the other in the internode, somewhat like the larvae of *H. tritici*, except that they did not form typical galls like those of the latter species. The writer had never seen larvae infesting wheat in the manner described and thought little more about the matter until the larva of *H. sativi* was found and the adult reared.

Professor Webster perhaps never reared any of these to adults, as he considered them to be *H. grandis*. Had Webster seen adults he might easily have mistaken them for *H. grandis*, as specialists knew only a few species of the genus *Harmolita* at that time.

#### HARMOLITA STIPICOLA, new species

(Pl. 1 and fig. 1)

*Female*.—Length 2.2 to 2.4 mm. Abdomen equal to, or shorter than, head and thorax combined. Antennae brownish black; scape sometimes yellowish brown, slightly longer than combined pedicel, ring joint, and first funicle joint; pedicel distinctly shorter than first funicle joint plus ring joint; joints 2, 3, 4, and 5 of funicle equal, shorter than 1, 4, and 5, quadrate, though 4 not as distinctly so as 5; club three-jointed, its segments distinctly defined, first two joints of club broader than long. Praescutum smoothly reticulate, with an occasional broad, shallow, irregular impression; pronotum the same except that the impressions are more numerous; this also true of the scutellum; pronotal spots absent; propodeum with a narrow, deep, margined, median groove; rugose laterad of the groove, sometimes appearing slightly granulose. Legs black; tarsi, front tibiae, and knees light brownish; anterior face of front coxae thickly covered with white hairs. Wings apparently reaching tip of abdomen; veins light honey yellow to ivory but knob of stigma dusky; marginal vein not quite twice as long as stigmal, stigmal a little shorter than postmarginal; knob on stigmal almost circular, spur short. Abdomen in profile as shown in figure 1. Petiole longer than for the average species; first abdominal segment occupying about one-fourth dorsal length of the abdomen; fifth segment shortest; 2, 3, 4, and 6 about equal.

*Male* unknown. There were males among the specimens but there were also females of *H. comatae* present. As these two species are very closely related it seems unsafe to name the males.

*Type locality*.—Beach, N. Dak.

*Type*.—Catalogue no. 50783, United States National Museum.

Described from five females reared by C. N. Ainslie. The specimens bear labels with the following data: "Reared from *Stipa comata*, Beach, N. Dak., C. N. Ainslie, collector, August 1924, Webster no.

23396." These specimens are deposited in the United States National Museum.

HARMOLITA COMATAE, new species

(Pl. 1 and fig. 1)

*Female*.—A small, slender species; length 1.9 to 2.2 mm. Abdomen slender and slightly shorter than head and thorax combined. Antennae brownish black; scape about same length as combined pedicel, ring joint, and first funicle joint; first funicle plus ring joint about same length as pedicel, fifth joint of funicle broader than long, third and fourth about quadrate, and the first and second a little longer than broad; club three-jointed, distinctly broader than the preceding segments, first joint clearly defined but the two distal joints appearing to be fused, first two club joints distinctly broader than long. Praescutum smoothly reticulate, with an occasional irregular, shallow, broad impression; pronotum similar but shallow impressions more numerous; scutellum apparently as smooth as praescutum and also having the impressions; pronotal spots absent; propodeum with a very narrow, deep, median, margined groove with some cross rugae; a broad, granulose area present laterad of groove. Legs black, dirty brownish at knees, front tibiae frequently of a light brownish color, sometimes all femora brownish black; anterior face of front coxae sparsely covered with white hairs. Wings barely reaching to tip of abdomen; veins light honey yellow or about color of ivory; marginal vein not quite twice as long as stigmal and latter slightly shorter than postmarginal; knob at end of stigmal vein almost round, darker, spur short. Abdomen in profile as shown in figure 1; petiole longer than for the average species; first abdominal segment about one-fourth dorsal length of abdomen; segments 5 and 6 shortest and about equal, 2 next shortest, and 3 and 4 distinctly longer than 2, about equal to each other in length.

Male unknown. There were males in this lot but females of *H. stipicla* were also present. This latter species is so closely related to *camatae* that it would be unsafe to name the males.

*Type locality*.—Beach, N. Dak.

*Type*.—Catalogue no. 50782, United States National Museum.

Described from seven females reared by C. N. Ainslie. The specimens bear labels with the following data: "Reared from *Stipa comata*, Beach, N. Dak., C. N. Ainslie, collector, August 1924, Webster no. 23396." These specimens are deposited in the United States National Museum.

HARMOLITA AINSLIEI, new species

(Pl. 2 and fig. 1)

*Female*.—Length 3.2 to 3.5 mm. Abdomen slightly longer than head and thorax combined. Antennae black; scape slightly longer than combined pedicel, ring joint, and first funicle joint; first funicle plus ring joint about twice as long as pedicel; funicle five-jointed, all joints distinctly longer than broad and all of about same width; club three-jointed, very little broader than the preceding segment, the first joint very clearly defined, the last two apparently fused. Praescutum and pronotum reticulately lineolate; praescutum usually with numerous broad, irregular, shallow impressions, these impressions not so numerous on pronotum, but scutellum thickly covered

with them; pronotal spots bright and large, occupying about two-thirds anterior dorsal margin of the pronotum; propodeum with a margined, deep median groove of medium width but not always distinctly margined posteriorly; groove broader anteriorly and crossed by numerous strong rugae; very rugose laterad of groove; spiracular carinae prominent and spiracular area rather smooth. Tarsi, tibiae, and knees testaceous to translucent brown, basal part of femora black, distal half of front femora testaceous, sometimes middle tibiae dusky. Wings extending beyond tip of abdomen; veins testaceous to dusky; marginal vein longer than stigmal, stigmal and postmarginal about same length, stigmal vein distinctly broader distally. Abdomen rather stout, profile as in figure 1; first segment occupying about one-fourth dorsal length of abdomen; segments 2, 3, 4, 5, and 6 about same length dorsally.

*Male*.—Length 2.1 to 2.4 mm. Antennae black; scape distinctly broader near center, tapering toward each extremity, distinctly shorter than first flagellar joint; club not differentiated; bristles on first flagellar joint about four times as long as the segment is broad; first flagellar joint distinctly the longest, remaining joints of nearly equal length; four to five annulations at articulations of flagellar joints; apical segment ending in a small spur about as broad as long. Sculpturing of thorax as in female; pronotal spots bright and large, occupying one-half to two-thirds anterior dorsal margin of pronotum; propodeal groove usually deep and broader posteriorly; propodeum very rugose. Legs much darker than in female, but front tibiae usually as light as knees. Petiole slightly longer than hind coxae.

*Type locality*.—Elk Point, S. Dak.

*Type*.—Catalog no. 50772, United States National Museum.

Described from 9 females and 11 males, bearing labels with the following information: "Reared from *Elymus*, Elk Point, S. Dak., C. N. Ainslie collector, Webster no. 6692." These specimens are deposited in the United States National Museum.

