REVIEW OF THE NEOTROPICAL GENUS *HYALOCHLORIA*, WITH DESCRIPTIONS OF TEN NEW SPECIES (HEMIPTERA: MIRIDAE)

BY

Thomas J. Henry

From the Transactions of the American Entomological Society
Volume 104: 69-90

Issued May 16, 1978 1455

REVIEW OF THE NEOTROPICAL GENUS *HYALOCHLORIA*, WITH DESCRIPTIONS OF TEN NEW SPECIES (HEMIPTERA: MIRIDAE)

By Thomas J. Henry

Bureau of Plant Industry
Pennsylvania Department of Agriculture
Harrisburg, Pennsylvania 17120

The remarkably developed male antennae distinguish the genus *Hyalochloria* from other genera of Orthotylini. This character, however, was unknown when Reuter (1907) erected the genus and described *H. caviceps* and *H. unicolor* from females taken in Jamaica. Males were not known until Hsiao (1945) described *H. denticornis* from Peru and concluded that the form of the male antennae was peculiar to the genus. Based on this conclusion, he transferred *bella,* described in *Hyalochloria* by Van Duzee (1916), to *Saileria* Hsiao 1945. Carvalho (1953) also recognized the male antennae as good generic characters and transferred his *H. almeida* 1946 to *Saileria*. Carvalho (1952) designated *caviceps* as the type of the genus and included *Hyalochloria* in his key to the world genera (Carvalho 1955) and listed *caviceps, denticornis,* and *unicolor* in his *Catalogue of the Miridae of the World* (Carvalho 1958).

In this paper I describe the males of *caviceps* and *unicolor* and 10 new species and give a key to the genus. Adults of 8 species, male antennae of 12 species and male claspers of 7 species are illustrated.

The following abbreviations are for institutions cited in this paper:

AMNH	American Museum of Natural History, New York, New York
CAS	California Academy of Sciences, Berkeley, California
MN	Museu Nacional, Quinta Da Boa Vista, Rio de Janeiro, Brazil
NMNH	National Museum of Natural History, Washington, D.C.
PSU	Pennsylvania State University, University Park, Pennsylvania
TAM	Texas A&M University, College Station, Texas
UPR	University of Puerto Rico, Mayaguez, Puerto Rico

HYALOCHLORIA Reuter 1907:18

Type-species: Hyalochloria caviceps, Reuter 1907:20.

Small (length 2.30-3.20 mm, width 1.00-1.50 mm), delicate, hyaline species; head of male truncate on front, not protruding beyond eyes, posterior margin of head narrower than apex of pronotum, vertex broadly and deeply concave and carinate along posterior margin, eyes sparsely set with microsetae and dorsal margins often with pilose setae; antennae with simple, pilose, stout or hooked setae and armed with spines or variously shaped protuberances; rostrum reaching from mesocoxae to 2nd abdominal segment; pronotum trapezoidal, apex half width of base, calli distinct and often separated from disk by a shallow impressed line, basal margin sinuate, scutellum often convex; hemelytra hyaline to translucent, slightly arcuate, costal vein forming distinct embolium, color testaceous to translucent green, often marked with fuscous; pubescence simple, sometimes pilose; membrane transparent to fumate; large areole coriaceous or finely punctate; small areole absent or strongly reduced; legs slender, tibial spines absent or limited to a few short basal spines on hind tibiae. Females very similar to males, but broader, with simple antennae, head slightly produced in front of eyes, vertex less concave, and eyes lacking pilose setae.

The male claspers are quite similar but do disclose specific differences. The left clasper is slender, usually bent at the apex and bears pilose setae. The right clasper shows more variation and is usually shorter; it may be slender and bent, short with a truncate apex or rather broad in the middle and narrowed at the apex and does not possess setae. However, because of their small size, species are more difficult to separate using genitalia than by using male antennae or other external characters. As more specimens become available, detailed work is needed to study genital variation.

