

NEW GENERA AND SPECIES OF THYSANOPTERA, WITH NOTES ON DISTRIBUTION AND FOOD PLANTS.

By A. C. MORGAN,

Of the Bureau of Entomology, United States Department of Agriculture.

INTRODUCTION.

The facts upon which this paper is based are the outgrowth of occasional work, during the past four years, upon the food plants and distribution of the tobacco thrips, *Euthrips fuscus* Hinds. During this work several new forms were either collected or received from other collectors, and information was obtained which greatly extends the range of several of our already described species. Because of the increasing economic importance of the order it is thought advisable to place the accumulated facts on record for the use of other workers. In all, 3 new genera, 19 new species, 1 European form now first recorded for America, and 1 new variety, are added to our fauna. One species is placed in synonymy, and the males of 2 other species are here recorded for the first time. New locality records are given for 38 species, and new food plants recorded for many of them.

Although there is considerable doubt of the validity of the use of the genus *Euthrips* to contain such widely different forms as *Euthrips ulicis californicus* Moulton, *E. phalerata* Haliday, *E. pyri* Daniel, and *E. tritici* Fitch, the writer has refrained for the present from a revision of the genus, and has used it in the broad sense ascribed to it by Hinds. An examination of certain European species should be made the basis for the revision, and it is my hope that Mr. Richard S. Bagnall will do this in his treatise upon Thysanoptera, which he is preparing for the Genera Insectorum.

EUTHRIPS PHALERATA Haliday (Redescription).

Figs. 1-4.

Female.—Length about 1.3 mm. Width 0.16 to 0.17 mm. General color yellowish brown.

Head about one and one-half times as broad as long, slightly retracted within the prothorax; diverging slightly posteriorly, cheeks slightly roughened; dorsum very distinctly transversely striated

behind the eyes. Anterior margin slightly produced between the antennæ. Eyes large, black, not protruding, very sparsely and minutely pilose, occupying about three-fifths the width of the head. Ocelli light reddish, large, fairly well separated, the posterior ones just behind the center of the eyes and near their inner margins; anterior ocellus somewhat directed forward; margined inwardly with dark-reddish-brown crescents; a long, slender, yellowish-brown spine in front of each posterior ocellus, other spines upon head few and minute. Mouth cone long, narrowing abruptly to the middle, thence very slender to the tip, reaching posterior margin of prosternum. Maxillary palpi long and slender, first and third segments of equal length, the second about three-fifths as long as first, light yellowish brown. Mouth cone darker brown than head, darkest at tip. Labial palpi very slender. Antennæ two and one-half times as long as the head, inserted below the front. Relative lengths of segments as follows:

$\frac{1}{9}$	$\frac{2}{13}$	$\frac{3}{16}$	$\frac{4}{15}$	$\frac{5}{10.5}$	$\frac{6}{15}$	$\frac{7}{3.4}$	$\frac{8}{5}$
---------------	----------------	----------------	----------------	------------------	----------------	-----------------	---------------

Segment one broadest, slightly broader than long, broadest at base; segments one, four, five, and six concolorous with head or only slightly lighter, seven and eight lighter brown, three light yellowish with a slight tinge of brown. Segment three is stalked and has a pseudo joint near the base. Long spines upon segments are slender and light yellowish. A branched sense cone stands upon the upper side of segment three near the tip and a similar one is borne on the under side of four near the tip. Segment one bears a transverse stria near the base.

Prothorax slightly broader than long, broadest behind, hind angles broadly rounded, and bearing two long spines. No long spines at front angles. A row of four small spines stands on hind margin between meson and spines at angles. Other spines upon prothorax few and inconspicuous. Mesothorax rounded at anterior angles; each of which is produced into a shoulderlike process; mesonotal plate transversely striate, bearing one long spine at each lateral angle, spines on posterior margin inconspicuous. Metathorax tapers but slightly posteriorly, metanotal plate longitudinally striate, with two pairs of spines on the front margin, the pair toward the middle being much the larger. Wings reaching nearly to tip of the abdomen; breadth at the middle about one-eleventh their length; with two broad white bands, the first beginning near base and extending to end of first third of wing, the second beginning at about two-thirds length of wing and extending nearly to the tip. Basal two-fifths of scale is light brown, the remainder being included in the white band, middle and tip of wing light brown. Veins in fore wing extend nearly to tip of wing. Spines on veins arranged at regular intervals except in

apical white band, costa bears 28 to 31; fore vein 17 to 18; hind vein 14 to 16; scale 6, interior of scale 1; a light sparse fringe on costa of each wing, posterior fringes heavy and wavy. The single median vein in the hind wing runs its entire length. Each wing rather thickly set with short spines. All femora brown; all tibiae brown except distal half of fore tibiae which shade to yellowish-brown; all tarsi pale yellowish-brown; base of bladder with a dark brown spot. Fore femora thickened. All legs clothed with numerous small, light brown spines. Hind and middle tibiae bear two rather stout spines at the tips within, also a row of four smaller spines along the inner margin. Fore tibia bears two conspicuous teeth at the tip within, the outer one being much the stronger and longer, the inner one is more blunt and bears a slender spine near the tip.

Abdomen rather stout to the eighth segment, thence narrowing abruptly to the tip; a dark brown narrow stripe across the dorsum of segments two to eight near their anterior edges; a row of six short slender spines on posterior margin of ventral segments two to seven; two or three spines on sides of segments two to seven only one of which is prominent; three prominent spines on each side of segment eight. Segment nine near its posterior margin bears a circlet of 10 spines of which the dorsal six are long and prominent. Tenth segment near the tip bears a circlet of six spines of which the dorsal four are long, slender, and conspicuous. The tenth segment also bears a few smaller spines at the tip. Tenth segment split open above for about half its length, truncated-cone shaped.

Described from two females; no males found.

Locality, Quincy, Florida.

On *Plantago virginica*.

H. F. Wilson, collector.

EUTHRIPS HAWAIIENSIS, new species.

Figs. 5-8.

Female.—Length about 1.2 mm., width of body about 0.35 mm. General color, head and thorax orange with slight brownish tinge, abdomen, normal color is apparently dark brown, although one specimen on type slide has the abdomen gray, shading to brown only on the last three segments. The latter specimen was probably recently matured when collected.

Head about 0.18 mm. wide, 0.12 long, diverging slightly behind the eyes; front almost straight, very slightly produced between the antennae; antennae inserted below the front, their bases separated by about half the width of the basal segment; back of head very noticeable transversely striated; sides scarcely roughened. Eyes large, occupying more than half the length of the head and two-thirds the width; very dark purplish, almost black by transmitted light, light

yellow by reflected light; pilose and rather finely faceted. Ocelli situated well back toward hind margins of eyes, the posterior ones contiguous with inner margins of eyes; the anterior ocellus is on a line with the middle of the eyes; color light yellow with reddish pigmentation; inner crescents large, reddish orange. One small brownish spine in front of each posterior ocellus and a similar one immediately behind the ocellus. Extending from the latter spine in a curved row behind each eye to the lateral margin of the head stands six smaller light-brown spines. Mouth cone reaches slightly past the middle of the prosternum, suddenly constricted at the basal third, thence to the tip the sides are very nearly parallel. Labrum constricted just before the tip, which is black. Labium sharply rounded. First and third segments of maxillary palpi of equal length, second shorter. Relative lengths of segments of antennæ as follows, each of which is an average of 4 antennæ:

$\frac{1}{8}$	$\frac{2}{9.9}$	$\frac{3}{13.5}$	$\frac{4}{13.8}$	$\frac{5}{10.2}$	$\frac{6}{13.5}$	$\frac{7}{2.2}$	$\frac{8}{2.8}$
---------------	-----------------	------------------	------------------	------------------	------------------	-----------------	-----------------

Color: Segments one and two yellowish brown to brown; six to eight brown; three yellow; basal fifth of four and extreme base of five pale gray, remainder of these two brown like the apical segments. Spines on segments light brown, of medium size, and rather sparse. A branched sense cone on the dorsal side of three near the tip and a similar one on the ventral side of four near the tip.

Prothorax about 0.22 mm. wide and 0.125 long. Sides nearly straight; anterior margin nearly straight; hind angles broadly rounded; posterior margin slightly convex. Two stout dark-brown spines at each posterior angle; between these spines and the meson on each side a row of three short spines, of which the inner is much the larger. A short anteriorly directed spine at each anterior angle. Dorsum of prothorax bears numerous short light-brown spines scattered over its surface. Whole dorsum rather finely and faintly transversely striate. Mesothorax with front angles broadly rounded. Sides of meso and metathorax straight, gradually diverging to the broadly rounded posterior angles of the metathorax. Metathorax about 0.3 mm. wide, scarcely narrower than the abdomen. Mesonotum broad and large, finely transversely striate, its lateral angles obtuse; a dark-brown incurved spine at each lateral angle and a smaller spine on each side the meson at about the second third of the length of the notum. Metanotum shield shaped, longitudinally striate, except near the central anterior portion, which is transversely striate. Metanotum bears a pair of dark-brown spines on each side on anterior margin, of which the inner spine is much the larger, being about two-thirds as large as the spines at the posterior angle of the prothorax. Anterior wings sharp pointed, uniformly gray brown, the brown due to numerous very small dark-

brown spines in longitudinal rows. Width of fore wings at the middle about one-twelfth the length, considerably broadened at the base. Veins not visible. Spines dark brown, rather stout and conspicuous. Costa bearing 27 to 28 regularly placed, though somewhat closer on basal than on outer half. Fore vein on basal two-fifths bears seven to eight spines, and scattered beyond the center three other spines, of which the last one stands near the tip. The other two spines may stand close together near the second third of the wing, or the second one may stand equidistant from the first spine and from the spine at the tip. Hind vein bears 11 to 15 spines regularly placed; scale bears five spines and interior of scale one. Front fringe long and a little thicker than the spines. Hind fringe rather thick, long and wavy, light brown. Front fringe intermediate in color between the spines and the hind fringe. Hind wing gray, with a single median vein disappearing just before the tip; front fringe slender, sparse, light brown; hind fringe rather thick, long, wavy, and light brown. Legs uniform pale yellow, tips of the tibiae and the tarsi lightest; of medium length, stout. Fore femora considerably thickened. Fore and middle tibiae stout. All tarsi with dark-brown spot at tip within. Two stout pale-yellow spines at tips of hind tibiae within; a row of eight to ten much smaller spines on inner side of hind tibia. Spines at tips of other tibiae small and inconspicuous. All femora and tibiae clothed with numerous short, slender, pale-yellow spines.

Abdomen cylindrical ovate, blunt at apex; a heavy dark-brown stripe across dorsum of segments 2 to 8 near their anterior edges. Sides of abdomen faintly striate. Each segment 2 to 8 laterally bears three to four small dark brown spines. Ninth segment bears a circlet of 10 medium-sized spines. Tenth segment bears a circlet of six similar spines. Tenth segment split open above for a little more than half its length. In the lighter specimens abdomen is dark brown at the tip.

Described from two females on type slide.

Locality, Honolulu, Hawaii, February 6, 1909.

On cotton.

D. T. Fulloway, collector.

Type.—Cat. No. 15720, U.S.N.M.

EUTHRIPS FLORIDENSIS, new species.

Figs. 9-12.

Female.—Length about 1.1 mm. (specimens slightly distended), width about 0.3 mm. General color, head pale lemon yellow, thorax orange yellow, body medium brown to dark brown.

Head about three-fourths as long as broad and seven-eighths as long as prothorax, not withdrawn into prothorax; cheeks slightly arched behind the eyes and slightly roughened posteriorly, diverging

very slightly behind; anterior margin straight; back of head indistinctly transversely striated. Eyes large, dark, and sparsely pilose, occupying about three-fifths the width of the head, not protruding, rather coarsely faceted; ocelli present, separated, pale yellow, margined inwardly with orange crescents; spines in front of each posterior ocellus long and dark brown, two inconspicuous spines stand behind each posterior ocellus. One prominent dark brown spine behind each eye, slightly shorter than spine in front of ocellus; two or three shorter light brown spines between this spine and lateral margin of head. First and third segments of maxillary palpi of equal length, the second slightly shorter. Antennæ nearly two and one-half times as long as the head; relative lengths of segments as follows:

1	2	3	4	5	6	7	8
$\frac{1}{7.6}$	$\frac{2}{10.2}$	$\frac{3}{14.4}$	$\frac{4}{13.5}$	$\frac{5}{10.5}$	$\frac{6}{13.8}$	$\frac{7}{2.9}$	$\frac{8}{4.5}$

Color: One pale yellow, concolorous with head; two brown like the abdomen; three light brown, grayish in basal half; four and five light brown, slightly gray at bases; six, seven, and eight light brown. Spines upon segments two to five brown and conspicuous. A branched sense cone on the dorsal side of segment three near the tip and a similar one on the ventral side of four near the tip. Sixth segment bears one long, slender sense cone on the inner side about the middle, and a shorter one on the outer side. Last three segments bear numerous small spines. The last segment bears three small hairs at the tip which about equal the segment in length. Mouth cone is tipped with black and reaches three-fourths across the prosternum.

Prothorax rather rounded, two-thirds as long as broad; one pair of stout spines at each hind angle, one of similar length at each anterior angle; anterior margin also bears a spine of similar length half-way between meson and spine at anterior angle; one short, stout anteriorly directed spine stands near spine at anterior angle. Between the spines at the anterior angles and the meson there is a row of five spines of which only the fourth is long and stout. Mesothorax rounded at anterior angles with a distinct shoulder-like process; mesonotal plate bears one stout spine at each lateral angle and two pairs of smaller ones on posterior margin. Metathorax tapers slightly posteriorly, angles rounded behind; metanotal plate weakly reticulate and bears four spines on the anterior margin of which the middle pair is stout and conspicuous. Wings nearly reaching the tip of the abdomen, breadth at middle about one-twelfth the length; shaded decidedly with brown, a grayish spot between veins near origin of hind vein, basal fifth grayish. Spines on wings dark brown, stout and conspicuous. Each fore wing has two longitudinal veins extending to the tip. Spines arranged at regular intervals; costa bears 22 to 25; fore vein 17 to 20; hind vein 13 to 16; scale five, interior of

scale 1. Fringe on costa of fore wing long, stout, brown, and conspicuous. Fringe rather sparse on costa of hind wing. Posterior fringes brown, long, thick, and wavy. Hind wing shaded slightly with gray. Legs medium in size and length, yellow with a slight tinge of brown, quite thickly set with short brown spines. A pair of stout dark brown spines at the extremity of each tibia within; row of spines on inner side of hind tibia short but stout.

Abdomen elongate, ovate in outline, broadening to the fifth segment, narrowing from the sixth to the tip, last segment cone-shaped; a heavy dark brown stripe across dorsum of segments two to eight near anterior margin, and just back of this stripe a narrow dark brown line extends across each segment. Each ventral plate two to seven bears six small spines, on posterior margin. Each pleural plate bears three or four brown posteriorly directed spines. Also each dorsal plate bears three or four spines laterally just above spines on pleural plates. Dorsum of first abdominal segment weakly striate. Posterior edge of ninth segment bears a circle of 10 spines of which the dorsal six are long, brown, and prominent. Tenth segment at the tip bears a circle of six long slender spines, of which the dorsal four are the longest. Tenth segment split open above.

Described from many females, no males found.

Locality, Quincy, Florida. May 17, 1910.

Taken on *Asclepias variegata* Linnæus and in blossoms of *Catalpa catalpa*.

Collectors, G. A. Runner and A. C. Morgan.

Type.—Cat. No. 15721, U.S.N.M.

EUTHRIPS RUNNERI, new species.

Figs. 13-16.

Female.—Length 1.05 mm. (1 to 1.1 mm.); width about 0.25 mm. General color pale brownish yellow, thorax heavily tinged with brown.

Head four-fifths as long as broad and about four-fifths as long as the prothorax and but slightly withdrawn therein; cheeks slightly arched behind the eyes, almost parallel; anterior margin slightly produced between the antennæ; back of head very faintly transversely striate. Eyes large, pale yellow by reflected light, almost black by transmitted light, very sparsely and minutely pilose, together occupying about three-fifths the width of the head; ocelli present, subapproximate, yellow with a slight orange tinge, margined inwardly with deep orange crescents; spines between ocelli on each side long, slender, brown and conspicuous; post-ocular spines shorter, brown. Mouth cone reaching only about two-thirds across prosternum, blunt, black at tip. Antennæ two and one-fourth times as long as the head; relative length of segments as follows:

1	2	3	4	5	6	7	8
5.5	9	11.25	10.25	9.5	12.75	3	4.25

Color: One pale yellow; two light brownish yellow; three, four and five brown in apical half, bases light brownish yellow; six, seven and eight brown, except base of six which is light brown. Spines conspicuous upon segments two to five.