#### HARMOLITA POOSI, new species

(Pl. 2 and fig. 1)

*Female*.—Length 3 mm. Abdomen equal in length to head and thorax combined. Antennal scape yellow, pedicel dusky, the other antennal segments black; scape distinctly longer than combined pedicel, ring joint, and first funicle joint; pedicel a little shorter than first funicle joint and ring joint combined, slightly broader than first funicle joint; all funicle joints longer than broad; club three-jointed, broader than the funicle, the segmentation not distinct, first segment slightly broader than long, fairly well differentiated, the two apical ones fused. Praescutum reticulate, with a few irregular, shallow impressions; pronotum and scutellum with similar but more numerous impressions; pronotal spots large and bright, occupying two-thirds anterior dorsal margin of the pronotum; propodeum with a broad, very shallow median groove, granulose within and laterad of the groove; spiracular carinae not prominent, with several carinae within the spiracular area. Tarsi, tibiae, and knees appearing dusky, except the front tibiae and the distal half of the front femora, which are testaceous. Wings extending beyond the tip of abdomen; marginal vein longer than postmarginal; stigmal slightly longer than post-

marginal and distinctly knobbed; veins slightly dusky. Profile of abdomen as in figure 1.

Male unknown.

*Type locality*.—Arlington Experiment Farm, Rosslyn, Va.

*Type*.—Catalog no. 50767, United States National Museum.

One female collected by F. W. Poos in trap August 9, 1934. Nothing, of course, is known of its host plant but it undoubtedly has at least two generations a year since no instance is known in the *Harmolita* when the first generation emerges so late.

#### HARMOLITA UTAHENSIS, new species

(Pl. 2 and fig. 1)

*Female*.—Length 2.4 mm. Abdomen slightly shorter than head and thorax combined. Antennae brownish black; scape same length as combined pedicel, ring joint, and first funicle; pedicel distinctly shorter than first funicle plus ring joint, broader than first funicle joint; all funicle joints, except first, the same length and all very distinctly longer than broad; club three-jointed, the same width as last funicle joint, none of the club joints quadrate, the two distal segments tapering rapidly, the first segment distinctly differentiated, the last two apparently fused. Praescutum and scutellum reticulate and with a few shallow impressions; no impressions on pronotum; pronotal spots large and bright, occupying two-thirds anterior dorsal margin of pronotum; propodeum with a distinct, margined, shallow groove of medium width, rugose within and laterad of groove; spiracular carinae prominent and several carinae within the spiracular area. Legs brownish black to black, lighter at knees, tarsi about same color as knees. Wings extending beyond tip of abdomen; veins yellowish, marginal longer than postmarginal, stigmal and postmarginal the same length. Abdomen with profile as seen in figure 1; first segment, dorsally and exclusive of petiole, about equal to 2 and 3 combined; segments 2, 3, 4, and 5 of about equal length.

*Type locality*.—Salt Lake County, Utah.

*Type*.—Catalog no. 50769, United States National Museum.

Described from two females bearing labels with the following information: "Swept from wheat, Salt Lake County, Utah, C. N. Ainslie collector, Webster no. 5593." These specimens are deposited in the United States National Museum.

#### HARMOLITA KOEBELEI, new species

(Pl. 2 and fig. 1)

*Female*.—Length 2.6 mm. Abdomen slightly shorter than head and thorax combined. Antennae blackish brown; scape only very slightly longer than combined pedicel, ring joint, and first funicle joint; pedicel shorter than first funicle plus ring joint; first funicle joint the longest, distinctly broadest at distal end but not quite so broad here as the scape, second joint slightly shorter, and joints 3, 4, and 5 equal in length and the shortest, 4 and 5 quadrate; club three-jointed, slightly broader than the preceding segments, and segments well separated, first joint quadrate. Praescutum reticulately lineolate; pronotum same, no broad, shallow impressions; pronotal spots bright, very large, occupying about four-fifths anterior dorsal margin

and almost entire lateral face of pronotum; propodeum with a continuous, narrow, deep, margined groove, with numerous cross rugae within the groove and a broad granulose area laterad of groove. Front tibiae, knees, and tarsi luteotestaceous, other tibiae brownish black; femora black. Wings reaching distinctly beyond tip of abdomen; veins translucent brownish; marginal vein almost twice as long as stigmal, stigmal and postmarginal about same length; knob on stigmal vein hardly distinct and spur on knob very short. Abdomen in profile as shown in figure 1; first abdominal segment occupying about one-third dorsal length of the abdomen, 2 and 6 the next longest and equal in length, 3 the shortest, and 4 and 5 equal in length and each slightly longer than 3.

Male unknown.

*Type locality*.—Santa Cruz Mountains, Calif.

*Type*.—Catalog no. 50786, United States National Museum.

Described from one female bearing "*koebeleri* #547" and the following information: Santa Cruz Mountains, Calif. Deposited in the United States National Museum.

#### HARMOLITA PACIFICA, new species

(Pls. 3, 8, and fig. 2)

*Female*.—Length 2.8 to 3.2 mm. Abdomen slightly longer than head and thorax combined. Antennae brownish black; scape distinctly longer than combined pedicel, ring joint, and first funicle joint, strongly constricted in basal half; pedicel same length as ring joint and first funicle joint combined; first funicle joint distinctly the narrowest and about same length as second, three distal funicle joints shorter and all quadrate; club three-jointed, its segments clearly separated, the two basal segments broader than long. Praescutum rugulose; pronotal spots dull and very large, occupying three-fourths to four-fifths anterior dorsal margin of pronotum; propodeum varying more, perhaps, than any of the other American species; there may be a well-defined, narrow, complete, margined groove of the same width throughout, the surface rugose within and laterad of the groove; there may be a broad, shallow groove in the anterior portion, the marginal carinae of the groove converging or fading out, the floor of the groove almost smooth and granulose laterad of the groove; or there may occasionally be no distinct groove at all. Legs brownish black; front tibiae, distal half of front femora, knees, and tarsi luteotestaceous; the tibiae sometimes much lighter. Wings reaching distinctly beyond tip of abdomen; veins translucent brownish, marginal vein not twice as long as stigmal, stigmal and postmarginal almost the same length; knob at end of stigmal vein distinctly broader than vein; spur about same length as diameter of knob. Abdomen in profile as shown in figure 2; first abdominal segment occupying between one-fourth and one-fifth dorsal length of abdomen; 2 shortest, 4 longest (1 excluded), 3, 5, and 6 about equal in length.

*Male*.—Length 1.9 to 2.3 mm. Scape of antenna black, flagellar joints fuscous; scape slightly broader in distal portion, distinctly longer than first flagellar joint; bristles on flagellar joints longer than breadth of segments; all flagellar joints shorter, the sixth only about twice as long as broad; apical joint with a very inconspicuous cone-shaped tip. Sculpturing of thorax same as in female; pronotal spots proportionately not so large as in female; propodeum varying

about as much as in female, more often granulose; groove either complete or absent; petiole granulose and shorter than hind coxae.

*Type locality*.—Santa Cruz Mountains, Calif.

*Type*.—Catalog no. 50777, United States National Museum.

Described from 26 females and 6 males bearing labels with the following information: "No. 547, Santa Cruz Mountains, Calif." These specimens were collected by Albert Koebele and were originally included under *H. elymoxena* by Phillips and Emery. The present writer felt at the time that they perhaps did not belong with that species. The new character separates them distinctly, and consequently they are described under the new name. The material is deposited in the United States National Museum.