KEY TO SPECIES OF HYALOCHLORIA

1. Form broadly arcuate; width of hemelytra greater than length of antennal segments 2-4 combined and greater than half length of dorsum .... *arcuata* n. sp.
   Form not as broad; width of hemelytra much less than length of antennal segments 2-4 combined and less than half length of dorsum ..... 2.
2. Color uniform, without distinct fuscous markings on dorsum ..... 3.
   Color not uniform, distinct fuscous markings on pronotum, scutellum, or clavus ..... 9.
3. Second antennal segment without distinct dorsal spine; color distinctly greenish ..... *caviceps* Reuter
   Second antennal segment with distinct dorsal spine; color testaceous ..... 4.

4. Only second antennal segment with spine ..... 5.
   Both first and second antennal segments with spines or projections ..... 6.
5. Vertex with a short pubescent lateral tubercle; pronotum uniformly testaceous; spine on second antennal segment broad at base and curved at apex (Fig. 14) ..... *schuhi* n. sp.
   Vertex without lateral tubercles; basal angles of pronotum narrowly margined with fuscous; spine on second antennal segment short and slender (Fig. 19) ..... *schaffneri* n. sp.
6. Second antennal segment with two dorsal spines; vertex with a distinct pubescent tubercle on either side (Fig. 21) ..... *tuberculata* n. sp.
   Second antennal segment with only one dorsal spine; vertex without pubescent tubercles ..... 7.
7. First antennal segment without lateral projection ..... *colombiana* n. sp.
   First antennal segment with lateral projection ..... 8.
8. Lateral projection curved upwards (Fig. 8); length of setae arising from eyes equal to or greater than length of first antennal segment; calli lightly marked with brown; area beyond dorsal spine fuscous ..... *fuscicornis* n. sp.
   Lateral projection straight and stout (Fig. 16); length of setae arising from eyes less than length of first antennal segment; calli unicolorous with dorsum; area beyond dorsal spine pale ..... *unicolor* Reuter
9. First and second antennal segments with distinct spines ..... 10.
   Only second antennal segments with spines ..... 11.
10. Second antennal segment with recumbent setae and pale beyond spine ..... *denticornis* Hsiao
    Second antennal segment with long, erect setae and fuscous beyond spine ..... *brasiliana* n. sp.
11. Head and pronotum fuscous to black; rostrum reaching beyond metacoxae ..... *scutellata* n. sp.
    Head and pronotum mostly testaceous; rostrum not reaching beyond metacoxae ..... 12.
12. Length 3.20; second antennal segment fuscous, clothed with short recumbent setae, spine straight ..... *mexicana* n. sp.
    Length 2.36 mm; second antennal segment testaceous, narrowly fuscous at base, clothed with long, erect setae, spine bent at apex ..... *longicornis* n. sp.

Hyalochloria arcuata new species (Fig. 1)

Holotype Female: length 2.72 mm; width 1.50 mm. *Dorsum*: uniformly testaceous. *Head*: width 0.62 mm; vertex 0.34 mm, frons protruding beyond eyes. *Rostrum*: length 0.88 mm, reaching posterior margin of metacoxae. *Antennae*: testaceous, slender; I, length 0.22 mm; II, 0.72 mm, gradually enlarged towards apex; III, 0.46 mm; IV, 0.36 mm. *Pronotum*: length 0.36 mm; width at base 1.00 mm; calli well defined, separated from disk by a deep impressed line; basal margin slightly sinuate; clothed with short, simple golden pubescence, intermixed with a few