Prothorax broadened posteriorly, hind angles broadly rounded; one pair of stout spines at each posterior angle, a spine of similar length at each anterior angle, also one short anteriorly directed spine near the long spine; between each posterior pair and median line stands a row of five spines of which only number four is conspicuous; midway between anterior angle and median line stands a spine nearly equal in size to the large spine at the anterior angle. Mesothorax rounded at anterior angles which bear a shoulderlike process; mesonotal plate with a small spine at each lateral angle and with two pairs of inconspicuous spines upon posterior margin. Metathorax broader behind than at juncture with mesothorax; metanotal plate bears two pairs of spines on anterior margin of which the median pair is much the larger. Sides of meso and metathorax tinged with brown. Wings not reaching beyond seventh abdominal segment; breadth at middle about one-eleventh the length; very light brownish yellow; veins in fore wing extend from base to tip; spines on veins at regular intervals, brown and conspicuous; costa bears 15 to 19; fore vein 13 to 16; hind vein 9 to 10; scale 5; interior of scale 1; fringe on costa of both wings slender and sparse; fringe on hind margin of both wings heavy, light yellow and wavy. Legs concolorous with body, moderately stout, clothed with numerous short brown spines; a pair of stout spines at the extremity of each tibia within; rows of spines on inner side of hind tibiae rather weak.

Abdomen broadens gradually to the fifth segment and narrows gradually from the seventh segment to the tip; the usual thickening across the dorsum of segments two to eight reduced to a very thin inconspicuous line; three to four dark brown conspicuous spines stand on each side of segments two to eight; a row of six small spines stands near posterior edge of ventral segments two to seven; posterior edge of dorsum of eighth segment bears a series of scalelike projections 12 to 16 in number, each of which bears a tiny transparent hair directed caudad. Posterior edge of ninth segment bears a circlet of 10 spines, 8 of which are long, dark brown and conspicuous, the ventral pair being smaller and lighter in color. The tenth segment bears six long spines, the four dorsal being much stronger than the two ventral ones and also darker brown. Tenth segment conical.

Described from 4 females; no males found.

Locality, Clarksville, Tennessee, February 2, 1910.

G. A. Runner, collector.

Food plant, *Aster* sp.; specimens were collected from the roots of this plant, undoubtedly in hibernation.

Named in honor of the collector.

Type.—Cat. No. 15722, U.S.N.M.

Note.—This species is closely related to *Euthrips tritici* Fitch from which it may be separated by the difference in coloration of the thorax, the absence of black at the tip of the abdomen, the different relative lengths of the segments of the antennæ, and by the smaller number of spines upon costa and veins.

EUTHRIPS GOSSYPH, new species.

Figs. 19-22.

Female.—Length 1.1 mm. (1 to 1.3 mm.). General color yellowish gray—some specimens almost white.

Head nearly three-fourths as long as broad and four-fifths as long as prothorax, slightly retracted therein; slightly broadening behind; anterior margin very nearly straight; back of head indistinctly transversely striate. Eyes of medium size, occupying a little more than half the width of the head, yellowish to transparent gray, facets of medium size, sparsely and minutely pilose; ocelli present, well separated, the posterior ones very close to inner margins of eyes, transparent whitish, as large as facets of eye, not margined with crescents inwardly, the anterior ocellus slightly directed forward. A long slender brown spine near each posterior ocellus in front and toward the meson. Postocular spines brown and very nearly as large as those in front of the ocelli. A row of small very light brown spines extends across the dorsum of head back of eyes. Mouth cone reaches nearly to posterior edge of prosternum, its sides straight, tinged with brown and with a very dark brown spot at the tip. First and third segments of maxillary palpi of equal length, the second shorter. Labial palpi slender, the first segment very short. Antennæ slightly more than twice as long as head. Relative lengths of segments as follows:

$$\frac{1}{6} \quad \frac{2}{10} \quad \frac{3}{12} \quad \frac{4}{11.5} \quad \frac{5}{9} \quad \frac{6}{12} \quad \frac{7}{2} \quad \frac{8}{3}$$

Color: One gray; two yellowish gray, lightest at the base; three to five brownish yellow; six to eight light brown. Spines upon segments two to five, slender, light brown, those on segment two stoutest. Branched sense cones on upper side of three near the tip and on the under side of four near the tip.

Prothorax rounded, only about three-fifths as long as wide; one pair of stout spines at each posterior angle, a similar spine at each anterior angle, midway between meson and spine on anterior angle stands a spine of similar length to those at the angles, between spines on posterior angles and meson on each side stands a row of five spines, only the second one from the meson being large and conspicuous. Mesothorax very bluntly rounded; mesonotal plate with one stout

spine at each lateral angle and two pairs of smaller spines on posterior margin. Mesothorax tapers very slightly posteriorly; metanotal plate bears four spines very close together on front margin, of which the inner pair is much the stouter—nearly as stout as those upon angles of prothorax. Wings reaching seventh abdominal segment; breadth at the middle about one-tenth the length; shaded very slightly with yellow; veins in fore wing extend to the tip; spines on veins at regular intervals; costa 23 to 30; fore vein 17 to 22; hind vein 13 to 16; scale 5; interior of scale 1; all spines are long, prominent, and brownish; a sparse slender fringe on costa of each wing; posterior fringes rather heavy and wavy. Legs pale yellow, of medium length, strong, the fore femora considerably thickened; legs clothed with numerous slender, light brownish spines; all tibiae armed with two rather stout spines at the tip within; hind tibiae with a row of five spines along inner margin near the tip. Hind tarsi bear three rather conspicuous spines; a dark brown spot at tip of each tarsus within.

Abdomen almost cylindrical to the eighth segment, thence tapering evenly to the rounded tip; a narrow brownish indistinct line across dorsum of segments two to seven; three to four fairly stout brownish spines stand out prominently on sides of segments two to eight; six slender brownish spines stand in a row along posterior margin of each ventral plate two to eight; tip of ninth segment bears a circlet of 10 spines, of which the dorsal four pairs are strong and prominent; tenth segment bears a circlet of six long slender spines near the tip, of which the dorsal four are the stouter and much the browner; other spines on ninth and tenth segments small and inconspicuous; tenth segment conical, split open above.

Described from four females; no males found.

Locality, Yuma, Arizona, June, 1910.

Food plant, cotton—collected from tips of the leaves.

Argyle McLachlan, collector.

Type.—Cat. No. 15723, U.S.N.M.

NOTE.—This species lies very close to *Euthrips helianthi* Moulton, from which it may be distinguished by the greater relative width of the head, the difference in coloration of the antennae, the different number of spines upon the scale, by the greater relative width and length of prothorax, and by having the tenth abdominal segment split open above.

EUTHRIPS TRITICI, var. **BISPINOSUS**, new variety.

Figs. 17-18.

Female.—Length about 1.28 mm. Relative measurements of head and prothorax as in *Euthrips tritici*. General color pale yellow, shading to gray on sides of head and abdomen. Anterior wings pale

yellow, posterior wings gray. Tip of abdomen not darker than remainder of body.

Relative lengths of segments of antennæ:

$\frac{1}{6}$	$\frac{2}{9}$	$\frac{3}{14.2}$	$\frac{4}{12}$	$\frac{5}{9}$	$\frac{6}{13}$	$\frac{7}{2.5}$	$\frac{8}{3}$
---------------	---------------	------------------	----------------	---------------	----------------	-----------------	---------------

Color of antennæ: Segment one gray; two brown, gray at extreme base; three very light brown on basal fourth, apical third brown, lighter at tip, middle of segment gray; four dark brown except at extreme base, which is lighter brown; five light brown, shaded darker at extreme tip and on sides; six to eight dark brown. Segments three and four relatively much more slender than in *Euthrips tritici*. Tip of second segment raised dorsally and bearing two exceptionally heavy dark brown spines. Spines on wing veins as in *Euthrips tritici*.

Described from four females, no males found.

Locality, Dade City, Florida, May 12, 1910.

Collected from blooms of Yucca.

A. C. Morgan, collector.

Type.—Cat. No. 15724, U.S.N.M.

EUTHRIPS FUSCUS Hinds.

On a slide in the collection of the United States Department of Agriculture were found five females and one male of this species. The data on the slide is as follows: "Thrips on timothy, from J. H. Comstock, July 6, /73." Since the male of this species has never been noted, a brief description and comparison with the female is here given.

Male.—Newly discovered. Length 0.75 mm. Antennæ shaded as in Hinds's description, though lighter throughout. Apterous. Color of body light yellowish brown. (The color of the abdomens of the females on the slide is deep brown.) Comparative measurements of the antennæ both of the females and the male on the Comstock slide are as follows:

Male.....	$\frac{1}{5}$	$\frac{2}{8}$	$\frac{3}{10}$	$\frac{4}{9}$	$\frac{5}{8}$	$\frac{6}{11}$	$\frac{7}{2.5}$	$\frac{8}{3}$
Female...	$\frac{1}{6}$	$\frac{2}{9}$	$\frac{3}{12}$	$\frac{4}{12}$	$\frac{5}{10}$	$\frac{6}{14}$	$\frac{7}{3}$	$\frac{8}{4}$

The ninth segment of abdomen apically bears a circlet of eight conspicuous spines. Of these the four that are borne ventrally are the smallest and lightest in color, and do not quite reach the tip of the tenth segment. Dorsally near each lateral margin stands a very long, strong, dark-brown spine, which is about twice the length of the ventral spines. The two remaining spines stand one on each side midway between the meson and the spines near the lateral margin,

and are very nearly as long as the lateral spines. This segment also bears two other very strong, dark-brown spines, one on each lateral margin about midway between the base and tip of the segment. This segment also bears a few smaller spines, one of which stands on each side the meson dorsally, in the apical row. The tenth segment bears four long, strong, brown spines, two on each side near the lateral margin, about two-thirds the distance from the base of the segment to the tip. Of these spines the two more dorso-cephalad are much the stouter and are strongly in-curved. Tenth segment large, lateral margins convex; tip is broadly rounded. A few small, almost transparent spines are borne on the segment.

ANAPHOTHIRIPS ARIZONENSIS, new species.

Figs. 23-26.

Female.—Length 0.96 mm. (0.89 mm. — 1), width of mesothorax at front angles 0.2 (0.18 mm. — 0.22). General color very light yellow, almost white, with brownish shadings on head and prothorax, meso- and metathorax heavily tinged with orange.

Head about one-half wider than long, slightly rounded in front, diverging behind; cheeks roughened; dorsum faintly transversely striate back of eyes; very light yellow with a slight brownish tinge; no spines visible. Eyes of medium size, rather coarsely faceted; black by transmitted light, orange by reflected light; ocelli subapproximate, situated upon the sides of a slight hump, yellow, margined inwardly with brownish yellow crescents. Mouth cone reaching only slightly past the middle of the prothorax, somewhat narrowed at the middle, tipped with black; first and third segments of maxillary palpi of equal length, the second half as long as the first, third segment tipped with three hairs; first segment of labial palpi very short, the second long and slender. Antennæ subapproximate at the base, clearly only eight segmented; relative lengths of segments as follows (from the average measurements of eight antennæ):

1	2	3	4	5	6	7	8
4.4	7.6	9.7	8.6	8	9.5	1.7	2

Segment one rounded at the base; two nearly barrel-shaped, narrowed at the base; three to five stalked, three and five very noticeably, four weakly; three and five broaden to near the tips which are constricted; four nearly barrel-shaped; six fusiform. One is pale, almost white; two very light brownish yellow; three gray in basal half shading to yellow at tip; four brownish yellow except extreme base which is somewhat paler; five to eight light brown, six the darkest. Spines few, minute, pale and inconspicuous. A simple sense cone on outer margin of three near tip; a branched cone on

underside of four near tip; a short cone on outer margin of five near tip and a longer cone on inner margin of six near the tip.

Prothorax about one and one-half times as long as the head, and about one-half wider than long, sides and angles rounded; transversely striate; spines numerous and minute dorsally. Mesothorax considerably wider than prothorax, its front angles rounded and bearing a shoulder-like process. Mesoscutum faintly reticulate. Metathorax smoothly joined to mesothorax and tapering gradually to base of abdomen. Metascutum plainly reticulate. No spines visible on meso- or metathorax. Meso- and metathorax heavily tinged with orange. Wings well developed, reaching about to the ninth abdominal segment; at the middle about one-eleventh as broad as long; the fore longitudinal vein fades out near the tip of the wing, the hind vein fades out at the last fifth of the wing. Front fringe sparse but long, brownish; hind fringe on both wings rather sparse, long and straight, brownish. Spines upon costa and veins short, indistinct and nearly transparent upon most specimens, one specimen, however, has short, stout, dark brown spines. Costa bears about 22 spines, fore vein 15, hind vein 9. Tip of fore wing bears a stout dark brown spine which is about three times as long as other spines on wing; scale bears 5 spines. Two cross veins present, one extending obliquely from fore to hind vein, joining the hind vein just beyond the second spine, second cross vein is between fore vein and costa at about the middle of the wing. The second cross vein is lacking in some specimens. The single median vein of the hind wing reaches nearly to the tip. Fore wing is light yellowish, hind wing gray—nearly white—except for median brownish tinge. Legs concolorous with body, strong spines only at inner tip of hind tibiae. Other spines on hind tibiae weak. A dark spot at the tips of all tarsi within.

Abdomen rather stout, broadening to the fifth segment, thence narrowing to the tip, segments 7 to 10 sharply conical. First segment weakly reticulated upon the dorsum, 2 to 7 weakly transversely striate. Each dorsal plate 2 to 8 bears four spines, on plates 2 to 4 the median pair stands close together near anterior of segment and the lateral pair are only slightly removed from the margin; on segments 5 to 8 median spines diverge and the lateral spines are successively farther from the anterior edge until on the eighth segment they stand near the middle of the segment. Tip of ninth segment dorsally bears a transverse row of six spines of medium size and brownish in color, of these the median pair is the shortest and the second pair the longest. Tip of tenth segment dorsally bears four minute slender spines. Each pleural plate, segments 2 to 8 bears two short, stout, brownish spines directed caudally. Abdomen

very light yellow by transmitted light, nearly white by reflected light. Receptaculum seminis conspicuous, brownish red.

Described from 10 females.

Male unknown.

Locality, Yuma, Arizona, July 6, 1910.

Food plant, Snake weed.

Collector, Argyle McLachlan.

Type.—Cat. No. 15725, U.S.N.M.

ECHINOTHRIPS AMERICANUS, new species.

Figs. 31-32.

Female.—Length of distended specimens 1.3 mm. The normal length is very probably not more than 1 mm. General color light brown to dark brown with considerable red hypodermal pigmentation.

Head—Length 0.12 mm., width 0.16, almost rectangular, converging slightly toward prothorax; cheeks very slightly arched; slightly retracted within prothorax; front of head obtusely triangular. Eyes large, not protruding, pilose, occupying almost three-fifths the width of the head, black by transmitted light, yellow by reflected light, rather coarsely faceted. Ocelli large, subapproximate, the posterior ones situated back of center of eyes; orange yellow margined inwardly with dark red crescents. The anterior ocellus is situated in a depression in the front. A small spine stands in front of each posterior ocellus, and a row of four small spines extend in an arc in front of the anterior ocellus. Head transversely areolate behind the eyes. Mouth cone broad at the base, short, reaching only a little more than half-way across the prosternum, its sides straight. Maxillary palpi light gray, two segmented, of medium length, the first segment very much shorter than the second; second segment bears a slender hair at the tip. Labial palpi minute. Antennæ eight segmented, slender, about two and one-half times as long as the head. Relative lengths of segments as follows, taken from measurements from an average of five antennæ:

1	2	3	4	5	6	7	8
5.9	10	14.5	11.7	13.1	17.4	5	7.7

First two segments of antennæ stout; the first nearly cylindrical, one and one-third times as broad as long; the second barrel-shaped, four-fifths as long as broad; third segment distinctly stalked, the fourth and fifth very slightly so. All segments beyond the second slender. Color: First two segments concolorous with the head; three, four, and basal half of five gray; three and four sometimes with a yellowish brown tinge apically; remainder of antennæ light brown. Antennal segments with conspicuous spines on segments two to five, those on two and three being noticeably blunt. The eighth

segment at the tip bears a long hair which is slightly longer than the segment. A short, blunt, transparent sense cone is borne on the outside near the tip of segments three, five, and six.

Prothorax about 0.12 mm. in length and 0.21 in width, broadest across the middle, straight on the anterior margin, slightly convex on the posterior margin, hind angles bluntly rounded, yellowish brown tinged with red hypodermal pigmentation. Each hind angle bears a slender blunt spine, and a spine of similar size stands about two-fifths the distance from the spine at the angle to the meson. A smaller spine stands near the latter spine. Other spines on the prothorax small and inconspicuous. Surface of prothorax reticulated. Mesothorax about 0.28 mm. wide, its front angles broadly rounded, each bearing a shoulder-like process. Mesonotal plate broad and long bearing a transverse row of four spines half-way between front margin and lateral angles.