**HARMOLITA FLAVICOXA, new species**

(Pls. 3, 8, and fig. 2)

*Female*.—Length 3.7 to 4.2 mm. Abdomen distinctly longer than head and thorax combined. Antennal scape and pedicel light brown, the remaining segments brownish black to black; scape very distinctly longer than combined pedicel, ring joint, and first funicle joint; pedicel distinctly shorter than first funicle joint plus ring joint; first funicle joint the narrowest and only very slightly longer than the others, not much more than half as wide as the pedicel; all flagellar joints distinctly longer than broad; club two-jointed, flagellum six-jointed; the two club joints distinctly separated and each longer than broad. Praescutum and pronotum rugulose; pronotal spots medium, occupying half or less of anterior dorsal margin of pronotum; usually entire anterior portion of pronotum brownish; propodeum with a narrow, deep median groove, very rugose within and laterad of groove, usually very convex laterad of groove and frequently the whole propodeum brownish; spiracular area not well defined. Legs translucent brown to reddish brown; coxae same color, sometimes darker. Wings not reaching tip of abdomen; veins brownish yellow, marginal vein distinctly longer than stigmal, stigmal and postmarginal veins about the same length; stigmal club about twice as broad as rest of stigma; spur of stigmal knob short. Abdomen as shown in profile in figure 2; first abdominal segment usually brownish and between one-fourth and one-fifth length of entire abdomen; segment 4 about same as 2; 2 the shortest, 3, 5, and 6 about equal in length.

*Male*.—Length 2.5 to 3.4 mm. Antennae fuscous; scape, exclusive of base, same length as first flagellar joint, distinctly broader at distal extremity; bristles on first flagellar joint perhaps slightly longer than the joint is broad; club not differentiated; first two flagellar joints distinctly longer than others, remaining joints about equal; one annulation at articulation of flagellum; a cone-shaped tip to the distal segment is clearly marked off from the remainder of the segment. Sculpturing of thorax same as in female; pronotal spots small but visible from above; propodeal groove narrow and deep; very rugose laterad of groove. Legs as in female but coxae a little darker. Petiole longer than hind coxae.

*Type locality*.—Springer, N. Mex.

*Type*.—Catalog no. 50776, United States National Museum.

Described from 16 females and 3 males bearing labels with the following information: "Reared from *Elymus* sp., Springer, N. Mex.,



C. N. Ainslie collector, Webster no. 5059." These specimens are deposited in the United States National Museum.

**HARMOLITA DAKOTA, new species**

(Pls. 4, 9, and fig. 2)

*Female*.—Length 3.4 to 4 mm. Abdomen slightly longer than head and thorax combined. Antennae black; scape distinctly longer than first funicle joint plus ring joint, and the two latter distinctly longer than pedicel; first funicle joint smallest in diameter, all funicle joints distinctly longer than broad; club three-jointed, the joints all well defined, and longer than broad. Praescutum and pronotum rugulose; pronotal spots bright and medium sized, occupying about one-half of anterior dorsal margin of pronotum; propodeum with a deep, narrow, median groove, the main marginal carinae sometimes appearing to curve off laterally, the posterior part of the groove then not so distinct; propodeum very rugose; no distinct spiracular carina and no clearly outlined spiracular area. Legs translucent brown to reddish brown, the coxae tinged with brownish at distal extremities. Wings not quite reaching tip of abdomen; veins yellowish, marginal a little longer than stigmal, stigmal and postmarginal about same length; stigmal club small and spur short. Abdomen stout, profile as shown in figure 2; first abdominal segment occupying a little more than one-fifth of dorsal length of abdomen, segment 4 about as long as 1; 2 the shortest; 3, 5, and 6 about equal.

*Male*.—Length 2.8 to 3 mm. Antennae black; scape, exclusive of radicle, same length as first funicle joint, and distinctly broader near apex; first funicle joint the longest, remaining joints of about equal length, bristles a little longer than first funicle joint is broad; articulations of the funicles with one to three annulations, the greatest number being at the third and fourth articulations; protuberance at tip of distal segment of antennae a little longer than broad, rounded at tip with sides parallel. Sculpturing of thorax same as in the female; pronotal spots small, scarcely visible from above. Propodeal groove narrow and rather deep; propodeum rugose or granulose laterad of groove. Legs as in female. Petiole longer than hind coxae.

*Type locality*.—Mott, N. Dak.

*Type*.—Catalog no. 50773, United States National Museum.

Described from 7 females and 14 males bearing labels with the following data: "Reared from *Elymus* sp., Mott, N. Dak., Webster no. 24208, C. N. Ainslie collector." These specimens are deposited in the United States National Museum.

**HARMOLITA OREGON, new species**

(Pl. 4 and fig. 3)

*Female*.—Length 2.5 to 3.4 mm. Abdomen longer than head and thorax combined. Antennae fuscous to black; scape distinctly longer than combined pedicel, ring, and first funicle joint; pedicel about same length as ring joint plus first funicle joint, the latter practically the same width throughout and narrowest of all funicle joints, fifth funicle almost quadrate; club three-jointed, the segments not very clearly defined, first two segments about quadrate. Praescutum and pronotum rugosely punctured; pronotal spots dull and medium to large, occupying from one-half to two-thirds anterior dorsal margin

of pronotum; propodeum with continuous broad, shallow, median groove, which is broad in anterior part and often comes to a point posteriorly, rugose within and laterad of groove, sometimes granulose laterad of groove; spiracular area not clearly defined. Legs varying from almost black to fuscous, with front tibiae, knees, and tarsi testaceous. Wings reaching just to tip of abdomen; veins dusky, marginal vein nearly twice as long as stigmal, stigmal and postmarginal about equal; stigmal vein ending in a knob the spur of which is long and about as broad as the vein near base. Abdomen as shown in profile in figure 3; first segment occupying between one-fourth and one-fifth dorsal length of abdomen; 2 shortest; 3 and 4 about equal in length and longer than either 5 or 6; sometimes 4 is the longest except 1.

Male unknown.

*Type locality*.—Forest Grove, Oreg.

*Type*.—Catalog no. 50774, United States National Museum.

Described from 17 females. The specimens bear labels with the following data: "Reared from *Elymus* sp., Forest Grove, and Canby, Oreg., T. R. Chamberlin collector." These specimens are deposited in the United States National Museum.

*HARMOLITA JONESI*, new species

(Pls. 6, 10, and fig. 3)

*Female*.—Length 3.3 to 3.7 mm. Abdomen slightly longer than head and thorax combined. Antennae black; scape distinctly longer than combined pedicel, ring joint, and first funicle joint; first funicle joint plus ring joint about same length as pedicel, segments of funicle very nearly equal and all distinctly longer than broad; club three-jointed, slightly broader than funicle joints, first club joint distinct, the other two not so clearly marked. Praescutum and pronotum rugulose; pronotal spots large to very large, usually occupying three-fourths of anterior dorsal margin of pronotum, sometimes dull; propodeum with continuous, margined, median groove of medium width and depth which is slightly narrower posteriorly, rugose within and laterad of groove, sometimes granulose laterad; spiracular area not sharply defined. Legs varying from black to fuscous with distal half of front femora, knees, tibiae, and tarsi much lighter or about testaceous. Wings reaching beyond tip of abdomen; veins dirty brown, marginal vein twice as long as stigmal, stigmal and postmarginal about same length; stigmal club about twice as broad as stigmal vein; spur about as long as diameter of club. Abdomen in profile as shown in figure 3; first segment between one-fourth and one-fifth dorsal length of abdomen; 2 shortest; 4 longest (exclusive of 1); and 3, 5, and 6 about equal in length.