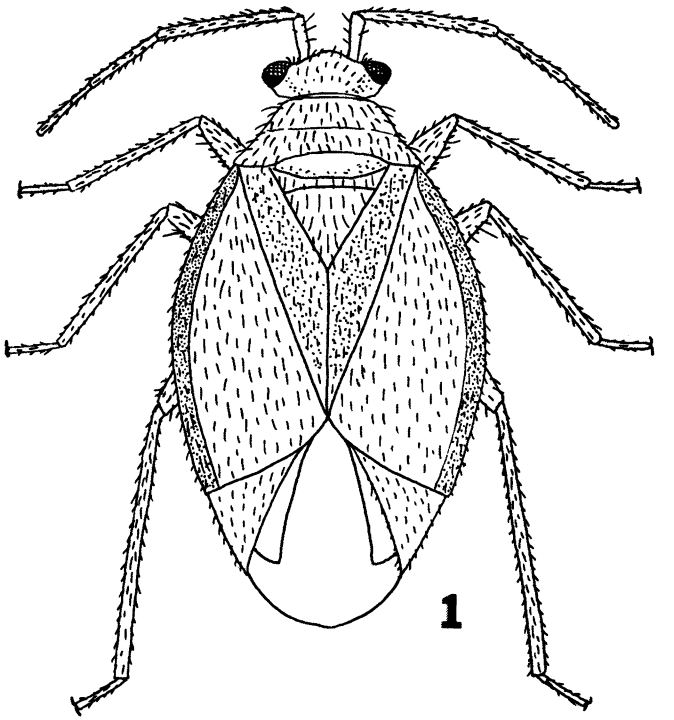


FIG. 1: adult female *H. arcuata*.

longer erect setae; scutellum feebly convex. *Hemelytra*: translucent, thickly clothed with short, recumbent golden setae, intermixed with more pilose setae (similar to that of *denticornis*); embolium wide, more opaque than rest of hemelytra. *Membrane*: nearly transparent, veins indistinct. *Venter*: testaceous. *Legs*: testaceous, tibial spines absent.

HOLOTYPE: ♀, Pern ambucum Penedo, Brazil, 1948, Schubart coll. (MN).

Remarks: This species is easily separated from other *Hyalochloria* by the extremely broad form, uniformly testaceous color and the thickly set setae on the dorsum. Though I have only a female of *arcuata*, there is little doubt that this species is distinct. Females of all species of *Hyalochloria* are broader than males; those of *arcuata*, however, are proportionately wider. Eventual

examination of the male antennae undoubtedly will provide other distinguishing characters.

Hyalochloria brasiliana new species (Figs. 21, 29)

Holotype Male: length 3.20 mm; width 1.24 mm. *Dorsum*: pale testaceous and lightly marked with fuscous, clothed with erect golden setae. *Head*: width 0.64 mm; vertex 0.36 mm, testaceous, narrowly fuscous along posterior margin; clothed with pilose setae at posterior angles. *Rostrum*: length 1.00 mm, pale brownish at apex, reaching posterior coxae. *Antennae*: I, length 0.40 mm, pale inner angles, lightly tinted with brown, apex with a short slender spine, sparsely clothed with pale setae and intermixed with several longer setae. II, 1.02 mm, fuscous, paler before dorsal spine; weakly emarginate at base, slender dorsal spine 0.20 mm from base; clothed with short recumbent setae and several rows of erect slightly hooked setae beyond spine (Fig. 21). III, 0.52 mm, fuscous; IV, broken. *Pronotum*: length 0.40 mm, width at base 0.96 mm, pale, posterior half of calli and basal angles fuscous; calli separated from disk by a shallow impressed line that does not reach lateral margins; mesoscutum and scutellum fuscous. *Hemelytra*: testaceous, translucent, inner margin narrowly fuscous; sparsely set with erect golden setae. *Membrane*: clear, inner margin narrowly fuscous. *Venter*: testaceous, sternum slightly browner. *Legs*: testaceous, hind tibiae becoming fuscous on apical half, spines evident. *Genital Claspers*: (Fig. 29).

HOLOTYPE: ♂, Bello Horizonte, M. Geraes, Brazil, 1-6 Nov. '19, Cornell University Exped., Cornell U. Lot 569, Sub. 64 (CU).