Mesonotal plate transversely areolate. Metanotal plate with a spine on each side the meson near the front margin, reticulated. Metanotal plate and sides of meso- and metathorax brown and without red hypodermal pigmentation. Sides of meso- and metathorax reticulate and areolate. Wings long and slender, attaining the tip of the abdomen, broadened at the base, at the middle only about one-eighteenth as broad as long, margins nearly straight except at the tip, basal fifth gray, and sometimes a broad band across middle of wings grayish, tip of wings gray usually, remainder of wings brown, darkest toward the base. Veins inconspicuous, the two longitudinal veins anastomose at first seventh of the wing and soon fade out. All spines on wings long, stout, and knobbed. Costa bears 15 to 19; fore vein 13 to 14; scale 2 interior of scale 1. Fringe present on both margins of both wings; the basal fifth on front margin and a shorter distance at the base of hind margin being without fringe. Fringe long and slender, that on both margins of fore wing being wavy, while only the posterior fringe of the hind wing is wavy. Hind wing with a very dark brown median longitudinal vein. Legs rather long and slender, tibiae unarmed except for a rather weak pair of spines at the tip of the hind tibia within. All femora brown except bases of middle femora and sometimes the bases of fore femora which are gray. Basal half of middle and hind tibiae and basal fourth of fore tibiae light yellowish, as are also the tarsi. A black spot at the tip of the tarsi within. Legs clothed with a few small spines.

Abdomen broadening to the fourth segment which is about 0.3 mm. wide, thence tapering gradually to the tenth segment, which is cylindrical. Sides of abdomen reticulate. Across the middle of the dorsum of each segment two to eight stands a row of 8 to 10 small

spines, those at the meson being nearest the anterior margin; these spines increase in size upon each succeeding segment caudally. The ninth segment bears two rows of spines, one transverse row of six long spines across the center of the dorsum; the second row at the tip of the segment consist of six long spines. Midway between these two rows on each side stands two spines similar in size to those composing the rows. Tip of tenth segment bears six long slender spines, and the pseudo or eleventh segment bears two small spines. All abdominal spines are sharp pointed and are much lighter in color than the abdomen.

Male.—Similar to the female, except smaller and more slender and lighter in color. The abdomen narrower and more nearly cylindrical. Segments two to eight of the abdomen ventrally are thickly peppered with small circular transparent spots. The ninth segment is only slightly narrowed caudally. The tenth segment is cylindrical and about half retracted within the ninth. Relative lengths of segments of antennæ taken from measurements upon the same scale as with the female:

$\frac{1}{5}$	$\frac{2}{8.5}$	$\frac{3}{12.5}$	$\frac{4}{9.7}$	$\frac{5}{11.5}$	$\frac{6}{14.7}$	$\frac{7}{3.9}$	$\frac{8}{6}$
---------------	-----------------	------------------	-----------------	------------------	------------------	-----------------	---------------

Described from many females. Type slide contains three females collected from Indian Poke, Quincy, Florida, May 18, 1910, by G. A. Runner and A. C. Morgan. Other specimens of females collected from *Magnolia grandiflorum*, Quincy, Florida, September 8 and 9, 1909, by A. C. Morgan, and from "Coffee bean" September 7, 1909, Quincy, Florida, by the writer.

Two males from "Touch-me-not," Clarksville, Tennessee, August 11, 1910, by S. E. Crumb. One of these is designated as the Allotype. One male in sweepings from grass Wittenberg, Missouri, July 12, 1909, by A. G. Vestal. This paratype is in the collection of Mr. J. D. Hood, from whom it was received for comparison.

One slide in the collection of the United States Department of Agriculture contains about 20 females, one male, and several larvæ. These were collected in the District of Columbia, August 14, 1900, from Adicea. Department note No. 9305.

This species may be distinguished from its congener *E. mexicanus* Moulton, by the following differences: Basal fifth of wing gray and a grayish band across the middle; the greater number of spines on the costa and the fore vein; and by the greater relative difference in the lengths of the first and second antennal segments. In *mexicanus* the second segment is more than three times as long as the first, while in *americanus* the second segment is only about twice as long as the first.

Type.—Cat. No. 15726, U.S.N.M.

RHIPIPHOROTHRIPS new genus.

Body, especially the head and prothorax, deeply sculptured. Head broader than long, uneven, somewhat narrowed behind, broadly rounded in front and with a hump between the eyes. Eyes prominent, slightly protruding. Ocelli present. Antennæ eight-segmented; second segment of the style much longer than the first and provided with a long slender hair at the tip; third and fourth segments each with a simple sense cone. Maxillary palpi two-segmented. Prothorax shorter than the head, without spines at the angles. Legs unarmed. Wings present; fore wings sculptured at the base, narrow, with two longitudinal veins which are very indistinct. Spines on veins very minute. Costa without fringe or spines. Anal spines weak. Mesothorax produced into prominent acute angles in front. Male with a curious fan-shaped scale on each lateral margin of the ninth segment, near the tip.

This genus is very near *Heliothrips*, but differs from it in being sculptured instead of reticulated, and in the fan-shaped scale on the ninth abdominal segment of the male.

Type of the genus.—*Rhipiphorothrips pulchellus*, new species.

RHIPIPHOROTHRIPS PULCHELLUS, new species.

Figs. 33–37.

Male.—Length 1.27 mm.; width of mesothorax 0.3 mm., greatest body width a little less than width of mesothorax. General color yellow, with heavy tinge of dark brown on head and thorax.

Head dorsally only about three-fifths as long as wide, ventrally about four-fifths as long as wide; deeply and coarsely sculptured; broadly rounded in front of eyes; a hump between the eyes which bears the ocelli; cheeks very rough, produced laterally behind the eyes; outline of the eyes more convex than outline of head at that point, so that there is a distinct notch both before and behind the eyes. Eyes prominent, slightly protruding, rather coarsely faceted, not pilose, black by transmitted light, yellowish brown by reflected light. Back of head slightly narrowed. Ocelli about as large as facets of eyes and situated upon sides of hump between the eyes; approximate, pale yellow, the anterior ocellus being directed forward; inner crescents indistinct yellowish orange. Mouth cone not quite reaching across prosternum, black at the tip; labrum rather sharply pointed; labium rounded at tip; maxillary palpi short, the first segment shorter than the second; labial palpi short and blunt. Antennæ situated very low, just above ventral margin of the head, well separated, each in a depression next the eye and below the produced front; relative lengths of segments as follows:

1	2	3	4	5	6	7	8
9.5	12	18.7	15.5	12.5	11	2.8	15.3

Segment one barrel-shaped, longer than broad; two somewhat barrel-shaped, more constricted at base than at the tip; three and four fusiform; five clavate; six and seven similar in form to five only inverted; eight long and slender, tipped with a short hair. Segments one and two with a heavy yellow tinge medianly, the sides light gray; three and four gray, almost white; five and six with a broad median tinge of yellow; seven and eight light brownish gray. Segment two roughened. Segment three bears a long simple transparent sense cone on the outer margin near the tip, and segment four bears a similar cone similarly placed. Head without spines.

Prothorax shorter than the head, about two-thirds as long as broad, front angles rounded, broadest behind, posterior angles broadly rounded, posterior margin convex; coarsely sculptured, but not so deeply so as the head; spines few and minute; not so dark as the head and mesothorax, with an orange tinge in some specimens; constricted at articulation with mesothorax. Mesothorax broadest of all segments, about 0.3 mm. broad (one and one-half times as broad as the head and about one-eleventh broader than the abdomen), its anterior margin concave, its anterior angles acute and slightly overlapping the hind angles of the prothorax; mesothorax joined by about two-thirds its width to prothorax. Mesonotal plate concave on anterior margin, convex behind except a slight concavity at its juncture with metanotal plate; lateral angles acute; mesonotal plate bears a few small spines of which only the transparent insertions are visible; deeply sculptured. Metanotal plate triangular, with the base somewhat convex, the sides straight and meeting in an acute angle behind, deeply sculptured. Mesothorax broadest behind, the sides broadly rounded and roughened. Metathorax with sides convex and roughened, narrowing behind. Meso- and metanotal plates, and sides of both meso- and metathorax tinged with brown; remainder of meso- and metathorax yellow. Fore wings slightly broadened at the base, slender and long, reaching to the ninth abdominal segment; slightly sculptured at the base; the veins are indistinct and fade out at the middle of the wing; no spines or fringe upon the costa; spines on the veins few and minute, only the transparent insertions being visible. Hind wing with a single median vein. Fore wing at the extreme base brown, the brown area including nearly all of the scale, in some specimens all; remainder of wing gray with yellow longitudinal tinge on posterior margin. Hind wing gray with slight shading of yellow. Hind fringe on both wings of medium thickness, long, slender, brown, and for the most part straight, there being only an occasional wavy hair. Legs short, stout, roughened, unarmed, light yellow to lemon yellow; tarsi lighter with black spot at tip within.

Abdomen joined broadly to the thorax, broadening gradually to the fourth segment, thence tapering gradually to the tip, which is

rounded; greatest width only one and one-half times that of the head. Sides of abdomen noticeably sculptured. Each dorsal plate two to eight bears two pairs of spines placed in the form of a trapezoid, the anterior pair standing about the middle of the segment and quite near the median line. Spines on ninth segment short, comparatively stout though indistinct; the sides of the ninth segment almost inclose the tenth segment. Ninth segment long. Tenth segment short and almost retracted within the ninth segment. A curious fan-like ribbed scale or clasper on each lateral margin of the ninth segment near the tip.

Locality, Philippine Islands, 1910.

Collected by George Compere.

Food plant, Banyan tree.

Described from 3 males.

Female.—Similar to male in shape and coloration, length 1.4 mm.; the body does not narrow posteriorly as evenly as in the male, gradually narrowing from fourth to eighth segments, thence more rapidly to the tip; tenth segment cone-shaped, rounded at the tip; ovipositor not quite reaching the tip.

Described from 2 females.

Collected with the males.

Type.—Cat. No. 15727, U.S.N.M.

MICROTHRIPS, new genus.

Ocelli present. Antennæ seven-segmented (style one-segmented), seventh segment as long as or longer than the sixth. Eyes protruding. Maxillary palpi two-segmented. Head wider than long. Prothorax wider than long and as long as or slightly longer than the head; two spines upon the hind angles. Fore tibiæ unarmed. Wings present, long, narrow, only slightly broadened at the base, pointed at the tip. Costal fringe of fore wings sparse but well developed. Hind fringe well developed and long. Costa and veins with spines. Fore wing with two veins which anastomose near base of the wing, thence running near the costa to the tip. Hind wing with a single median vein. Fore wings without bands.

This genus is very near *Baliothrips* Haliday, but differs in not having the wings banded, and in having the two veins of the fore wing joined together from near the base to the tip.

Type of the genus.—*Microthrips piercei*, new species.

MICROTHRIPS PIERCEI, new species.

Figs. 27-30.

Female.—Length 0.62 mm. (0.56 to 0.73 mm.). General color pale brownish yellow. The brownish tinge is quite pronounced in some specimens; legs transparent white.

Head five-ninths as long as broad; somewhat retracted within the prothorax; front produced between the antennæ; narrowed behind, broadest through the eyes; no hairs or spines visible upon the head; cheeks convex, eyes strongly protruding, coarsely granulated and together three-fifths the width of the head; ocelli approximate, not contiguous with inner margins of eyes, the posterior ones on a line with the hind margins of the eyes, the anterior one on line with the center of the eyes, yellowish by reflected light, black by transmitted light, margined inwardly with bright red crescents; maxillary palpi two segmented, transparent white, the first segment slightly longer than the second; labial palpi minute. Antennæ seven segmented, the relative lengths of the segments as follows:

$\frac{1}{3.25}$	$\frac{2}{6.25}$	$\frac{3}{7.3}$	$\frac{4}{6.2}$	$\frac{5}{6.3}$	$\frac{6}{6.3}$	$\frac{7}{6.9}$
------------------	------------------	-----------------	-----------------	-----------------	-----------------	-----------------

Segment one short and cylindrical; two much the largest, globular viewed from above, cone shaped viewed from the side; three to five pedunculate—three and four conspicuously so, five slightly so—three ovoid; four and five barrel shaped; six nearly cylindrical with base and tip slightly narrowed; seven slender and the blunt apex bearing three short, slender, transparent hairs. The seventh segment bears four other hairs, one near the base, two at the middle, and one near the tip.

The other segments, except the first, bear a few minute colorless hairs which increase in length upon each succeeding segment. Color generally very light yellow—in some specimens almost white—except segment six which has a slight tinge of brown near the tip, and seven, which is very light brown with a tinge of yellow.

Prothorax trapezoidal, broadest behind, in front broader than the head and as long as or slightly longer than the head, width at hind angles nearly twice the length. Front angles noticeably rounded, high angles only slightly so. Pronotum behind very weakly cross striated. No spines upon pronotum except a pair of slender white ones upon each posterior angle. Prothorax somewhat constricted at its juncture with the mesothorax. Mesothorax about two-fifths wider than prothorax, widest in the middle, narrower than prothorax at juncture with prothorax but widening rapidly to the middle, slightly converging behind; a shoulderlike projection at each front angle. Metathorax narrower than mesothorax but about one-fourth wider than the prothorax, its sides nearly parallel. No spines on either the mesonotum or the metanotum. Wings very slender, reaching to end of the abdomen, broadest in first third, at the middle about one-twentieth as broad as long; nearly transparent whitish, costal fringe of fore wings composed of a few long, slender, colorless bristles intermixed with shorter almost colorless spines. Costa bears 20 to 22

spines. Fore vein runs very close to costa to tip of wing, hind vein nearer costal than anal margin of wing, and joins fore vein at end of first fifth of length of wing, thence running to tip of wing. Hind vein with one or two spines; the anastomosed veins bear three or four minute almost colorless spines; one spine on hind vein very near juncture of veins, one spine upon the anastomosed veins always near the tip of the wing. Hairs composing posterior fringes of both wings long, slender, straight and light colored. Legs lighter colored than body, quite long and slender; tarsi apparently only one-segmented; fore and middle tibiae unarmed; each hind tibia bears two slender colorless spines at its inner extremity; other spines upon hind tibia few, and minute.

Abdomen scarcely wider than prothorax, almost cylindrical, widest at fifth segment, thence tapering very gradually to the ninth segment; ninth segment considerably narrowed behind; tenth segment longer than wide, widest at base, sides convex, tip broadly rounded. Tip of tenth segment dorsally bears four slender, colorless spines, and midway of segment on each side stands a spine similar to the apical ones. Ninth segment bears dorsally four slender colorless spines at the apex and two similar spines on the lateral margins apically.

Described from numerous females taken at Dallas, Texas, September 26, 1910, by W. D. Pierce, after whom the species is named. No males found.

Food plants, cotton, Dallas, Texas, September 26, and November 4, 1910; and *Vernonia*, Dallas, Texas, November 4, 1910, W. D. Pierce; *Papaw*, Clarksville, Tennessee, May 13, 1910, A. C. Morgan.

Type.—Cat. No. 15728, U.S.N.M.

THRIPS QUINCIENSIS, new species.

Figs. 38-41.

Female.—Length 1.1 mm. to 1.2 mm.; width about one-fourth the length. Color almost white with a slight tinge of yellow. Yellow tinge is pronounced on thorax and last two abdominal segments.

Head one and one-half times as wide as long; cheeks arched somewhat behind the eyes; front slightly produced between the antennæ; occiput indistinctly transversely striated; hairs upon head few, minute and almost transparent whitish; eyes not protruding, sparsely pilose, ocelli subapproximate, standing well back toward hind margins of eyes, posterior ones not contiguous with margins of eyes; color light yellow, margined inwardly with dark red crescents. Maxillary palpi three segmented. Antennæ seven segmented, relative lengths of segments as follows:

$$\frac{1}{5} \quad \frac{2}{8} \quad \frac{3}{10} \quad \frac{4}{9} \quad \frac{5}{8.5} \quad \frac{6}{12} \quad \frac{7}{5}$$

Segment one cylindrical; two barrel shaped; three to five pedunculate elongated ovoid; five joined by a moderately broad surface to base of six, which tapers somewhat from its middle to its apical end; seven tapering slightly, blunt at apex. Segments one, two, three, and four pale yellow, five light yellow with a tinge of brown which is more pronounced at apex; six and seven light brown.