*Male*.—Length 2.0 to 2.6 mm. Antennae black; scape very distinctly broader in distal half, where there is a distinct shoulder, slightly longer than first flagellar joint; first three funicle joints about equal in length and not quite half as wide as the bristles are long; remaining segments about equal in length but shorter than the first three; last segment bearing a long, slender tubercle at tip that is about twice as long as broad; apparently not more than one annulation at any of the articulations. Sculpturing of thorax as in female; pronotal spots same as in female; propodeum with very narrow groove, somewhat granulose laterad of groove. Legs darker than in female. Petiole longer than hind coxae, granulose.

*Type locality*.—Contra Costa County, Calif.

*Type*.—Catalog no. 50775, United States National Museum.

Described from 6 females and 8 males reared from ryegrass (*Elymus* sp.), Contra Costa County, Calif., by W. W. Jones. According to the labels the specimens were reared from rye but correspondence with Mr. Jones brought out the fact that this was a mistake and that the host plant was really ryegrass. These specimens are deposited in the United States National Museum.

**HARMOLITA STIPIPHILA, new species**

(Pl. 5 and fig. 3)

*Female*.—Length 2.5 mm. Abdomen slightly longer than head and thorax combined. Antennal scape black, funicle and club fuscous; scape practically same width throughout, distinctly longer than combined pedicel, ring joint, and first funicle; pedicel longer than first funicle plus ring joint; all funicle joints about the same length, first two very narrow, the first narrowest of all, fifth funicle joint quadrate; club three-jointed, the first joint clearly defined and the last two apparently fused, the first two joints quadrate. Praescutum slightly rugulose and pronotum apparently reticulate; pronotal spots very large, occupying about three-fourths of anterior dorsal margin of prothorax, very dull and dorsally appearing more as a browning of the pronotum; propodeum with a broad, shallow, median, margined groove which is broader posteriorly and sometimes not continuous; rugose within groove and granulose laterad of groove; spiracular area fairly well defined and bearing several carinae. Legs black except anterior tibiae, tarsi, and knees, which are a dirty brown. Wings reaching beyond tip of abdomen; veins honey yellow, marginal vein broad and less than twice as long as stigmal, the latter about same length as the postmarginal, stigmal with a rather large knob which bears a short, blunt spur. Abdomen in profile as shown in figure 3; first abdominal segment occupying about one-fourth dorsal length of abdomen; 2 the shortest; 3 and 4 of equal length and longer than the others (except 1); 5 and 6 about equal in length and each longer than 2.

Male unknown.

*Type locality*.—Beach, N. Dak.

*Type*.—Catalog no. 50785, United States National Museum.

Described from three females reared from *Stipa comata* by C. N. Ainslie. The specimens bear labels with the following data: "Reared from *Stipa comata*, Beach, N. Dak., C. N. Ainslie collector, August 1924, Webster no. 23396." These specimens are deposited in the United States National Museum.

**HARMOLITA LONGIPETIOLATA, new species**

(Pl. 5 and fig. 4)

*Female*.—Length 3.7 mm. Abdomen slightly shorter than head and thorax combined. Antennae black; scape brownish at base and distinctly longer than pedicel plus first funicle and ring joint; pedicel distinctly shorter than first funicle plus ring joint; first funicle joint very distinctly the longest segment, distinctly broadest at distal extremity, where it is as broad as the pedicel; fifth segment quadrate; club three-jointed, the first segment about as distinctly set off as the funicle joints, the last two joints not so distinctly separated, apparently partly fused; first and second club joints broader than long.

Praescutum with numerous irregular, shallow impressions; pronotum evenly covered with shallow, more or less umbilicate punctures; pronotal spots absent; propodeum with a narrow, deep groove, rugose within and laterad of the groove. Tarsi, front tibiae, and knees translucent brown, the femora black and the middle and hind tibiae brownish black. Wings reaching to tip of abdomen; veins translucent brownish, marginal vein but little longer than stigmal and quite broad, stigmal and postmarginal same length; knob at end of stigmal about twice as wide as stigmal vein and spur on knob quite short. Abdomen with profile as shown in figure 4; petiole long and bearing on anterior margin a very prominent, pointed elevation, the petiole longer and the elevation more prominent than in any of our other American species.

*Type locality*.—Beach, N. Dak.

*Type*.—Catalog no. 50784, United States National Museum.

Described from one female reared from *Stipa comata*, Beach, N. Dak., Webster no. 23396, C. N. Ainslie collector.

#### HARMOLITA STIPIPHAGA, new species

(Pl. 5 and fig. 4)

*Female*.—Length 3.1 to 4.6 mm. Abdomen varying from very distinctly longer than head and thorax combined, in the very large specimens, to slightly longer, in average individuals. Antennal scape brownish yellow and pedicel brownish, the remaining segments dull black; scape slightly longer than combined pedicel, ring joint, and first funicle joint; first funicle plus ring joint distinctly longer than pedicel; first funicle joint distinctly the longest joint, slightly broader at distal end and as broad as next two segments, fifth funicle joint quadrate; club three-jointed and short, the first joint very distinctly set off, the last two fused, the first two joints broader than long. Praescutum rugulose, with a few to many irregular, shallow impressions; pronotum with many shallow, rather well-defined, umbilicate punctures; pronotal spots absent; propodeum usually with a narrow, deep, median, margined groove, the anterior part of which is broadest and the floor in this region usually smooth; rugose or granulose laterad of the groove. Legs frequently translucent brown throughout; sometimes the basal half of femora dark brown to almost black. Wings not reaching tip of abdomen; veins a light honey yellow, marginal vein almost twice as long as stigmal, the latter slightly shorter than postmarginal; the knob on the stigmal distinct and the spur so short as almost to appear an enlargement of the knob. Abdomen stout, profile as shown in figure 4; first abdominal segment short, occupying one-fifth or less of dorsal length of abdomen; in average-sized specimens, segments 2, 3, 4, 5, and 6 usually approximately equal; in two very large specimens segment 4 the longest.

*Type locality*.—Beach, N. Dak.

*Type*.—Catalog no. 50781, United States National Museum.

Described from 21 females. Males and females of this and other very closely related species were reared from the same host at the same time. The males will not be described, as the writer cannot be sure which females to associate with them. This species was reared from *Stipa comata*, Beach, N. Dak., Webster no. 23396, C. N. Ainslie

collector. These specimens are deposited in the United States National Museum.