Prothorax about one and one-half times as long as the head; one-fourth wider than long. Angles not distinct, broadly rounded. Each hind angle bears two slender, light yellowish spines of medium length, and between these pairs along the hind edge of the pronotum stands a row of three smaller spines on each side. Mesothorax one-third wider than prothorax. Wings at the middle about one-twelfth as broad as long; wings light gray, spines almost colorless, with a very slight tinge of yellow; costal fringe of fore wings composed of rather long bristles intermixed with a row of shorter, slender spines. Costa bears about 22 spines; fore vein bears 9 to 10 spines arranged as follows: A basal group of three or four spines, a group of three terminating at about two-fifths the length of the wing (these two groups are so close together that they might be considered as a single group), beyond the second group are three spines, the first stands beyond the center of the wing, the second at about two-thirds the distance between the first and the third, the latter being near the tip of the vein. Hind vein bears 9 to 11 spines. Spines upon wings quite long and slender. Origin of hind vein indistinct, near the second group of three spines upon the fore vein. Hairs composing hind fringe upon both wings long, slender, wavy, and light colored. Legs concolorous with body, rather slender; second segment of tarsus much longer than the first; spines upon inner side of hind tibia weak, except the almost colorless pair at its inner extremity.

Abdomen slightly wider than mesothorax, nearly three times as long as wide; posterior edge of ninth abdominal segment bears a circlet of twelve spines, all long and slender except the second spine on each side of the dorso-median line, which is short and indistinct; the dorsum of this segment bears two other spines of medium length, each standing near the middle of the segment cephalad of the third spine in the apical circlet. Tenth segment bears six long slender spines and a number of smaller ones. Tenth segment broad at base, cone shaped and rounded at the tip. Spines upon sides of abdomen short and slender.

Described from four specimens.

Locality, Quincy, Florida.

Food plant, *Pinckneya pubens* Michaux.

Collected by the writer and G. A. Runner.

No males found.

Type.—Cat. No. 15729, U.S.N.M.

THRIPS HELIANTHI, new species.

Figs. 44; 47-49.

Female.—Length, 1.05 mm. (1.07 to 1.02); width, about one-fourth the length. Color: thorax, yellowish brown, rest of body dark brown varying to light brown in some specimens.

Head one and one-half times as wide as long; cheeks slightly arched behind the eyes; front produced between the antennæ; occiput very distinctly cross striated; a small spine in front and a similar one behind each posterior ocellus, a row of six small spines extending in a curved line from the spine behind the posterior ocellus behind the compound eye to the lateral margin of the head; eyes not protruding, coarsely granulated, black by reflected light, dark purplish by transmitted light, sparsely pilose; ocelli well separated, the posterior ones cephalad of the hind margins of the eyes, not contiguous with the borders of the eyes, larger than the facets of the eye, color light yellow, margined inwardly with dark reddish crescents; maxillary palpi three-segmented; first and third segments of equal length, the second shorter. Mouth cone reaching nearly to hind edge of prosternum. Antennæ seven-segmented, two and one-half times as long as the head; relative lengths of the segments as follows:

$\frac{1}{6}$	$\frac{2}{9.1}$	$\frac{3}{12}$	$\frac{4}{11.6}$	$\frac{5}{10}$	$\frac{6}{14.4}$	$\frac{7}{5.4}$
---------------	-----------------	----------------	------------------	----------------	------------------	-----------------

Segment one cylindrical; two barrel-shaped; three to five pedunculate—three and four strongly, five weakly so—elongate ovoid; five joined by a moderately broad surface to base of six which tapers considerably from its middle to the apical end; seven tapers somewhat, blunt at the apex. Segments one, two, six, and seven dark brown; three and four pale brown; five dark brown, except the base which is somewhat lighter. Spines upon antennæ conspicuous, particularly so upon segment two. All spines brown, but shading from dark brown upon basal segments to light brown upon apical segments. Segments three and four each bear a branched sense cone near the tip, on upper side of three and on under side of four.

Prothorax rectangular, as long as the head and about three-fifths as long as wide; posterior portion of pronotum distinctly transversely striated; pronotum clothed with a number of small spines; each hind angle bears a pair of stout conspicuous spines; between these pairs along the hind margin of the pronotum stands a row of three smaller spines on each side, the inner spine being the strongest. A row of three spines on each side parallels the row upon the hind margin, the outer spine of which is cephalad of the two spines upon the hind angle, the inner cephalad of the last spine in the marginal row. Three short spines stand upon the front angles of the prothorax. Mesoscutum distinctly and finely transversely striated, bearing a

small dark spine at each lateral angle and a similar spine on each side equidistant from the meson and the hind margin. Metathorax about one-third wider than the prothorax; metanotal plate indistinctly longitudinally striate, bearing a row of four small spines upon front margin of which the inner two are the larger. Wings reach nearly to the tip of the abdomen, at the middle about one-fourteenth as broad as long, light brown, except basal fifth and apical fourth, which are light gray. Spines upon basal fifth almost colorless, remainder of spines dark brown. Costal fringe of fore wings composed of slender bristles intermixed with a row of shorter spines. Costa bears 21 to 23 spines; fore vein 9 to 10 placed as follows: A group of three or four in transparent basal fifth, a group of three in second fourth, beyond center of wing are two to four spines; if four, they stand equidistant from second group of spines and from each other; if three, the first stands alone near the center of the wing, the other two near the tip; if only two spines are present, they stand near the tip; hind vein bears 14 to 20 spines regularly placed. Origin of the hind vein indistinct, near middle of the second group of spines on the fore vein. Hairs composing hind fringe long, wavy, and dark colored. Legs rather slender; fore femora very slightly thickened; all femora dark brown; basal third of fore tibiae, basal half of middle tibiae and basal two-thirds of hind tibiae brown; remainder of tibiae and all tarsi yellowish brown. Second segment of tarsi much longer than the first; spines on inner side of hind tibiae medium in size, light colored. All femora and tibiae clothed with fine hairs. All femora striate.

Abdomen as wide as mesothorax, about two and one-half times as long as wide; each dorsal plate of segments two to eight marked near its anterior edge with a narrow transverse line of black which disappears about the middle of the pleural plates. Normally the segments of the abdomen overlap a little. Posterior edge of ninth segment bears a circlet of ten spines, the dorsal three pairs being long, rather dark brown, and conspicuous. Two smaller spines are found upon the dorsum of this segment about midway between front and hind margin, on each side somewhat nearer the lateral margin than the meson. Tenth segment bears a circlet of six spines at the tip, the four upon the dorsum being rather stout and conspicuous. Tenth segment split open above. Dorsum of first abdominal segment cross striate. Sides of abdomen striate. Posterior margin of each ventral segment two to seven bears a row of four small spines directed caudad. On each pleural plate of segments two to eight are 4 to 5 spines directed caudad, and increasing in strength caudally.

Described from nine specimens.

Food plant, *Helianthus* sp.

Locality, Clarksville, Tennessee.

Collected August 1, 1910, by the writer and S. E. Crumb.

Life history unknown, except that the specimens were feeding upon the under sides of the leaves of the host plant.

Type.—Cat. No. 15730, U.S.N.M.

THRIPS SPINOSUS, new species.

Figs. 42-43; 45-46.

Female.—Length 1.26 mm. (1.16 mm. to 1.35 mm.). (Specimens somewhat distended.) Width about one-fourth the length. Color quite uniformly light brown, with a tinge of yellow, except the ninth abdominal segment which shades to dark brown at the tip, and the tenth which is dark brown.

Head one-third wider than long, widest behind; cheeks slightly arched behind the eyes; occiput distinctly transversely striated; front slightly produced between the eyes; a prominent spine in front of each posterior ocellus, a smaller spine behind each posterior ocellus and two similar spines behind each eye distinctly noticeable, other spines upon head small and inconspicuous; eyes not protruding, rather coarsely granulated, dark purplish by reflected light, black by transmitted light, pilose; ocelli subapproximate, the posterior ones standing back of the center of the eyes, and not contiguous with their margins; color light yellow margined inwardly with dark red crescents. Mouth cone distinctly narrowed in the middle, slender, reaching three-fourths across prothorax; maxillary palpi slender, three segmented, the first segment slightly longer than either of the other two which are about of equal length. Antennæ seven segmented; relative lengths of segments as follows:

$\frac{1}{8}$	$\frac{2}{11}$	$\frac{3}{16.5}$	$\frac{4}{17}$	$\frac{5}{12.7}$	$\frac{6}{15.5}$	$\frac{7}{6}$
---------------	----------------	------------------	----------------	------------------	------------------	---------------

Segment one short, semiglobose; two cup shaped; three and four pedunculate elongated ovoid; five slightly pedunculate elongate, joined by a moderately broad surface to base of six, which tapers from its middle to its apical end; seven tapering, slightly rounded at apex. Segment three bears a transparent branched sense cone on the upper surface near the tip, and segment four bears a similar cone upon the under surface near the tip. Spines upon antennal segments two to five rather slender but distinct. Spines upon other segments rather minute. Segment one light yellowish brown; two light brown; three light yellowish brown, the brown tinge more pronounced toward the apex; four with peduncle almost transparent whitish, remainder light yellowish darkening toward the apex; five, six, and seven light brown except base of five, yellowish brown.

Prothorax rectangular, angles more rounded behind than in front, as long as head and one-half wider than long; pronotum indistinctly

transversely striated and sparsely clothed with small spines; each hind angle bears a pair of stout dark conspicuous spines, and between these pairs, along hind edge of pronotum, stands a row of three smaller spines on each side (on one specimen this row is composed of four spines). Front angle of prothorax bears a group of three or four short spines directed cephalad. Metathorax about one-third wider than prothorax; meso- and metathorax striated; metanotal plate bears a few small spines. Wings at middle about one-fifteenth as broad as long, very light brown. Costal fringe well developed, composed of light brown hairs, which are more than twice as long as the rather long dark brown spines with which they are intermixed. Costa bears 26 to 31 spines regularly placed. Fore vein bears a basal group of 7 to 8 spines and three scattered spines the first of which stands slightly beyond the center of the vein, the second stands at about two-thirds the distance from the first to the third, the third stands near the tip of the wing. Hind vein bears from 14 to 20 spines quite regularly placed. Origin of hind vein indistinct; it arises at about the sixth spine of the group upon base of fore vein. Spines upon wing long, dark colored and prominent. Hairs composing posterior fringe upon both wings long, slender, wavy, and light brown. All femora somewhat darker than body, tarsi pale yellow, tibiae intermediate in color between femora and tarsi. Legs rather slender, fore femora indistinctly striate, second segment of tarsi much longer than the first; spines on inner side of hind tibiae weak, except pair at the extremity; legs sparsely clothed with fine hairs.

Abdomen as wide or slightly wider than the mesothorax, a little more than twice as long as wide; each dorsal plate of segments two to eight marked near its anterior edge with a narrow transverse, indistinct brownish line, which disappears near the pleural plates. Posterior edge of ninth segment bears ten brownish spines of which the dorsal six are the longest; tenth segment bears a circlet of six spines, the dorsal four being the longest. Tenth segment conical, truncate at the tip. Ninth and tenth segments bear a few smaller spines. Posterior edges of ventral segments two to seven bear a row of six slender spines. Each pleural plate bears three to four slender spines directed posteriorly. Tenth segment split open above. The spines upon the last two segments are long, slender, light brown.

Described from several specimens of both sexes.

Locality, Quincy, Florida, May 21, 1910.

In flowers of *Magnolia grandiflora*.

Collectors, G. A. Runner and A. C. Morgan.

Male.—Similar to the female but slightly smaller. Ventral abdominal segments two to seven each show an elongated gray area, which is about four times as long as broad.

This species may be distinguished from its nearest congener, *Thrips tabaci*, by the red ocellar crescents, by the general color, which is brown, and by the *stouter* spines.

Type.—Cat. No. 15731, U.S.N.M.

EURYTHRIPS HINDSI, new species.

Figs. 61-63.

Female.—Measurements, length, excluding connective tissue, about 1.4 mm.; width of body 0.35, which is about two-fifths its length. Head, length 0.16, width 0.15. Prothorax, length 0.12, width through coxæ 0.27. Mesothorax at front angles 0.27 wide; meta-thorax 0.3 wide. General color: head, legs, and first to fifth antennal segments yellow; thorax yellowish brown; remainder of body light brown.

Head about as wide as long, narrowed in front, sides nearly parallel, cheeks very slightly roughened, front produced; basal segments of antennæ large, approximate. Eyes small, rather coarsely faceted, very dark purplish, almost black by transmitted light, very light gray by reflected light. Ocelli wanting. Post-ocular bristles long, slender, light yellow, and sharp pointed. Mouth cone short and broad, reaching only half across prosternum. Labrum constricted near the tip, sharply pointed and tipped with black. Labium with sides nearly straight, tip broad, truncated and edged with black. Maxillary palpi short, the first segment very short, the second much longer and tipped with three or four bristles, which are about as long as both segments of the palpi. Labial palpi short and indistinct. Head yellow with a very light shading of brown at the sides.

Relative lengths of segments of antennæ as follows:

$\frac{1}{12}$	$\frac{2}{12}$	$\frac{3}{13}$	$\frac{4}{13}$	$\frac{5}{12}$	$\frac{6}{12}$	$\frac{7}{10}$	$\frac{8}{9}$
----------------	----------------	----------------	----------------	----------------	----------------	----------------	---------------

Color: one to four yellow; three and four with a very slight brownish tinge; five brownish yellow; six light brown; eight dark brown; seven intermediate in color between six and eight. Two curved transparent sense cones on each of segments three to eight near the tip, one within, one without.

Prothorax trapezoidal, hind angles broadly rounding, sides nearly straight. All spines on prothorax yellow and sharp pointed. One long spine at each posterior angle, a similar one on each side on the posterior margin about one-third the distance from the hind angle to the meson, a midlateral spine of similar length to the one at the posterior angle. The spine at the anterior angle is much shorter than the foregoing spines. Anterior marginals wanting. Mesothorax with front angles rather abrupt, broadest at juncture with metathorax. Metathorax converging behind. Wings wanting. Legs of medium length, stout; fore femora somewhat thickened. All femora and tibiæ bear

several slender erect spines. Those at the tip of the tibiæ being more conspicuous than the others upon the segment. The fore coxæ also bear an erect spine on the outer side. All tarsi with a black spot at the tip within.

Abdomen broadly joined to the thorax, sides nearly parallel to the eighth segment. Eighth and ninth segments converging abruptly to the tube. On posterior margin of each dorsal segment one to eight stands two spines, the outer one of which stands very near the lateral margin. On the first two segments only the inner spine is long and conspicuous, on the other segments both the spines are conspicuous. The ninth segment on its posterior margin bears a circlet of six long spines. The tip of the tube bears a circlet of six long spines and a similar number of shorter ones. All spines on the body are yellow and sharp pointed. A narrow dark brown line crosses the dorsum of segments three to eight. Tube as long as the head, and twice as broad at the base as at the tip, its sides straight. Thorax and abdomen suffused with dark purplish pigmentation.

Described from one female taken in a stool of broom sedge.

Named for Dr. W. E. Hinds in recognition of his valuable work upon this order.

Locality, Clarksville, Tennessee, October 17, 1910.

A. C. Morgan, collector.

Type.—Cat. No. 15732, U.S.N.M.

This species differs from its congeners in having the prominent spines upon the prothorax and body acute instead of blunt, in having a narrower body in proportion to its length, and in having the segments of the antennæ roughened.

TRICHOTHRIPS FLAVICAUDA, new species.

Figs. 50-54.

Female.—Apterous: Length 1.1 mm. General color brown, with basal joints of antennæ, ninth and tenth abdominal segments and all tarsi yellow. Thorax and abdomen with considerable very dark reddish brown hypodermal pigmentation.

Head: Length about 0.18 mm., width about 0.17, general shape rectangular, front slightly produced both above and between the antennæ, sides nearly straight and parallel; the dorsal and lateral surfaces bear a few minute spines; dorsal surface faintly transversely striate-reticulate; postocular bristles long, slender, and sharply pointed. Eyes small. Ocelli wanting. Antennæ eight-segmented, all segments free, twice as long as the head; segments gradually decreasing in width from the base to the tip. Relative lengths of segments as follows:

1	2	3	4	5	6	7	8
9	10	12	11	12	12	10	11

Segments three to eight stalked; segments one and two yellow with a slight tinge of brown; segments three to six slightly more heavily tinged with brown than the preceding; seven and eight light brown. Sense cones of medium size, transparent, located as follows: Segments three to six with two each, one on the outer side, one on the inner side near the tip; segment seven with a small cone on the outer side. The inner cone on six is also small. Mouth cone short, not attaining the base of the prosternum, labrum pointed and just attaining the end of the labium, which is broadly rounded.

Prothorax large, length about 0.17 mm., width 0.34 through the coxæ; front margin concave, hind margin convex, the curves of the two margins being nearly concentric. Anterior marginal spines minute, other spines present, of medium size, blunt. Anterior coxal spines present, equaling in size those at the posterior margin of the prothorax, blunt. Pterothorax greatly reduced in length, as broad as prothorax but only slightly more than half as long. General color of legs slightly lighter brown than the body; all tarsi, tips of hind femora, apical third of fore femora, bases of fore and hind tibiæ, yellow. A dark spot at the tips of all tarsi within. Fore femora scarcely enlarged.

Abdomen very large and heavy, 1.4 times as broad as pterothorax, deep brown; eighth and ninth segments narrow abruptly; ninth segment and the tube, yellow. Tube short, only very slightly more than half as long as the head, its sides straight, very slightly infusate at the tip; twice as wide at the base as at the apex. Terminal bristles slender, about as long as the tube.

Described from two specimens, taken under bark at Corbin, Kentucky, September 26, 1911, by the writer.

Male.—Allotype. Extended specimen 1.3 mm. in length. A contracted specimen would probably be shorter than the female. Color similar to that of the female except the antennal joints, which are slightly browner.

Head 0.2 mm. in length, width 0.13. Lateral margins of the head with an angular protuberance just behind the eyes.

Prothorax, length 0.2 mm., width through coxæ 0.31. Fore femora much enlarged, as broad as the head; fore tarsus armed with a stout tooth; a blunt tooth-like projection on inner side of fore tibiæ. Pterothorax, width 0.3 mm.

Abdomen much more slender than in the female, greatest width 0.31 mm.

One specimen, Corbin, Kentucky. Taken with the females under bark by the writer.

Type.—Cat. No. 15733, U.S.N.M.

TRICHOTHRIPS FUSCUS, new species.

Figs. 55-57.

Female.—Measurements, length 1.75 mm.; head, length .033, width 0.25; prothorax, length 0.21, width 0.4 through coxæ; mesothorax at front angles of same width as the prothorax, slightly broader at juncture with metathorax. Metathorax posteriorly of same width as prothorax. Width of abdomen 0.5 mm.; tube, length 0.18, width at base 0.09, at the tip one-half as wide as at the base. General color, dark brown. Relative lengths of segments of antennæ:

1	2	3	4	5	6	7	8
$\frac{1}{10}$	$\frac{2}{17}$	$\frac{3}{22}$	$\frac{4}{21}$	$\frac{5}{17}$	$\frac{6}{17}$	$\frac{7}{14}$	$\frac{8}{9}$

General color of antennæ very dark brown.

Head broadly rounded in front, the rounding beginning just back of eyes; broadest just behind the eyes, converging slightly to articulation with prothorax. Cheeks with a few small spines. Whole dorsum of head finely transversely striated. Post ocular spines stout and prominent, blunt. Other spines upon head minute. Eyes large, occupying about three-fifths of width of head, very dark purplish, almost black by transmitted light, light yellow by reflected light, finely faceted. Ocelli larger than facets of eyes, with orange pigmentation, well separated, the posterior ones on a line with center of eyes and near their margins, the anterior ocellus is on the tip of the raised and produced front, and is directed forward. Mouth cone about as long as broad, the labrum triangular and sharp at the tip; the labium broadly rounded and overreaching the labrum, reaching nearly across the prosternum. Antennæ inserted below the front, the basal segments separated by about half their width. Color of antennal segments: One, dark brown; two, dark brown, except the tip, which is lighter brown; three, yellow; four and five, yellow, very slightly infusate at the sides near the tips; six, yellow in basal half, infusate in apical half; seven, dark brown, except basal fourth, which is yellowish; eight, dark brown. Segments 4 to 6 each bear near the tip two short transparent sense cones, one on the outer margin and one on the inner. Segment three on the outer side near the tip bears a single sense cone. Segments bear numerous light brown spines.

Prothorax trapezoidal, only about four-sevenths as broad on anterior margin as through coxæ, slightly lighter brown than head. One short spine at each posterior angle and one shorter one on each coxa, a short spine on each anterior angle and two similar ones on anterior margin somewhat nearer the meson than to the angles. All these spines are only very slightly dilated. Posterior marginals and midlaterals wanting. Dorsum faintly transversely striate, and

bearing a few minute spines scattered over the surface. Mesothorax dark brown at the sides, remainder light brown. Mesonotum finely transversely striate, spines minute. Metanotum very finely longitudinally striate. Anterior angles of mesothorax abrupt. Width of mesothorax at anterior margin only very slightly greater than width of metathorax at its juncture with abdomen. The sides of these two segments are slightly convex and areolate. Wings of medium size. Fringes straight and simple. Extreme base of anterior wing yellow, and bearing on anterior margin, basally, three very light-colored spines with dilated tips. Legs of medium length, stout, fore femora somewhat enlarged; fore tarsi unarmed; color dark brown, fore tarsi a lighter brown. A stout, light brown spine at tip of each posterior tibia without. Femora and tibiae transversely striate, and clothed with numerous short, stout, dark brown spines.

Abdomen broad, nearly one-half as wide as long (the specimen is, however, considerably contracted abdominally, which accounts largely for the apparent great width of the abdomen); sides nearly parallel from second to fourth segments, inclusive, tapering gradually thence to the seventh segment; the eighth and ninth converge very abruptly to the base of the tube. Segments overlap for almost half their length. Prominent spines on segments 2 to 8 rather stout, with tips slightly dilated. Spines at tip of ninth segment blunt, those at tip of tenth segment long, slender, light brown, and sharply pointed. The tube at the tip bears six long spines and six shorter ones. Dorsum of first abdominal segment areolate; second segment areolate on anterior portion, transversely striate on remainder. Remaining segments striate at the sides.

Described from one specimen.

Locality, Quincy, Florida. May 21, 1910.

Swept from Spice bush.

A. C. Morgan, collector.

Type.—Cat. No. 15734, U. S. N. M.

TRICHOTRIPS HOODI, new species.

Figs. 58-60.

Female.—Length, 1.6 mm.; length of head, 0.21; width of head, 0.21; meso thorax, width, 0.36. General color, very dark brown.

Head, broadly rounding in front, nearly black, converging behind, widest just behind the eyes; cheeks very nearly straight, slightly roughened, very sparsely and weakly spinose, front slightly raised and produced between the eyes, the anterior ocellus at the extremity of the projection, other ocelli situated well forward and close to margins of the eyes. Eyes of medium size, black, rather finely faceted, not protruding. Postocular spines of medium length, stout, blunt,

black. Dorsum of head behind the eyes transversely striated. Mouth cone broad at the base, triangular, reaching nearly across the prosternum. Antennæ approximate at the base, situated below the front, twice as long as the head; relative lengths of segments as follows:

$\frac{1}{10}$	$\frac{2}{15}$	$\frac{3}{20}$	$\frac{4}{19}$	$\frac{5}{17}$	$\frac{6}{16}$	$\frac{7}{16}$	$\frac{8}{9}$
----------------	----------------	----------------	----------------	----------------	----------------	----------------	---------------

Segment one cylindrical, as wide as long; two barrel-shaped; three to six clavate; three to seven slightly stalked; seven and eight taper evenly from the middle of seven to the slightly rounded tip of eight; tip of eight bears a slender hair which is about as long as the segment. Sense cones located as follows: One weak cone on the outer margin of three near the tip; segment four with three cones similar in size to the one on segment three; five and six with two each, one on the outer margin near the tip and the other on the inner margin near the tip. Spines on antennal segments brown, of medium length. Color of segments: One light yellow; two light yellow with brown shading at the sides; three is light brown with distinct dark brown shading at the sides; four, light brown with dark brown shading on stalk; five to eight increasing in intensity of dark brown toward the tip.

Prothorax a little more than three-fifths as long as the head, its length on the meson only about three-eighths the width through coxæ, in front about three-fourths as broad as through coxæ; trapezoidal in shape, sides slightly rounding; one short, stout, blunt dark-brown spine at each posterior angle; one about two-thirds as stout and long as the preceding, midway on each lateral margin; a small blunt spine on each anterior angle; the projections of the fore coxæ each bear a short blunt spine; posterior marginals are stout and blunt; anterior marginals are of medium size and blunt.

Mesothorax noticeably wider than the prothorax, its front angles abrupt. Mesonotum transverse, finely longitudinally striate. Sides of meso- and metathorax nearly straight, the sides of the latter converging to the articulation with the abdomen. Connective tissue between head and prothorax finely pigmented with red. Wings well developed and reaching about to eighth abdominal segment. The single median vein of the fore wing fades out at the first third of the wing. Three short, stout, blunt, dark brown spines stand near the base of the wing. Both fringes of fore wing well developed, composed of long, slender, dark brown hairs. Hind fringe near the tip double for eight hairs. Wings of even width throughout. (The hind wings are folded on the abdomen and are invisible.) Legs well developed, the fore femora are somewhat thickened and about half as wide as the head. All femora and tibiæ dark brown, except a gray, almost white, area at the tip of the femora within which extends about one-

third the length of the segment. Tarsi lighter brown than other segments of the leg and tipped with black within. Hind and middle tibiae each bear a long gray spine near the tip without.

Abdomen twice as broad as the head, almost as broad at the base as at the middle; sixth and seventh segments tapering very slightly, eighth narrowing suddenly; ninth segment only three-fourths as broad as the head. Tube four-fifths as long as the head and at its middle one-third as broad as long. Dorsal posterior margin of first abdominal segment strongly convex, straight only on each lateral fifth. Each dorsal segment two to eight bears a strong, black, blunt spine on the posterior margin near the side. The lateral spines are blunt and short on segments two to five, thence lengthening and strengthening strongly to segment eight. Six strong, dark brown, blunt spines stand in a circlet upon the posterior edge of segment nine, and six long, slender, sharp-pointed spines stand in a circlet on the tip of the tube. The tube also bears about eight shorter, light brown spines intermixed with the longer ones. The wing retaining bristles are strong and black.

Described from one female taken upon the underside of a leaf of *Paulonia imperialis*.

Locality, Clarksville, Tennessee, June 21, 1911.

A. C. Morgan, collector.

I take pleasure in naming this species *hoodi*, as a compliment to Mr. J. D. Hood, who has done a great deal of valuable work in this order.

Type.—Cat. No. 15735, U.S.N.M.

TRICHOTHRIPS AMPLIPENNIS, new species.

Figs. 64-67.

Female.—Measurements: Length 2.15 mm. (2 to 2.2 mm.)—specimens slightly extended; head, length 0.25 mm., width 0.23; prothorax, length 0.14, width 0.35 (the specimen is slightly mashed and the width of the prothorax may be slightly less than given); mesothorax, width 0.43 mm.; abdomen, width 0.5 mm. General color dark brown. Relative lengths of segments of antennæ:

$\frac{1}{10}$	$\frac{2}{15}$	$\frac{3}{19}$	$\frac{4}{16}$	$\frac{5}{16}$	$\frac{6}{14}$	$\frac{7}{14}$	$\frac{8}{13}$
----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------

Head nearly as broad as long, broadest just behind the eyes, converging behind. The cheeks bear several small spines. Postocular bristles somewhat remote from the eyes, pale yellow, conspicuous and sharp pointed. Eyes large, oval in outline viewed dorsally, very minutely pilose, pale yellow, finely faceted. Ocelli large with purplish pigmentation, posterior ones contiguous to margins of eyes and on a line with their middle. Anterior ocellus situated at the extrem-

ity of the produced front. Ocelli margined inwardly with black crescents. Dorsum finely transversely striated. Mouth cone as broad as long. Labrum sharply pointed, black at the tip. Labium broad at the tip and broadly rounded, slightly overreaching the labrum. Maxillary palpi stout, the first segment very short. Antennæ uniformly dark brown. Sense cones simple, situated as follows: Segment three bears three cones, one on the inner margin, one on the outer margin, and one below, near the tip; segment four bears three cones, which are situated as those on segment three; segments five and six each bear two cones, one on the inner margin near the tip and one on the outer margin near the tip, the outer cone on segment six being only about half as large as the inner. Seven and eight each bear a small cone on the underside near the tip. Segments rather thickly clothed with small gray hairs.

Prothorax transverse, broadest behind, trapezoidal, anterior margin slightly concave in outline, posterior margin convex. Spines present as follows: Posterior angular, posterior marginal, midlateral, anterior marginal, and anterior angular. Posterior angular and posterior marginal alone stout. All spines light yellow and blunt. One small stout spine stands on outer angles of fore coxæ. Mesothorax slopes gradually to the angles, which are abrupt and slightly shouldered. Sides of mesothorax parallel. Metathorax broadest at the middle, at which point it is broader than the mesothorax, converging from the middle to the articulation with the abdomen. Mesonotum transversely striate and bearing only a few small spines. Metanotum reticulate. Wings stout, reaching about to seventh abdominal segment, the apical two-fifths broadened, color light gray, almost white. Scale brown and a small area at base of fore wing brown, and bearing three long, blunt, hyaline spines. Hind wing similar in shape to the fore wing, and similarly colored, bearing two sharp spines in the basal brown area, the proximal one being very small. Fringe on borders of both wings thick, brown and long. Hind fringe on fore wings double, subapically, for about 24 hairs. All legs dark brown, only the tarsi being slightly lighter. Middle and hind legs of medium size, fore legs heavy, the femora three-sevenths as broad as the head. Fore tarsus with a strong sharp tooth which bears two setæ, on its inner side at the base. All legs clothed with a few small spines, and each tibia near the tip bears several conspicuous, blunt, hyaline spines.

Abdomen stout. Dorsum of first segment reticulate, and reduced to a shield-shaped piece which is not more than one-third as broad as segment two. Segments two to eight have a transverse thickening near the anterior margin. Spines on sides of segments few, only one small, transparent, blunt spine noticeable on sides of segments six to eight. Segment nine bears the usual circlet of six spines, which are light yellow, long, and blunt. Ninth segment also bears several

smaller, shorter spines. Tip of tube bears six spines, which are not so conspicuously blunt as the preceding. Tube two-thirds as long as the head, its sides straight; at the tip about three-fifths as broad as at the base. Hairs at the tip very nearly as long as the tube.

Described from six females, 1 type, 5 paratypes.

Locality, Quincy, Florida, May 15, 1910.

On *Hypericum dolabriforme*.

G. A. Runner and A. C. Morgan, collectors.

This species is provisionally placed in *Trichothrips*, since the wings are rather broader apically than is typical of the genus.

Type.—Cat. No. 15736, U.S.N.M.

GASTROTHRIPS Hood.¹

In my collection are a male and female of *Gastrothrips ruficauda* Hood, the type-species of this genus. An examination of the male suggests the following emendation of the generic description: Male with the fore femora considerably thickened, the fore tarsi armed with a stout tooth, a scale at the base of the tube.

GASTROTHRIPS RUFICAUDA Hood.

Male.—Newly discovered. Agrees very closely in coloration with the type, somewhat more slender, and is slightly smaller than the female in my collection. Measurements: Length 1.35 mm.; head, length 0.183, width 0.183; prothorax, length 0.175, width (including coxæ) 0.35; pterothorax, width 0.35; abdomen, width 0.375; tube, length 0.15, width at base 0.075, width at tip 0.033; greatest width of fore femur 0.125; length of antennal segments in microns: 1-36; 2-52; 3-60; 4-52; 5-52; 6-48; 7-40; 8-36. The fore femur is about one and one-half times as broad as that of the female, the fore tarsus is armed with a stout tooth the length of which is about half the width of the fore femur, a conspicuous scale at the base of the tube. The fore angles of the mesothorax are produced laterally into a sharp tooth-like process.

The measurements of the female in my collection are as follows: Length 1.46 mm.; head, length 0.183, width 0.208; prothorax, length 0.142, width (inclusive of coxæ) 0.40; pterothorax, width 0.333; abdomen, width 0.467; tube, length 0.168, width at base 0.080, width at tip 0.40. Length of antennal segments in microns as follows: 1-40; 2-54; 3-64; 4-58; 5-56; 6-56; 7-40; 8-40.

HORISTOTHRIPS, new genus.

Head longer than wide, rectangular viewed from above, front truncate, not produced in front of eyes; cheeks slightly roughened and bearing small spines not on warts; eyes large, finely faceted;

¹ Proc. Ent. Soc. Wash., vol. 14, No. 3, pp. 156.

ocelli present, the anterior one directed forward; antennæ inserted below the eyes, twice as long as the head, eight-segmented, style two-segmented, intermediate segments scarcely elongated; mouth cone reaching past base of prosternum, narrowing sharply just below maxillary palpi, very sharply pointed; maxillary palpi of medium size, the first segment very short, the second segment tipped with two long, slender hairs; labial palpi nearly or quite as long as the maxillary, the first segment being about four times as long as the first segment of the maxillary palpi. Prothorax stout, trapezoidal, slightly longer than the head, through the coxæ more than one and one-half times as broad as long, all of the usual spines present. Mesothorax broadest of thoracic segments, sides of meso- and metathorax nearly straight, converging slightly to juncture with abdomen. Wings of medium size, not constricted in the middle, margins nearly parallel to the apical third whence the hind margin curves forward broadly. Middle and hind legs of medium size and length, fore femora greatly thickened, nearly as broad as the head, fore tarsus armed with a long, stout tooth. Abdomen stout, slightly wider than the mesothorax; tube stout, about twice as long as the preceding segment.

Generic description drawn up from three females, one winged and two wingless.

This genus is apparently closely related to *Cryptothrips*, but differs from it in having the femora of the females greatly enlarged and armed, in having the labial palpi as long as the maxillary palpi, in having the wings not narrowed in their first half, and in having the mouth cone long and sharply pointed.