**HARMOLITA GAHANI, new species**

(Pl. 3 and fig. 4)

*Female*.—Length 3.2 to 4 mm. Abdomen slightly shorter than head and thorax combined. Antennae fuscous; scape equal in length to combined pedicel, ring joint, and first flagellar joint; first funicle joint plus ring joint twice as long as pedicel; first funicle joint longest of funicle joints, almost twice as broad at distal as at proximal end and as broad as pedicel at distal extremity; second funicle joint about same length as third and fourth but not so broad, fifth and sixth segments shortest and quadrate; club two-jointed, the division between the two segments very distinct, so much so that the club appears more as a continuation of the funicle than as a club; first club joint quadrate. Entire thorax rather thickly covered with more or less regular umbilicate punctures; pronotal spots minute, scarcely visible from above; propodeum with continuous, margined, deep groove of medium width which is widest anteriorly, many transverse rugae in groove and very rugose laterad of groove; spiracular area not sharply defined, being very rugose almost up to the spiracles. Tarsi, tibiae, and distal half of femora translucent brown, the proximal half of femora black to brownish black. Wings extending beyond tip of abdomen; veins testaceous, marginal vein longer than postmarginal and the latter about same length as stigmal, stigmal vein only slightly thickened at distal extremity and spur very short. Abdomen stout, profile as in figure 4; first segment occupying from one-third to one-half dorsal aspect of abdomen. Of the remaining segments, 3 is the longest and 2, 4, 5, and 6 are of about equal length.

*Type locality*.—Elk Point, S. Dak.

*Type*.—Catalog no. 50771, United States National Museum.

Described from six females bearing labels with the following information: "Reared from *Elymus*, Elk Point, S. Dak., C. N. Ainslie collector, Webster no. 6692." These specimens are deposited in the United States National Museum.

**HARMOLITA DANTHONIAE, new species**

(Pl. 6 and fig. 4)

*Female*.—Length 2.7 mm; abdomen, including petiole, 1.3 mm; head and thorax 1.38 mm. Not including petiole, head and thorax distinctly longer than abdomen. Antennae black, scape yellow, and pedicel brownish; scape slightly longer than combined pedicel, first funicle, and ring joint; pedicel distinctly shorter than first funicle joint and ring joint combined; first funicle joint the longest of the funicle joints, distinctly broader in distal half and broader here than pedicel, remaining funicle joints about equal in length, distal segment of funicle quadrate; club slightly broader than funicle joints, first segment broader than long and very strongly set off from rest of club, the two distal segments of club appearing to be fused, line of demarcation very faint. Praescutum reticulate, with rather regular, small, shallow, umbilicate punctures; similar punctures on pronotum and scutellum also, though still fainter than on praescutum; pronotal spots minute, not visible from above; propodeum with a deep, narrow-margined groove, rugose within and laterad of the groove;

spiracular carinae not prominent and numerous prominent carinae within spiracular area. Legs not intensely black; tarsi, knees, and front tibiae testaceous or dirty brownish. Wings hyaline, reaching slightly beyond tip of abdomen; marginal vein longer than postmarginal, stigmal and postmarginal veins about same length; no distinct, slender, knobbed projection from stigmal vein as in some species. Abdomen in profile thick, the greatest vertical diameter being at segment 5; segment 1, exclusive of petiole, about equal in length to 2 and 3 combined; 2, 3, and 4 of about equal length; 5 shortest of all.

Male unknown.

*Type locality*.—Hudson, Mich.

*Type*.—Catalog no. 50778, United States National Museum.

Described from three females, one of which was fragmentary. The host plant, *Danthonia spicata*, was collected by W. T. Emery at Hudson, Mich., under Webster no. 9393. These specimens are deposited in the United States National Museum.

#### HARMOLITA HOLCI, new species

(Pl. 6 and fig. 4)

*Female*.—Length 2.9 to 3.7 mm. Abdomen slightly longer than head and thorax combined. Antennae black; scape shorter than the combined pedicel, ring joint, and first funicle joint; first funicle and ring joint combined twice as long as pedicel, all funicle joints distinctly longer than broad; club three-jointed, no broader than funicle joints, basal segment very distinctly set off but distal joints appearing fused. Praescutum reticulate, with a few very shallow umbilicate punctures; pronotum and scutellum with numerous such punctures; pronotal spots usually dull and minute, scarcely visible from above; propodeum with a continuous, shallow, median margined groove of medium width, usually granulose laterad of groove. Legs jet black, except knees and tarsi, which are testaceous. Wings reaching beyond tip of abdomen; veins dusky brownish, marginal vein twice as long as stigmal, the latter same length as postmarginal; knob of the stigmal vein only slightly thicker than the vein, and spur on knob short. Abdomen in profile as shown in figure 4; first abdominal segment constituting between one-fourth and one-fifth dorsal length of abdomen; 3 the shortest and 2, 4, 5, and 6 of about equal length.

*Male*.—Length 1.9 mm. Antennae black; scape same length as first funicle joint, very distinctly broader in distal portion, where there is a distinct shoulder; first funicle joint the longest, remaining joints of very nearly the same length; bristles on funicle about three times as long as width of joints; distal segment of antenna unusual in that it is drawn out in a long slender tip or protuberance that is fully equal in length to the width of the segment. Pronotal spots minute. (There is only one specimen and the thorax is covered with balsam so that the sculpturing cannot be determined.) Propodeum with a narrow, shallow groove anteriorly, the remaining part granulose. Legs darker than in female.

*Type locality*.—Forest Grove, Oreg.

*Type*.—Catalog no. 50780, United States National Museum.

Described from 24 females and 1 male. Males are perhaps rare. The following record occurs on the labels: "Reared from *Holcus*

sp., Albany, Oreg., T. R. Chamberlin, collector." This material is deposited in the United States National Museum.

**HARMOLITA BAMBUSAE, new species**

(Pl. 6 and fig. 4)

*Female*.—Length 3.5 to 4.5 mm; the slenderest of the American species. Abdomen distinctly longer than head and thorax combined and very slender. Antennae with the first two flagellar segments fused, the funicle, therefore, usually four-jointed (not over 12 of 60 specimens having complete antennae had five-jointed funicles); scape black, the remainder of antennae brownish; scape about as long as the combined pedicel, ring joint, and first two (fused) funicle joints; two distal funicle joints about quadrate; club three-jointed, frequently collapsed, basal segment clearly set off but the two distal ones fused. Praescutum and entire thorax rather thickly covered with irregular, shallow, umbilicate punctures; pronotal spots, laterally and dorsally, small to medium, occupying about one-third anterior dorsal margin of pronotum and extending forward onto the neck more than in any species noted heretofore; propodeum with a narrow, deep, continuous, median margined groove, very rugose laterad of groove. Legs black, except tarsi and knees, which are luteotestaceous; anterior tibiae much lighter in color than other tibiae. Wings not reaching beyond fifth segment; veins dusky brownish; marginal vein over twice as long as stigmal, stigmal a little over half as long as postmarginal, with a distinct knob, the spur on the knob very short. Abdomen in profile as shown in figure 4; proportionately the longest and slenderest abdomen of any American species; first abdominal segment occupying one-fourth to one-fifth entire dorsal length of abdomen, 2 shortest, about half (or less than half) as long as 3, and 3 about half as long as 4 but shorter than 5 and about same length as 6.