Type of the genus.—*Horistothrips australiæ*.

HORISTOTHRIPS AUSTRALIÆ, new species.

Figs. 68-71.

Female.—Length of winged form 2.75 mm., length of wingless form 2.41. General color dark brown.

Head, length 0.28 mm., width 0.21; sides almost straight—very slightly convex—and very slightly constricted posteriorly. Entire dorsum finely areolate—very nearly reticulate; cheeks bear a few tiny spines similar in size to those scattered upon the dorsum. Post ocular bristles prominent and with dilated tips. Eyes finely faceted, occupying slightly more than half the width of the head and nearly one-third the length, pale yellow, almost white. Front truncate across the eyes, antennæ inserted below the front which is slightly produced at that point between the basal joints. Ocelli present, posterior pair situated on a line with center of eyes and contiguous to them. Anterior ocellus at extremity of front and directed forward.

Ocelli larger than facets of eyes, clouded with dark purplish pigmentation; margined inwardly with very dark purplish crescents. Mouth cone long and sharply pointed, constricted suddenly just beyond maxillary palpi thence very slender to the tip, in undistended specimens would surpass the posterior margin of prothorax; maxillary palpi of medium size, the first segment very short; labial palpi slender, very nearly as long as the maxillary palpi; first segment of labial palpi fully four times as long as first segment of maxillary palpi; second segment of maxillary palpi tipped with two long yellowish hairs. Color of head dark brown, almost black at the sides. Relative lengths of segments of antennæ as follows:

$\frac{1}{11}$	$\frac{2}{16}$	$\frac{3}{21.5}$	$\frac{4}{22}$	$\frac{5}{20}$	$\frac{6}{17}$	$\frac{7}{15}$	$\frac{8}{8.5}$
----------------	----------------	------------------	----------------	----------------	----------------	----------------	-----------------

Segment one truncated cone-shaped; two urn-shaped; three to six clavate; seven elliptical; seven and eight taper evenly from the middle of seven to the tip of eight which is cone-shaped. Color: One dark brown; two yellowish brown clouded with dark brown on sides near the base; three light yellowish brown clouded with dark brown on the apical third; four light brown at the base shading to dark brown at the tip; five dark brown, the basal half slightly lighter; six, seven, and eight dark brown. Spines on segments pale and inconspicuous. Sense cones located as follows: One on inner and one on outer sides on segments three to six.

Prothorax slightly longer than the head; width anteriorly five-sixths the length, width through coxæ one and two-thirds the length. All conspicuous spines on prothorax knobbed, arranged as follows: One at each hind angle, one on the projection of the coxæ, one mid-lateral, one on each side on posterior margin halfway between spine at hind angle and the meson, four spines on anterior margin arranged in two pairs, the lateral ones at the angles, the other pair standing near the meson, one on each side. Dorsum of prothorax finely areolate, hind margin broadly rounded. Mesothorax very nearly as broad as prothorax through the coxæ, its front angle abrupt—almost a right angle, sides slightly convex. Metathorax with sides gradually converging to the abdomen to which it is broadly joined. Mesonotum strongly transverse, transversely striate, bearing one conspicuous knobbed spine at each lateral angle. Two pairs of very small spines are also found, one spine of each pair stands near the anterior margin at about one-third the distance from the lateral margin to the meson, the spine of the second pair stands caudo-laterad of the spines of the first pair. Metanotal plate large, broader than long, finely areolate—almost reticulate. Legs of moderate length, middle and hind femora scarcely thickened, fore femora greatly enlarged, their

greatest width very nearly equal that of the head. Fore tarsus with a very stout tooth. All femora dark brown, except extreme bases and tips of middle femora and extreme tips of hind femora which are yellowish brown. Hind and middle tibiae dark brown along sides, light brown at tips, infusate along center. Fore tibiae yellowish brown. All tarsi light yellowish brown with a black spot at the tip within. All femora and tibiae clothed with numerous minute spines. In winged specimens the wings are short and broad, reaching only about to the sixth abdominal segment. Wings gray. Three almost transparent stout spines with dilated tips on vestigial basal portion of vein in fore wing. Hind wing gray with a slight median thickening visible for about one-third the length of the wing. Both fringes of both wings thick, slender, and long. Hind fringe of fore wing near tip double for about 17 hairs.

Abdomen broad and heavy, second to seventh segments of about equal widths, eighth and ninth segments tapering suddenly to the tube. Tube about two-thirds as long as the head. Dorsum of first segment and a band across anterior margin of second segment finely areolate. Third segment weakly cross striate on anterior portion. All prominent spines on body pale and with dilated tips, except the two ventral spines at the tip of the ninth segment which are blunt, and the six slender spines at the tip of the tube which are sharp pointed and brown. Spines at tip of tube slightly longer than the tube.

Type slide contains two females, one wingless and one winged, and three pupæ and one larva.

Swan River, Australia, received at the U. S. Department of Agriculture, March 1, 1902.

Collected under dead scales of *Eriococcus* on *Eucalyptus*.

Collector, George Compere.

Type.—Cat. No. 15737, U.S.N.M.

LEPTOTHRIPS ASPERSUS Hinds.

I have in my collection one slide of this species initialed by Moulton—therefore, presumably determined by him—and one slide of *Cryptothrips californicus* Daniel, also initialed by Moulton. A careful comparison of these slides with my slides of *Leptothrips aspersus* Hinds, which have been compared with Hinds' cotypes in the collection of the U. S. National Museum, show no specific differences. Therefore, *Cryptothrips californicus* Daniel becomes a synonym of *Leptothrips aspersus* Hinds. Mr. J. D. Hood¹ has already placed *Cryptothrips californicus* in *Leptothrips*, and has called attention to the identity of *Liothrips meconnelli* Crawford with *Leptothrips aspersus*. The distribution of *L. aspersus* is extended, therefore, to Mexico.

¹ Proc. Biol. Soc. Wash., vol. 25, April 13, 1912, pp. 61-62.

LEPTOTHIRIPS RUSSELLI, new species.

Figs. 72-75.

Female.—Measurements: total body length about 1.9 mm. (specimen slightly distended); head, length 0.24 mm., width 0.17 mm.; prothorax, length 0.14 mm., width through coxæ 0.28 mm.; mesothorax, width at front angles 0.30 mm.; metathorax, width at articulation with mesothorax 0.31 mm.; abdomen, width at second segment 0.30 mm.; tube, length 0.125, width at base 0.06, width at tip four-sevenths of width at base. General color fuscous, shading to brown on body in best cleared specimens. Abdomen with indistinct purplish pigmentation in the last segments. Relative lengths of segments of antennæ:

$\frac{1}{7}$	$\frac{2}{12}$	$\frac{3}{11.5}$	$\frac{4}{13.5}$	$\frac{5}{13}$	$\frac{6}{13}$	$\frac{7}{11.5}$	$\frac{8}{6}$
---------------	----------------	------------------	------------------	----------------	----------------	------------------	---------------

Head, broadest just behind the eyes, converging slightly to articulation with prothorax, sides very nearly straight, very indistinctly roughened, bearing a few minute spines; a hump between the eyes in front extending beyond and above the insertion of the antennæ; the posterior ocelli at the sides and on base of the hump cephalad of the middle of the eyes, the anterior ocellus at the extremity of the hump and directed forward. Dorsum faintly transversely striated. Eyes large, occupying about two-thirds the width of the head, finely faceted; sparsely and minutely pilose, gray. Ocelli much larger than facets of eye, posterior ones contiguous to eyes, gray. Post-ocular spines long, stout, and blunt. Mouth cone broad at the base, reaching slightly past the middle of prosternum. Sides of labrum nearly straight, labrum slightly constricted at the tip; labium broadly rounded at the tip and overreaching the labrum. Color of head, dark brown to fuscous. Antennæ dark brown, segments one and two slightly the darkest, basal half of three somewhat lighter than the remainder of the antennæ. Spines on antennal segments small, sparse and light colored. Sense cones nearly straight, transparent, located near tips of following segments: one on outer surface of three; two on each of segments four to six, one on the outer and one on the inner side, the outer one on segment six only about half as large as the other cones.

Prothorax trapezoidal, sides nearly straight to hind angles, which are abrupt. Spines at hind angles stout, prominent, and blunt; spines at front angles distinct, short, stout, and blunt. Posterior marginals intermediate in size between spines at fore and hind angles, blunt. Midlaterals wanting. Anterior marginals very short, blunt, visible only on lighter specimens. Mesothorax with front margin slightly convex, its front angles abrupt; a notch at each side just caudad of front angle. Mesonotum broad, transverse, transversely striate behind, its spines minute. Metathorax broad, very slightly

constricted at articulation with mesothorax, converging behind to articulation with abdomen. Metanotum longitudinally striate. Wings of medium size, transparent, a brownish tinge at extreme base, constricted in the middle. Fore wing without double fringe on hind margin subapically. Near base of anterior wing, where fore longitudinal vein should be stands three light-brown spines, the first two being stout and blunt, the third or distal one longer, more slender, and sharp pointed. Fringe of both wings rather heavy, stout, brown, and straight. Legs concolorous with body, the femora a little darker than the tibiae and tarsi, of medium length, fore and hind femora slightly thickened, fore coxae projecting strongly and bearing a few very small spines. Fore tarsi with a tiny tooth within. Legs clothed with numerous short spines, a slender spine on each fore tibia above near the tip alone conspicuous.

Abdomen long and slender, tapering gradually from the second segment, the eighth and ninth converging more sharply to the tube. Sides of tube nearly straight. Terminal hairs at tip of tube, slender and pale. Spines at sides of abdomen, slender, pale and not very prominent.

Described from five females; no males found.

Locality, Laurel Canon, California.

Food plant unknown.

H. M. Russell, collector.

I take pleasure in naming this species after Mr. H. M. Russell in recognition of his economic work upon certain species of the order.

Type.—Cat. No. 15738 U.S.N.M.

ZYGOTHRIPS FEMORALIS, new species.

Figs. 76-79.

Female.—Normal length about 1.1 mm. (the second, third, and fourth body segments are distended and the specimen as mounted measures 1.35 mm.). Width of prothorax 0.2 mm., width of mesothorax 0.27. General color of head and thorax dark brown, abdomen lighter brown on first three segments. Considerable red and orange hypodermal pigmentation in thorax and abdomen.

Head about one-ninth longer than broad, diverging very slightly behind the eyes, sides straight, broadest behind; almost straight across the front except for a slight projection between the antennae; back of head transversely striate; post-ocular bristles long, slender, and blunt; cheeks very faintly roughened. Eyes of medium size occupying a little more than four-sevenths the width of the head through them, finely faceted, not pilose, very dark red by transmitted light, light yellowish by reflected light. Ocelli large, situated well forward, the posterior ones in front of center of eyes, anterior one stands upon a prominence of the front; reddish yellow with purplish inner margins. Mouth cone short and blunt reaching a little more than half-way across prosternum, labrum sharply pointed, tipped with black,

the labium broadly rounded. Maxillary palpi of medium size, the first segment very short. Antennæ about one and three-fourths times as long as the head, slightly separated at the base by a slight projection of the head. Relative lengths of segments as follows:

$\frac{1}{5+}$	$\frac{2}{10}$	$\frac{3}{11}$	$\frac{4}{10}$	$\frac{5}{10.5}$	$\frac{6}{11}$	$\frac{7}{10}$	$\frac{8}{8}$
----------------	----------------	----------------	----------------	------------------	----------------	----------------	---------------

Segment one truncated cone-shaped; two urn-shaped; three to five similar in shape. One and two dark brown; four to eight somewhat lighter brown than the first two segments; segment three lightest of all. Spines light colored and inconspicuous. Segments three to six each bear two small curved sense cones near the tip, one on the inner side and one on the outer.

Prothorax three-fourths as long as the head, and across outer angles of the coxæ one and one-half times as wide as the head. Anterior marginal and midlateral spines wanting, those at the angles present, but small, transparent and inconspicuous. Mesothorax about one-seventh broader than the prothorax, its front angles sloping abruptly, it converges posteriorly to its juncture with the metathorax. Mesothorax with a small spine near each lateral angle, also a similar spine on anterior margin on each side halfway from lateral angle to meson. Metanotum weakly longitudinally striate. Metathorax only slightly narrower than mesothorax, converging posteriorly and broadly joined to the abdomen. Wings slender, weak, and transparent, scarcely reaching past seventh abdominal segment; and very slightly narrowed in the middle. Legs rather short and stout, all femora somewhat thickened, the fore femora noticeably so. All femora and tibiæ brown; all tarsi pale yellow with a black spot at the tip within. Tooth upon inner side of fore tarsi reduced to a slight swelling.

Abdomen slightly wider than mesothorax, almost cylindrical to the eighth segment, eighth and ninth segments converging rather abruptly to the tube. Spines upon abdomen rather weak except on last three segments where they are slightly stouter, longer, and more conspicuous. Ninth segment bears a circlet of six long slender spines which are light yellowish, and a few smaller spines. Of the long spines at tip of ninth segment the two most dorsal ones are blunt; tube at the tip also bears six long slender sharp-pointed spines of which the longest are nearly twice the length of the tube; the tube also bears a few smaller spines. A narrow dark line extends across the dorsum of segments three to eight near the anterior margin. Sides of tube nearly straight. Tube at the middle two-fifths as wide as long; nearly three-fifths as long as head.

Described from one specimen taken in sweepings.

Locality, Clarksville, Tennessee, June 20, 1911.

A. C. Morgan, collector.

Type.—Cat. No. 15739, U.S.N.M.

NEW LOCALITY AND FOOD PLANT RECORDS FOR CERTAIN
THYSANOPTERA.

Since the locality records in the writer's collection greatly extend the distribution of certain species, also since new food plants have been recorded for some of the species, it is thought advisable to place this information on record. This information is given below under an alphabetical arrangement of the genera within each family.

Suborder TEREBRANTIA.

Family AEOLOTHRIPIDÆ.

ÆOLOTHRIPS BICOLOR Hinds.

Quincy, Florida, March 17, 1909, *Plantago virginica*, H. F. Wilson.

Quincy, Florida, March 13, 1909, on corn, H. F. Wilson.

Quincy, Florida, March 20, 1909, on onions, H. F. Wilson.

Quincy, Florida, May 14, 1909, on Rutabaga, A. C. Morgan.

Clarksville, Tennessee, April 2, 1910, in sod, A. C. Morgan.

This species was also collected by the writer in May, 1910, at Quincy, Florida, while sweeping oats.

ÆOLOTHRIPS FASCIATUS (Linnaeus).

Flagstaff, Arizona, July 2, 1907, in miscellaneous collection of insects, Schwarz and Barber.

Avalon, Catalina Islands, California, October 29, 1908, in blossoms of wild tobacco, H. O. Marsh.

Family THRIPIDÆ.

ANAPHOTHRIPS STRIATUS Osborn.

Clarksville, Tennessee, April 14, 1910, on rye, A. C. Morgan.

BREGMATOTHRIPS VENUSTUS Hood.

Pearly, Tennessee, July 30, 1912, both short and long winged forms in sweeping grass along roadside, A. C. Morgan.

CHIROTTHRIPS CRASSUS Hinds.

Clarksville, Tennessee, April 9, 1909, on *Allium*, Morgan and Crumb.

CHIROTTHRIPS MANICATUS Haliday.

Quincy, Florida, March 20, 1909, on oats, H. F. Wilson.

Pearly, Tennessee, July 30, 1912, sweeping in grass along road, A. C. Morgan.

I have also in my collection a slide loaned from the collection of the United States Department of Agriculture bearing the following data: NW. Territory, British Columbia, September 12, 1901, on wheat, J. Fletcher.

CTENOTHRIPS BRIDWELLI Franklin.

Clarksville, Tennessee, April and May, 1910, breeding on the under side of the leaves of several species of *Trillium*, Morgan and Crumb.

Clarksville, Tennessee, July 8, 31, 1910, breeding on the under side of leaves of Mandrake, Crumb and Morgan.

EUTHRIPS FUSCUS Hinds.

Quincy, Florida, March 17, 1909, on *Plantago virginica*, H. F. Wilson.

Quincy, Florida, March 3, 1909, on life everlasting, H. F. Wilson.

Quincy, Florida, May 22, 1909, on peanuts, A. C. Morgan.

Quincy, Florida, May 22, 1909, on sorrel, A. C. Morgan.

Quincy, Florida, this species was also taken upon tobacco on all the above dates.

Clarksville, Tennessee, April 9, 1909, on dandelion, A. C. Morgan.

Clarksville, Tennessee, April 12, 1909, on *Cercis canadensis*, S. E. Crumb.

Clarksville, Tennessee, April 28, 1909, on *Quamasia*, S. E. Crumb.

Clarksville, Tennessee, April 23, 1910, on plantain, A. C. Morgan.

Clarksville, Tennessee, January 14, 1911, in stools broom sedge, Runner and Morgan.

Clarksville, Tennessee, January 21, 25, 1911, hibernating in sod, G. A. Runner.

Clarksville, Tennessee, June 16, 1909, on tobacco, S. E. Crumb and A. C. Morgan.

Appomattox, Virginia, April 16, 1909, on *Allium*, A. C. Morgan.

Washington, District of Columbia, March 23, 1910, on plantain, G. A. Runner.

Dallas, Texas, May, 1910, on cotton, Hunter No. 1895.

Robertsdale, Alabama, May 23, 1910, on oats and tobacco, A. C. Morgan.

Durham, North Carolina, August 8, 1910, injuring tobacco, G. A. Runner.

EUTHRIPS OCCIDENTALIS Pergande.

Dade City, Florida, May 12, 1910, on snap beans, Hunter and Morgan.

Manatee, Florida, March, 1911, on mango, H. F. Schultz.

EUTHRIPS TRITICI Fitch.

Dallas, Texas, May, 1910, on cotton, Hunter No. 1895.

I have specimens of this species from many localities and from many food plants. It is so cosmopolitan that I will not attempt to list its localities and food plants further.

EUTHRIPS NERVOSUS Hinds.

Clarksville, Tennessee, July 10, 11, 1912, on cattails in Aphid colonies, Crumb and Morgan.

HELIOTHRIPS FASCIATUS Pergande.

Clarksville, Tennessee, October 10, 1910, on under side of leaves of poplar, A. C. Morgan.

Davis, California, October 13, 1911, injuring cotton in tips of leaves, A. McLachlan.

HELIOTHRIPS FASCIAPENNIS Hinds.

Tlahualilo, Mexico, September 12, 1910, injuring cotton leaves, J. P. Conduit.

Davis, California, October 13, 1910, injuring cotton, A. McLachlan.

Chico, California, September, 1910, injuring cotton, T. H. Kearney.

HELIOTHRIPS HAEMORRHOIDALIS Bouche.

Haifa, Palestine, Jewish Agriculture Experiment Station, July 17, 1912. Injuring blossoms and young leaves of orange. Specimens sent by Aaron Aaronsohn.

HETEROTHRIPS ARISÆMÆ Hood.

Quincy, Florida, March 20, 1909, on honeysuckle, H. F. Wilson.

Quincy, Florida, March 17, 1909, on *Rhododendron ulmiflorum*, H. F. Wilson.

Clarksville, Tennessee, April 8, 1910, on *Arisaemae*, S. E. Crumb.

Appomattox, Virginia, July 21, 1910, on wild grape, G. A. Runner.

LIMOTHRIPS CEREALIMUM Hallday.

Clarksville, Tennessee, April, 1910, on rye, A. C. Morgan.

Quincy, Florida, May, 1910, on oats, A. C. Morgan.

Knoxville, Tennessee, June, 1911, on oats, E. C. Cotton.

PSEUDOTHRIPS INEQUALIS Beach.

Quincy, Florida, May 17, 1910, on *Senecio* sp., A. C. Morgan.

Clarksville, Tennessee, January, 1911, hibernating at base of *Aster*, G. A. Runner.

THRIPS ABDOMINALIS Crawford.

Lawton, Oklahoma, June 28, 1909, on *Rudbeckia*, W. D. Pierce.

Quincy, Florida, March, 1909, from tobacco plant bed, H. F. Wilson.

Quincy, Florida, May 17, 1910, *Senecio* sp., Runner and Morgan.

Appomattox, Virginia, March 16, 1909, on *Allium*, A. C. Morgan.

Key West, Florida, April 23, 1912, miscellaneous collecting, Runner and Morgan.

THRIPS MADRONII Moulton.

Corbin, Kentucky, September 26, 1911, in sweepings, A. C. Morgan.

THRIPS PERPLEXUS Beach.

Clarksville, Tennessee, April 2, 1910, in sod and on cedar, Crumb and Morgan.

Clarksville, Tennessee, August 19, 1910, on *Paspalum* and *Sorghum*, Crumb and Morgan.

Clarksville, Tennessee, October 15, 1910, in stools of broom sedge, A. C. Morgan.

Quincy, Florida, September 8, 1909, on grass, A. C. Morgan.

THRIPS TABACI Lindeman.

I have specimens of this cosmopolitan species from various food plants, from Quincy, Florida, Clarksville, Tennessee, and from Cranmoor, Wisconsin. Haifa, Palestine, Jewish Agriculture Experiment Station, July 16, 1912, on *Sesamum indicum*, specimens sent by Aaron Aaronsohn.

SERICOTHRIPS CINGULATUS Hinds.

Clarksville, Tennessee, June 4, 1910, on broad leaved plantain, A. C. Morgan.

Clarksville, Tennessee, October 15, 1910, hibernating in stools of broom sedge, A. C. Morgan.

Clarksville, Tennessee, January 14, 1911, hibernating in stools of broom sedge, Runner and Morgan.

SERICOTHRIPS VARIABILIS Beach.

Dallas, Texas, May, 1910, on cotton, Hunter No. 1895.

Clarksville, Tennessee, June 6, 1910, sweeping in woods, Crumb and Morgan.

Suborder TUBULIFERA.**Family PHLOEOTHRIPIDÆ.****ACANTHOTHRIPS MAGNAFEMORALIS** Hinds.

Clarksville, Tennessee, April, 1910, miscellaneous collecting, S. E. Crumb.

Clarksville, Tennessee, July, 1912, miscellaneous collecting, A. C. Morgan.

ANTHOTHRIPS NIGER Osborn.

Quincy, Florida, March 17, 1909, *Plantago virginica*, H. F. Wilson.

Quincy, Florida, March 17, 1909, on rye, H. F. Wilson.

Quincy, Florida, May 12, 1909, on corn, A. C. Morgan.

Quincy, Florida, May 14, 1909, on rutabaga, A. C. Morgan.

Quincy, Florida, May 12, 1909, on oats, A. C. Morgan.

Quincy, Florida, May 14, 1909, on tomato, A. C. Morgan.

Quincy, Florida, May 13, 1909, on cocoa grass, A. C. Morgan.

ANTHOTHRIPS VERBASI Osborn.

Clarksville, Tennessee, March 2, 5, 1909, on *Verbascum*, H. F. Wilson.

Clarksville, Tennessee, June 16, 1909, on *Verbascum*, A. C. Morgan.

Quincy, Florida, May 12, 1909, on corn, A. C. Morgan.

Knoxville, Tennessee, May 17, 1912, on *Verbascum*, G. M. Bentley.

CEPHALOTHRIPS YUCCÆ Hinds.

Quincy, Florida, May, 1910, on *Yucca*, A. C. Morgan.

Clarksville, Tennessee, May 6, 1910, on *Yucca*, A. C. Morgan.

CRYPTOTHRIPS RECTANGULARIS Hood.

Bridgeville, Delaware, December 23, 1911, under peach bark, A. C. Morgan.

EURYTHRIPS AMPLIVENTRIS Hinds.

Clarksville, Tennessee, January 12, 1911, hibernating in stools of broom sedge, G. A. Runner.

GASTROTHRIPS RUFICAUDA Hood.

Vienna, Virginia, August 22, 1912, under bark of grape, R. A. Cushman.

IDOLOTHRIPS CONIFERARUM Pergande.

Norfolk, Virginia, June, 1909, on pine, H. F. Wilson.

IDOLOTHRIPS FLAVIPES Hood.

Clarksville, Tennessee, April 16, 1909, from dead leaves, S. E. Crumb

LEPTOTHRIPS ASPERSUS Hinds.

Quincy, Florida, May, 1909, miscellaneous collecting, H. F. Wilson.

Quincy, Florida, May, 1909, on Indian poke, *Magnolia grandiflora*, beans, coffee bean, sweeping in woods, A. C. Morgan.

Dallas, Texas, May, 1910, on cotton, Hunter No. 1895.

Clarksville, Tennessee, April 4, 1909, *Cercis canadensis*, S. E. Crumb.

Clarksville, Tennessee, August 1, 1909, on sycamore, Crumb and Morgan.

Clarksville, Tennessee, August 21, 1909, on grape leaves, Crumb and Morgan.

Clarksville, Tennessee, August 21, 1909, on *Ambrosia*, Parman and Morgan.

Clarksville, Tennessee, August 28, 1909, on ash, S. E. Crumb.

Key West, Florida, April 23, 1912, miscellaneous collecting, Runner and Morgan.

LIOTHRIPS CITRICORNIS Hood.

Clarksville, Tennessee, April 21-26, 1909, emerged from leaves, Crumb and Morgan.

Clarksville, Tennessee, August 21, 1909, on grape, Crumb and Morgan.

Clarksville, Tennessee, July 18, 1910, on hickory leaves, A. C. Morgan.

LIOTHRIPS OCELLATUS Hood.

Vienna, Virginia, May 25, 1911, in galls of *Pemphigus caryæcollis* on black walnut, R. A. Cushman.

PHLOEOTHRIPS PERGANDEI Hinds.

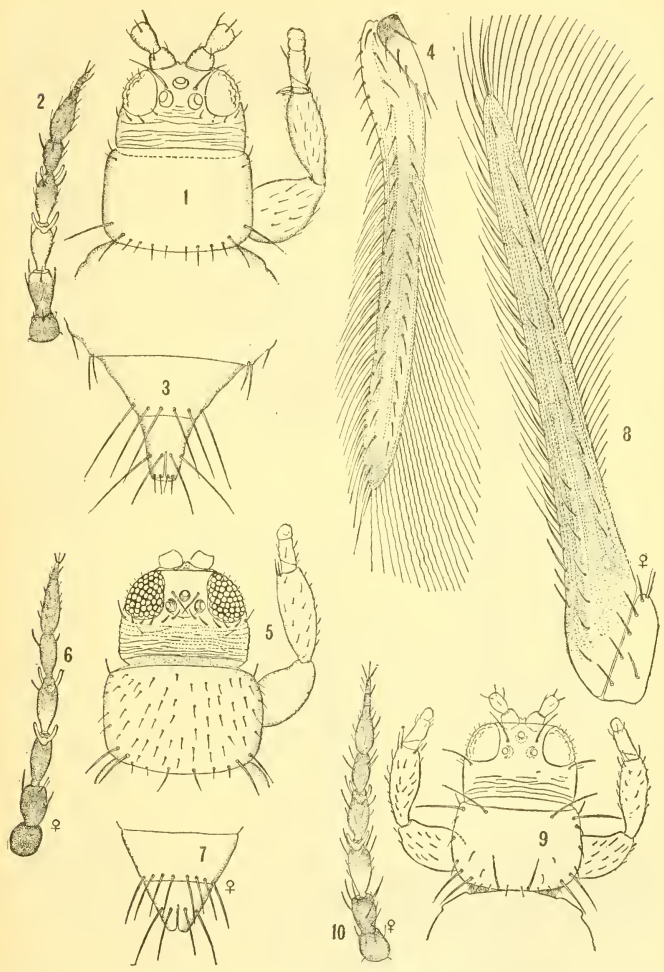
Clarksville, Tennessee, June 6, 1910, sweeping in woods, A. C. Morgan.

PHLOEOTHRIPS RAPTOR Crawford.

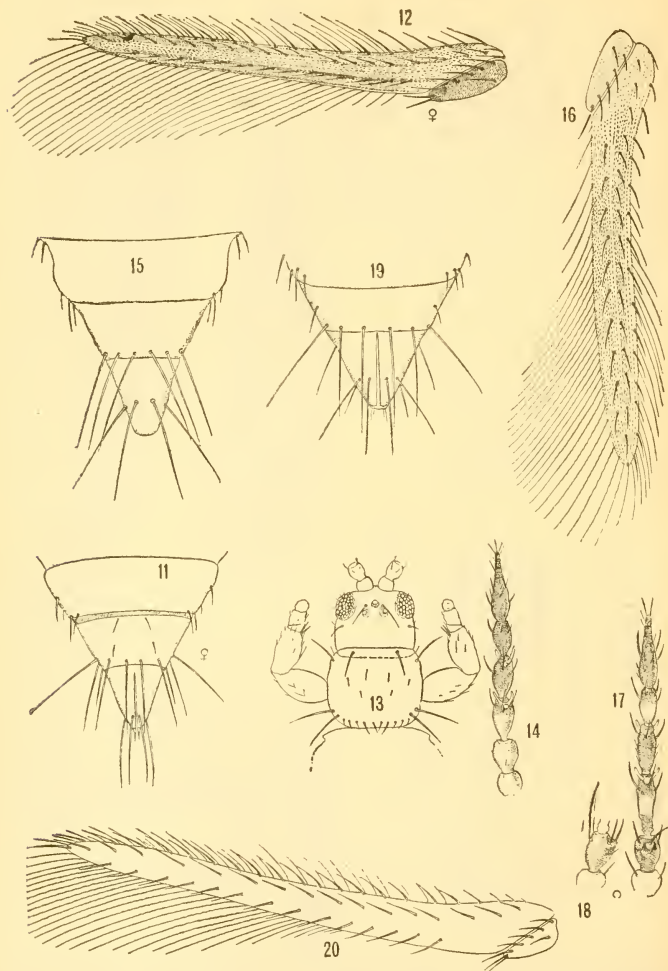
Quincy, Florida, May 14, 1909, miscellaneous collecting, A. C. Morgan.

PHLOEOTHRIPS UZELI Hinds.

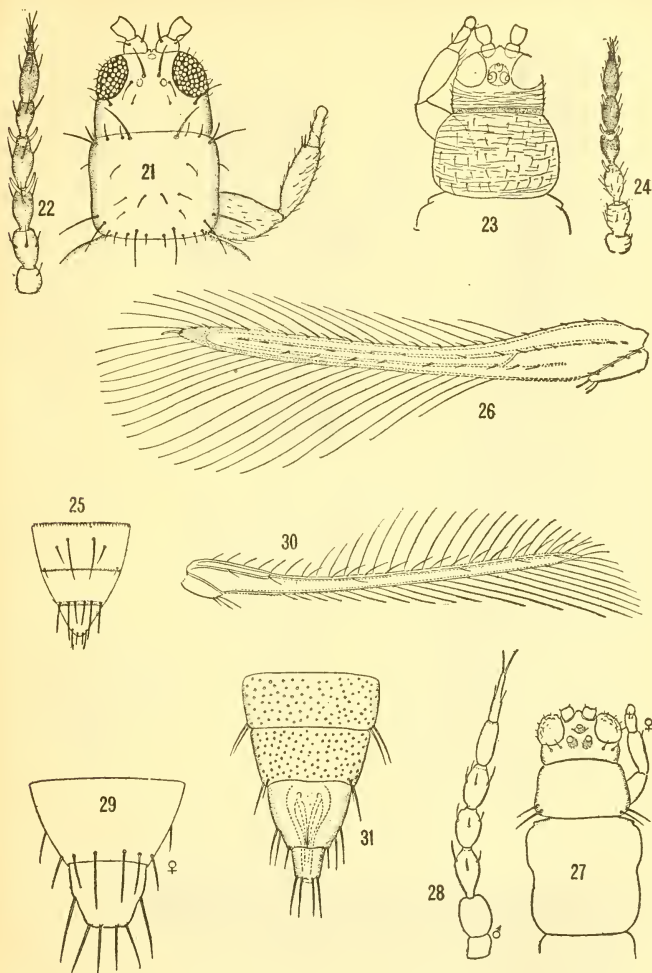
Clarksville, Tennessee, May 10, 1910, on *Yucca*, A. C. Morgan.



FIGS. 1-4.—EUTHRIPS PHALERATA. 1, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 2, RIGHT ANTENNA OF FEMALE, DORSAL VIEW; 3, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 4, LEFT FORE WING OF FEMALE. FIGS. 5-8.—EUTHRIPS HAWAIIENSIS. 5, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 6, LEFT ANTENNA OF FEMALE, DORSAL VIEW; 7, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 8, RIGHT FORE WING OF FEMALE. FIGS. 9-10.—EUTHRIPS FLORIDENSIS. 9, HEAD, PROTHORAX, AND FORE LEGS OF FEMALE, DORSAL VIEW; 10, RIGHT ANTENNA OF FEMALE, DORSAL VIEW.



FIGS. 11-12.—*EUTHRIPS FLORIDENSIS*. 11, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 12, LEFT FORE WING OF FEMALE. FIGS. 13-16.—*EUTHRIPS RUNNERI*. 13, HEAD, PROTHORAX, AND FORE LEGS OF FEMALE, DORSAL VIEW; 14, RIGHT ANTENNA OF FEMALE; 15, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 16, RIGHT FORE WING OF FEMALE. FIGS. 17-18.—*EUTHRIPS TRITICI*, VAR. *BISPINOSUS*. 17, RIGHT ANTENNA OF FEMALE, DORSAL VIEW; 18, SECOND ANTENNA SEGMENT OF FEMALE, LATERAL VIEW. FIGS. 19-20.—*EUTHRIPS GOSSYPH*. 19, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 20, LEFT FORE WING OF FEMALE.