Male unknown.

*Type locality*.—Savannah, Ga.

*Type*.—Catalog no. 50779, United States National Museum.

Described from 70 females. The host material was collected at the Bamboo Gardens, Savannah, Ga., by G. W. Barber in the spring of 1933. The host plant is an undetermined species of bamboo, recently introduced into the gardens. No males emerged from this material and, perhaps, they do not normally occur. The adults emerged from the host material at the Charlottesville, Va., laboratory. This material is deposited in the United States National Museum.

**LIST OF THE SPECIES FIGURED**

For convenient reference in the use of the illustrations as a guide in identifying specimens, there is included a list of all the species figured, with the numbers of the illustrations in which the parts are shown. These are given in table 1.



*grandis minuta*



*grandis grandis*



*minuenda*



*sativi*



*websteri*



*albomaculata*



*swezeyi*



*comatae*



*stipicola*



*captiva*



*poacola*

VENTRAL ASPECT OF PETIOLES IN HARMOLITA FEMALES, X 85.





*winsliei*



*poosi*



*dactylicola*



*elymi*



*phalaridis*



*utahensis*



*maculata*



*agropyrophila*



*koebelei*



*hordei*

VENTRAL ASPECT OF PETIOLES IN HARMOLITA FEMALES. X 85.



*tritici*



*panici*



*pacifica*



*rufipes*



*flavicoxa*



*vaginicola*



*kingi*



*poophila*



*ovata*



*agropyrocola*

VENTRAL ASPECT OF PETIOLES IN HARMOLITA FEMALES, X 85.



*dakota*



*hesperus*



*secalis*



*elymoxena*



*festucae*



*occidentalis*



*elymivora*



*gillettei*



*elymiophaga*



*oregon*

VENTRAL ASPECT OF PETIOLES IN HARMOITA FEMALES,  $\times 85$ .



*elymophila*



*atlantica*



*elymophithora*



*jonesi*



*elymicola*



*longipetiolata*



*phyllostachitis*



*stipiphila*



*stipiphaga*



*gahani*



*phalaricola*



*bambusae*



*lolii*



*danthoniae*



*cinnuae*



*holci*

VENTRAL ASPECT OF PETIOLES IN HARMOLITA FEMALES, X 85.



*albomaculata*



*poacola*



*websteri*



*ainsliei*



*phalaridis*



*dactylicola*



*maculata*



*agropyrophila*



*hordei*

VENTRAL ASPECT OF PETIOLES IN HARMOLITA MALES, X 75.



*panici*



*tritici*



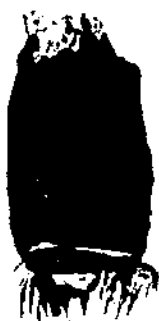
*pacifica*



*rufipes*



*flavicoxa*

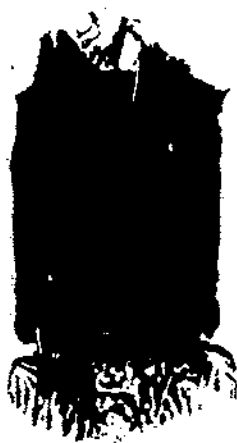


*kingi*



*poophila*

VENTRAL ASPECT OF PETIOLES IN HARMOLITA MALES, X 75.



*hesperus*



*ovata*



*dakota*



*elymoxena*



*elymivora*



*secalis*



*occidentalis*



*elymophthora*



*atlantica*

VENTRAL ASPECT OF PETIOLES IN HARMOLITA MALES. X 75.





*jonesi*



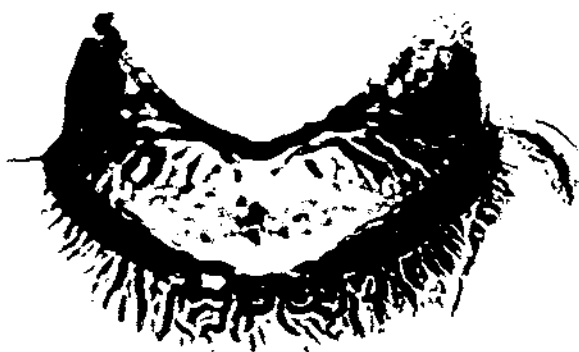
*elymophila*



*cinnae*



*elymicola*



*opuntiae*

VENTRAL ASPECT OF PETIOLES IN HARMOLITA MALES.  $\times 75$ . ALSO VENTRAL VIEW OF PETIOLE OF H. OPUNTIAE FEMALE.  $\times 85$ .

TABLE 1.—List of the species of *Harmolita* of which illustrations are given in this bulletin, with the figure numbers for the various parts shown

Species	Female petiole	Female abdomen	Male petiole	Species	Female petiole	Female abdomen	Male petiole
	<i>Pl. no.</i>	<i>Fig. no.</i>	<i>Pl. no.</i>		<i>Pl. no.</i>	<i>Fig. no.</i>	<i>Pl. no.</i>
<i>agropyrophila</i>	2	1	7	<i>kingi</i>	3	2	8
<i>agropyrocola</i>	3	2	7	<i>koebelii</i>	2	1	8
<i>ainatici</i>	2	1	7	<i>lofti</i>	6	4	8
<i>albomaculata</i>	1	1	7	<i>longipetiolata</i>	5	4	8
<i>aitanica</i>	5	3	9	<i>maculata</i>	2	1	7
<i>bambusae</i>	6	4	9	<i>minuenda</i>	1	1	7
<i>captiva</i>	1	1	7	<i>occidentalis</i>	4	3	9
<i>cinnabae</i>	6	4	10	<i>opuntiae</i>	10	4	8
<i>camatae</i>	1	1	7	<i>oregon</i>	4	3	8
<i>dactylicola</i>	2	1	7	<i>orata</i>	3	2	9
<i>dakota</i>	4	2	9	<i>pacifici</i>	3	2	8
<i>danthoniae</i>	6	4	9	<i>pariet</i>	3	2	8
<i>elymi</i>	2	1	7	<i>phalaricola</i>	6	4	7
<i>elymicola</i>	5	3	10	<i>phalaridis</i>	2	1	7
<i>elymicora</i>	4	3	9	<i>phyllostachidis</i>	5	3	7
<i>elymophila</i>	5	3	10	<i>poecila</i>	1	1	7
<i>elymophaga</i>	4	3	9	<i>poophila</i>	3	2	8
<i>elymophthora</i>	5	3	9	<i>poosi</i>	2	1	8
<i>elymarana</i>	4	3	9	<i>rufipes</i>	3	2	8
<i>festucae</i>	4	2	8	<i>sativi</i>	1	1	8
<i>flavicornis</i>	3	2	8	<i>secalis</i>	4	3	9
<i>gabani</i>	6	4	9	<i>stipicola</i>	1	1	8
<i>gilletti</i>	4	3	9	<i>stipiphila</i>	5	3	8
<i>grandis form grandis</i>	1	1	7	<i>stipiphaga</i>	5	4	8
<i>grandis form minuta</i>	1	1	7	<i>swezeyi</i>	1	1	8
<i>hesperus</i>	4	2	9	<i>tritici</i>	3	2	8
<i>holci</i>	6	4	9	<i>utahensis</i>	2	1	8
<i>hordei</i>	2	2	7	<i>vaginicola</i>	3	2	7
<i>jonesi</i>	5	3	10	<i>websteri</i>	1	1	7

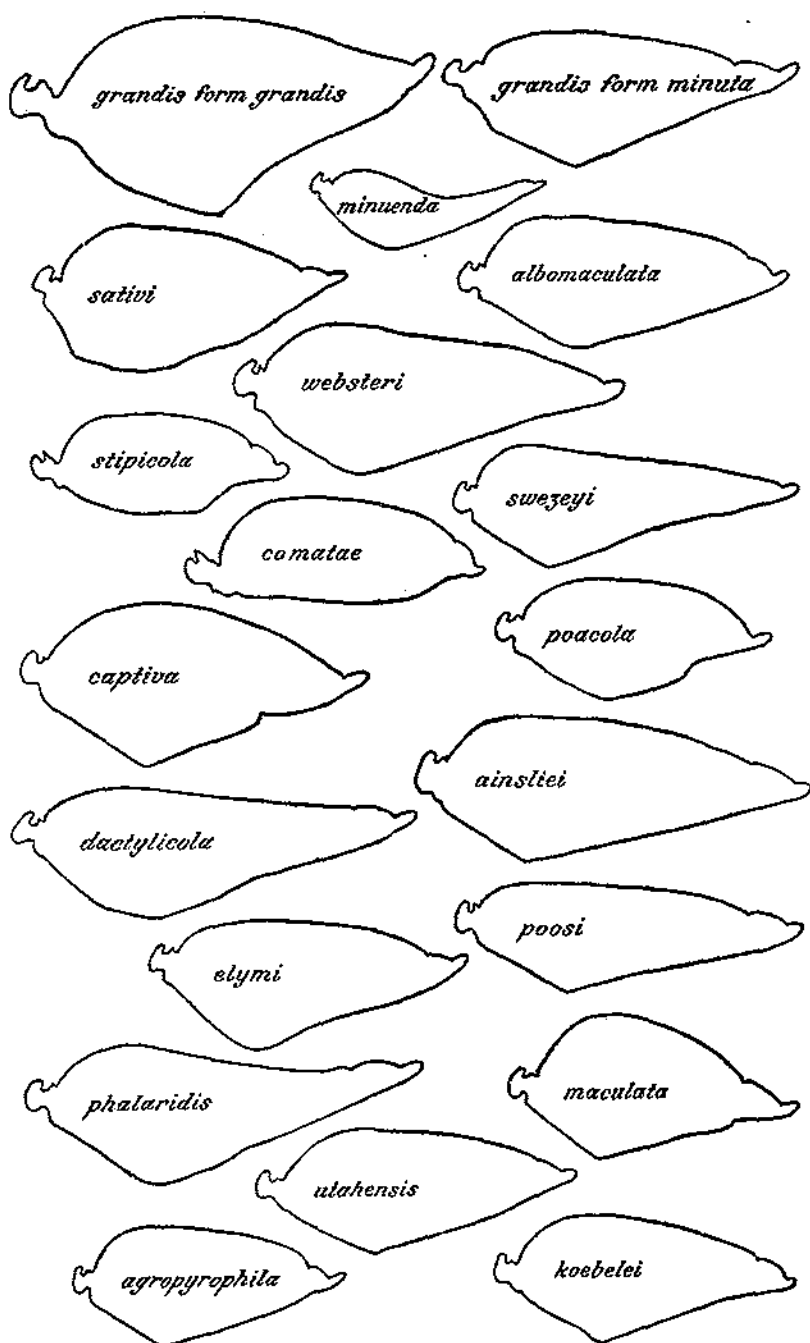


FIGURE 1.—Lateral profiles of abdomens in *Harmonia* females, X 30.

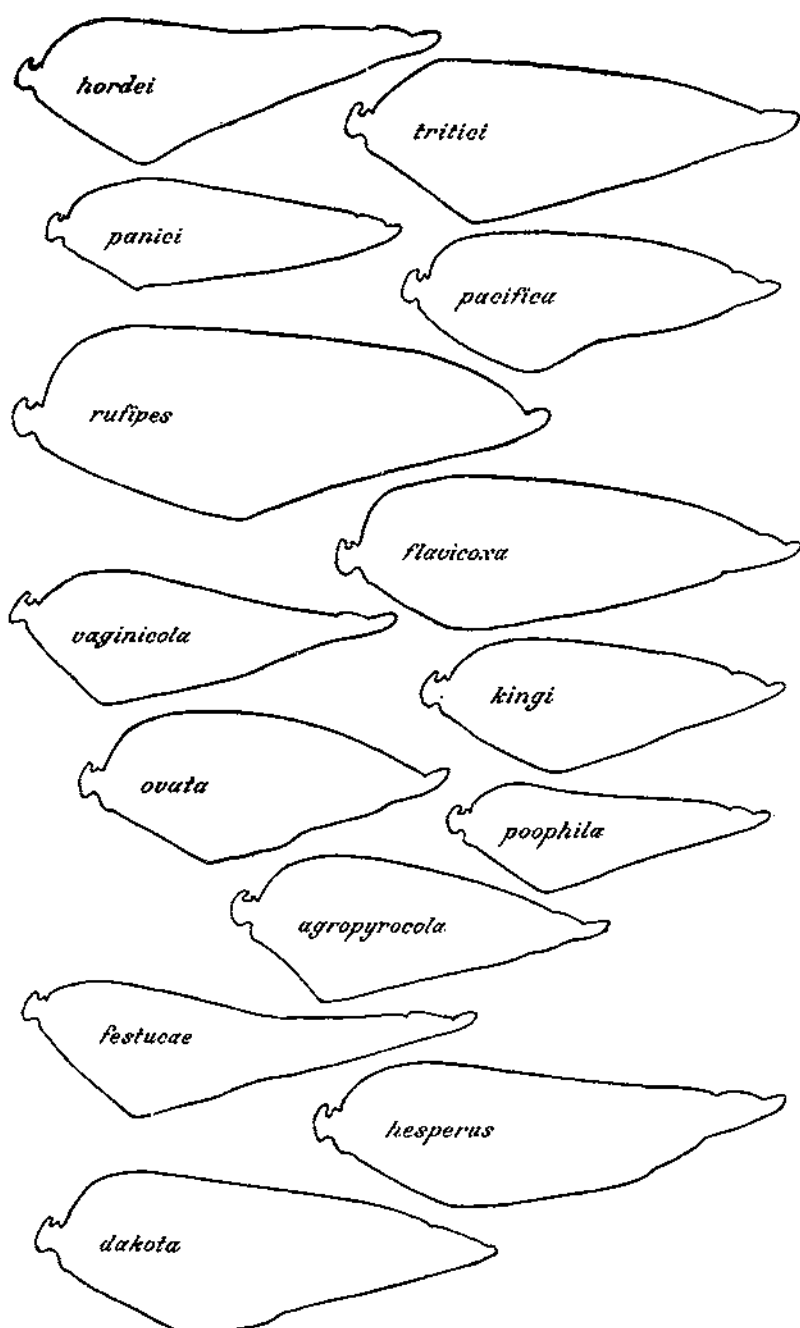


FIGURE 2.—Lateral profiles of abdomens in *Harmolita* females,  $\times 30$ .