FIGS. 21-22.—*EUTHRIPS GOSSYPHII*. 21, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 22, LEFT ANTENNA OF FEMALE, DORSAL VIEW. FIGS. 23-26.—*ANAPHOTHRIPS ARIZONENSIS*. 23, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 24, LEFT ANTENNA OF FEMALE, DORSAL VIEW; 25, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 26, LEFT FORE WING OF FEMALE. FIGS. 27-30.—*MICROTHRIPS PIERCEI*. 27, HEAD, THORAX, AND FORE LEG OF FEMALE, DORSAL VIEW. 28, RIGHT ANTENNA OF FEMALE, DORSAL VIEW; 29, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 30, RIGHT FORE WING OF FEMALE. FIG. 31.—*ECHINOTHRIPS AMERICANUS*. SEVENTH TO TENTH SEGMENTS OF ABDOMEN OF MALE, VENTRAL VIEW.

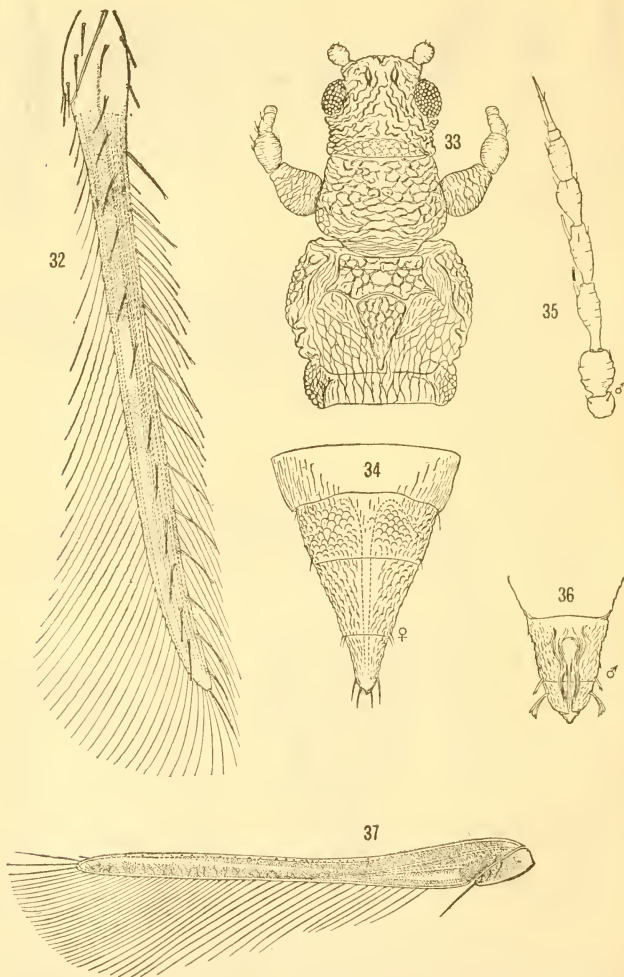
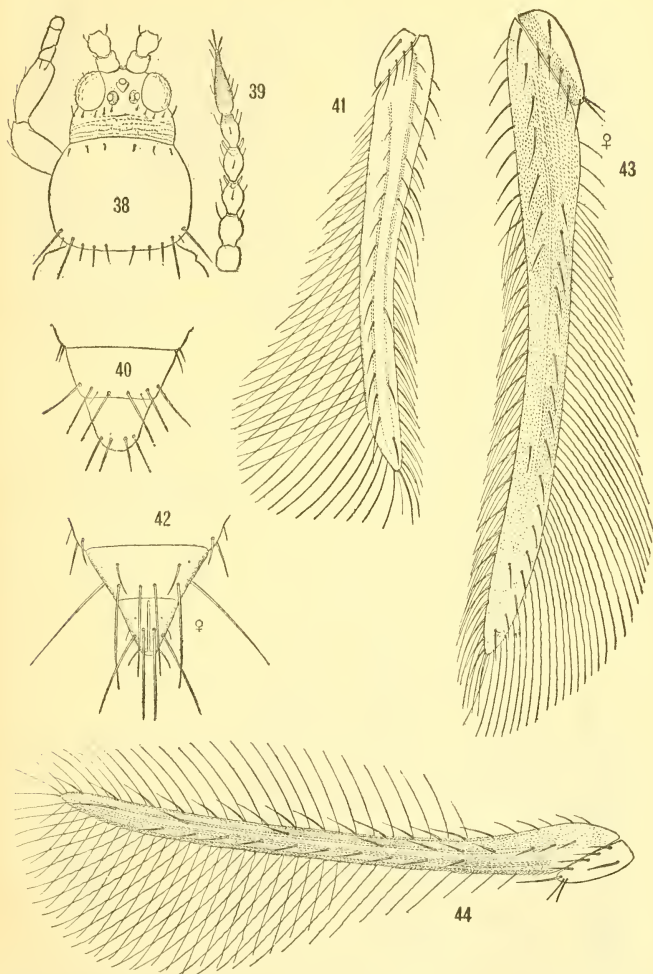
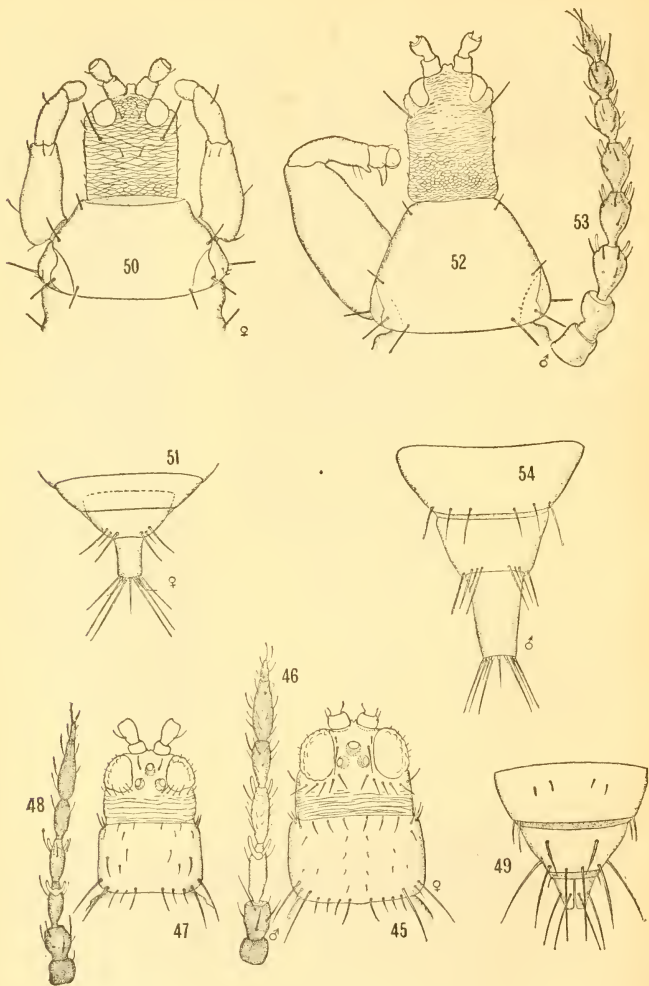


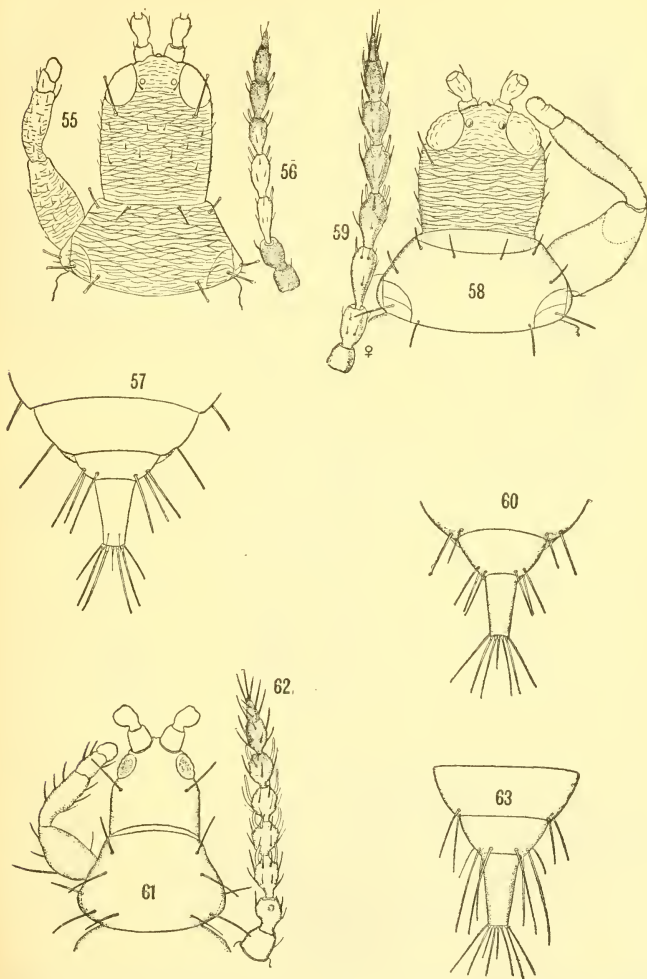
FIG. 32.—ECHINOTHRIPS AMERICANUS. RIGHT FORE WING OF FEMALE. FIGS. 33-37.—RHIPIPHOROTHRIPS PUICELLUS. 33, HEAD, THORAX, AND FORE LEGS OF FEMALE, DORSAL VIEW; 34, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 35, LEFT ANTENNA OF MALE, DORSAL VIEW; 36, TIP OF ABDOMEN OF MALE, VENTRAL VIEW; 37, LEFT FORE WING OF FEMALE.



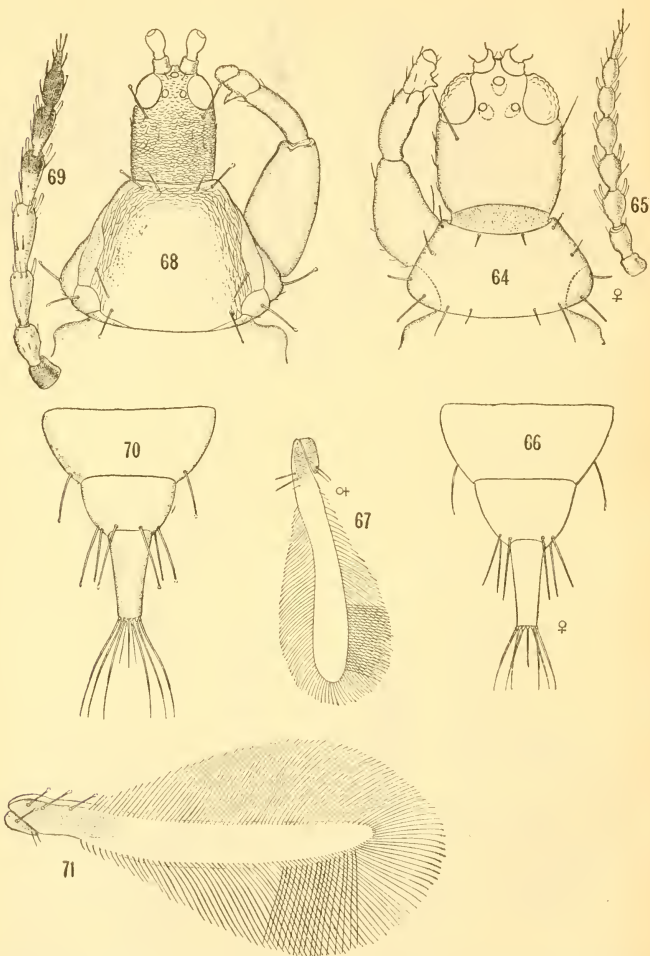
FIGS. 38-41.—*THRIPS QUINCIENSIS*. 38. HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 39, RIGHT ANTENNA OF FEMALE, DORSAL VIEW; 40, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 41, RIGHT FORE WING OF FEMALE. FIGS. 42-43.—*THRIPS SPINOSUS*. 42, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 43, LEFT FORE WING OF FEMALE. FIG. 44.—*THRIPS HELIANTHI*. LEFT FORE WING OF FEMALE.



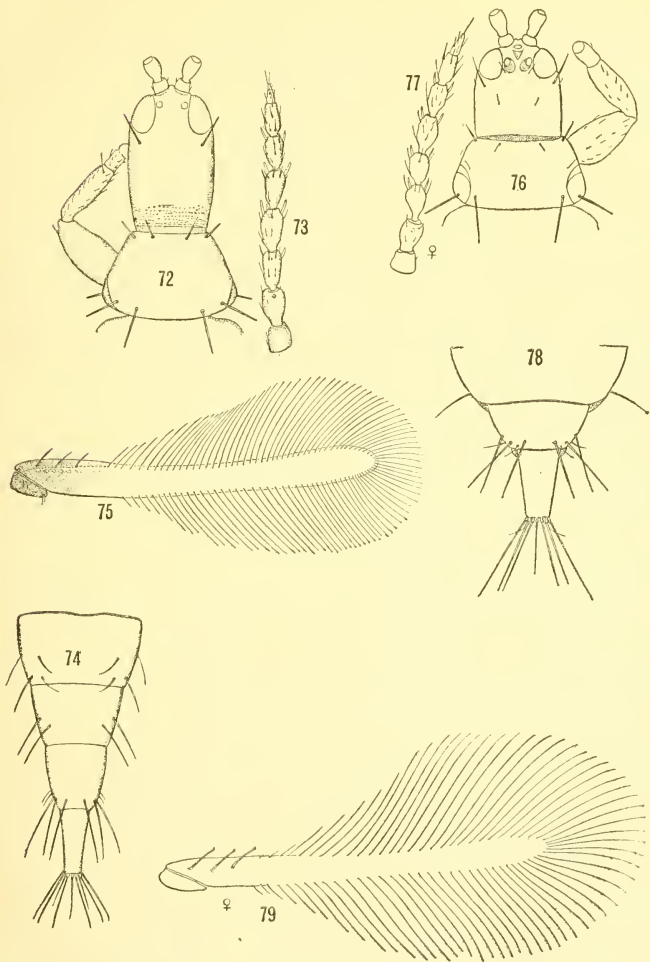
FIGS. 45-46.—*THRIPS SPINOSUS*. 45, HEAD AND PROTHORAX OF FEMALE, DORSAL VIEW; 46, LEFT ANTENNA OF MALE, DORSAL VIEW. FIGS. 47-49.—*THRIPS HELIANTHI*. 47, HEAD AND PROTHORAX OF FEMALE, DORSAL VIEW; 48, LEFT ANTENNA OF FEMALE, DORSAL VIEW; 49, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW. FIGS. 50-54.—*TRICHTHIPS FLAVICAUDA*. 50, HEAD, PROTHORAX, AND FORE LEGS OF FEMALE, DORSAL VIEW; 51, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 52, HEAD, PROTHORAX, AND FORE LEG OF MALE, DORSAL VIEW; 53, LEFT ANTENNA OF MALE, DORSAL VIEW; 54, TIP OF ABDOMEN OF MALE, DORSAL VIEW.



FIGS. 55-57.—*TRICHTHIPS FUSCUS*. 55, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 56, RIGHT ANTENNA OF FEMALE, DORSAL VIEW; 57, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW. FIGS. 58-60.—*TRICHTHIPS HOODI*. 58, HEAD, PROTHORAX AND FORE LEG OF FEMALE, DORSAL VIEW; 59, LEFT ANTENNA OF FEMALE, DORSAL VIEW; 60, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW. FIGS. 61-63.—*EURYTHIPS HINDSL.* 61, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 62, LEFT ANTENNA OF FEMALE, DORSAL VIEW; 63, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW.



FIGS. 64-67.—*TRICHTHOTHIPS AMPLIPENNIS*. 64, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 65, RIGHT ANTENNA OF FEMALE, DORSAL VIEW; 66, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 67, LEFT FORE WING OF FEMALE. FIGS. 68-71.—*HORISTOTHIPS AUSTRALIS*. 68, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 69, RIGHT ANTENNA OF FEMALE, DORSAL VIEW; 70, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 71, RIGHT FORE WING OF FEMALE.



FIGS. 72-75.—*LEPTOTHRIPS RUSSELLI*. 72, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 73, RIGHT ANTENNA OF FEMALE, DORSAL VIEW; 74, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 75, RIGHT FORE WING OF FEMALE. FIGS. 76-79.—*ZYGOTHRIPS FEMORALIS*. 76, HEAD, PROTHORAX, AND FORE LEG OF FEMALE, DORSAL VIEW; 77, RIGHT ANTENNA OF FEMALE, DORSAL VIEW; 78, TIP OF ABDOMEN OF FEMALE, DORSAL VIEW; 79, RIGHT FORE WING OF FEMALE.