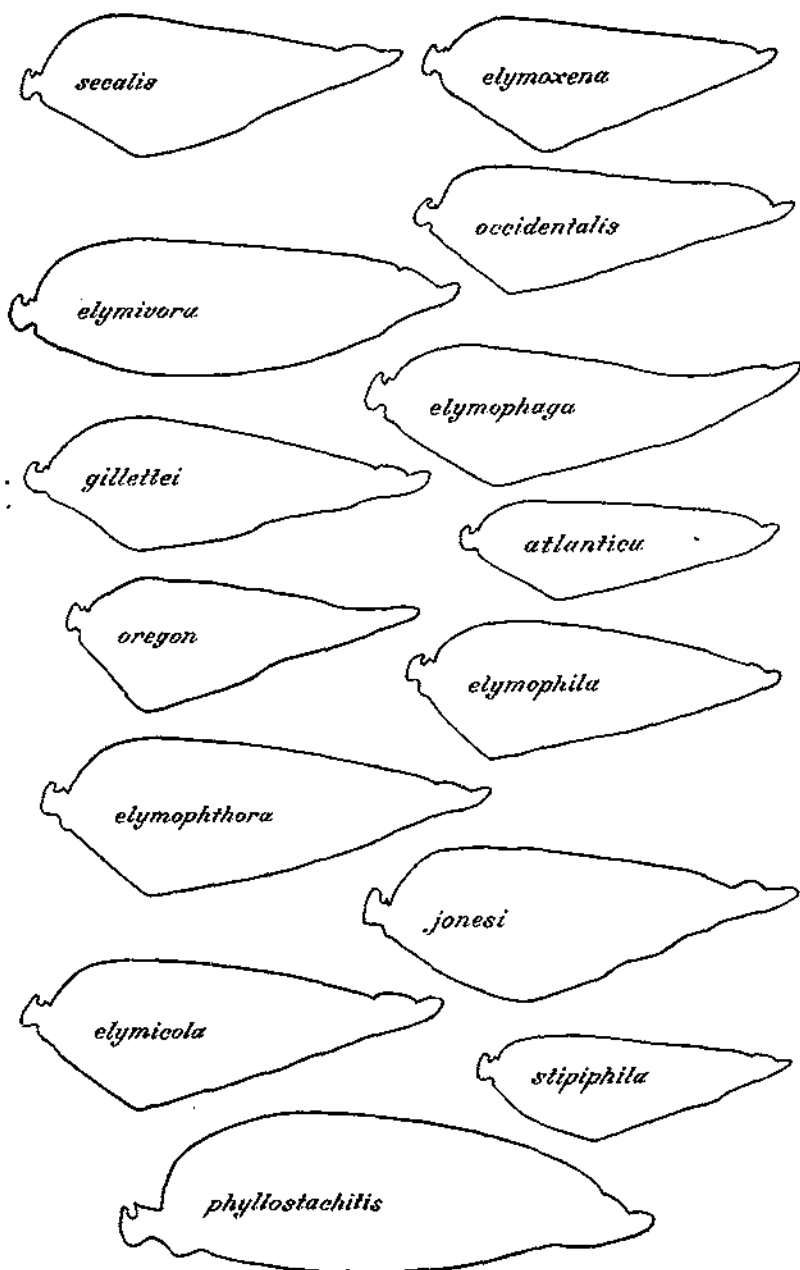


FIGURE 3.—Lateral profiles of abdomens in *Harmallia* females,  $\times 30$ .

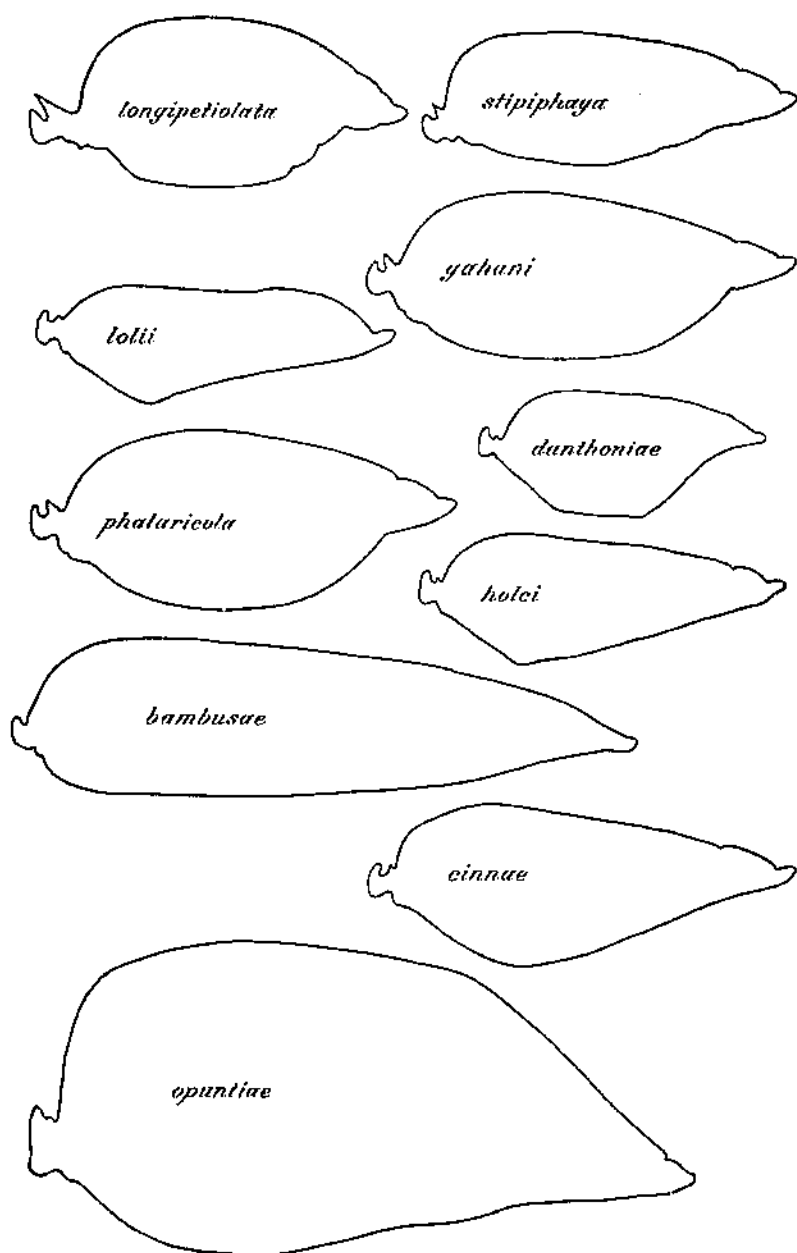


FIGURE 4.—Lateral profiles of abdomens in *Harmolita* females,  $\times 30$ .

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**END**