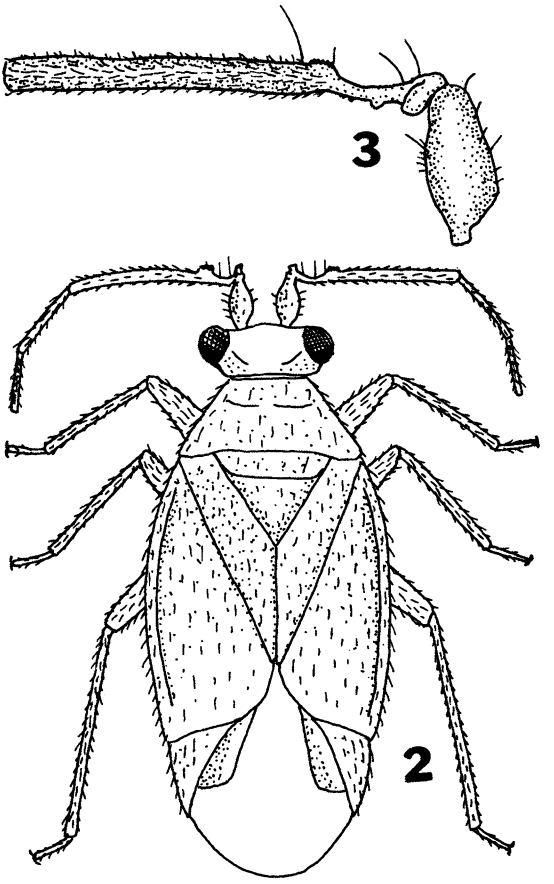
Remarks: *H. brasiliana* is very similar to *colombiana* and *denticornis* but may be separated by the fuscous second antennal segment bearing erect hooked setae, the fuscous mesoscutum and scutellum and the male genital claspers.

Hyalochloria caviceps Reuter (Figs. 2-3, 24)

(Type of Genus)

Reuter 1907:20; Van Duzee 1907:20, 1916:218, 390; Blatchley 1926:849; Hsiao 1945:24; Carvalho 1952:77, 1958:76.

Male: length 2.76 mm; width 1.20 mm. *Dorsum*: generally pale green; clothed with simple light-colored pubescence. *Head*: width 0.64 mm; vertex 0.32 mm; eyes sparsely clothed with very short bristle-like setae. *Rostrum*: length 0.80 mm, reaching posterior margin of mesocoxae. Antennae: I, length 0.32 mm, barrel-shaped, tapering towards apex (Fig. 3). II, 0.82 mm; emarginate or depressed at base (0.16 mm from base), spines replaced by a group of short stout setae, a flap-like lobe arising from base, a small node in middle of emargination; clothed with recumbent pale setae and intermixed with a few short erect setae (Fig. 3). III, 0.40 mm, becoming fuscous. IV, 0.34 mm, fuscous. *Pronotum*: length 0.40 mm, width at



FIGS. 2-3: Fig. 2, adult male *H. caviceps*; Fig. 3, 1st and 2nd antennal segments.

base 0.86; shiny and tinged with green; clothed with short, recumbent pale setae; collar distinct; calli separated from disk by an impressed line not reaching lateral margins; basal margin slightly sinuate. *Hemelytra*: hyaline, tinged with green, especially along veins and wing margins; clothed with simple, erect pale setae; cuneus clear, tinged with green along interior margin. *Membrane*: clear, veins clear, large areole green and coriaceous. *Venter*: yellowish to testaceous, lightly tinged with green. *Legs*: yellowish to testaceous, femora tinged with green, hind tibial spines short (ca 8 or 9) but evident at base. *Genital Claspers*: (Fig. 24).

Specimens Examined: 1 ♂, Kingston, Jamaica, Sept. 9, 1917, Harold Morrison, (NMNH); 2 ♂ ♂, Lake Placid, Fla., II-4-52, III-10-52, J. Needham, # 6 (NMNH); 1

♂, Havana, Cuba, 3-1952, N. L. H. Krauss on *Lantana* (NMNH); 1 ♂, Kingston, Jamaica, 12-1955, N. L. H. Krauss on *Lantana camara* (NMNH); 1 ♂, Archbold Biol. Sta., Highlands Co., Fla., 4-7-64, S. W. Frost (NMNH); 1 ♂, Pt. Antonio, Jamaica, A. E. Wight (AMNH); 1 ♂, Bisc. Bay, Fla., Mrs. A. T. Slosson, Ar 26226 (head and pronotum missing) (AMNH); 5 ♂♂, 5 miles north Haina, San Cristobal Prov., Republica Dominicana, August 14, 1967, J. C. Schaffner (MN, TAM); 10 ♂♂, San Cristobal, San Cristobal Prov., Republica Dominicana, Aug. 19, 1967, J. C. Schaffner (TAM); 2 ♂♂, Archbold Biol. Sta., Highlands Co., Fla., 11-20-71, S. W. Frost (PSU).

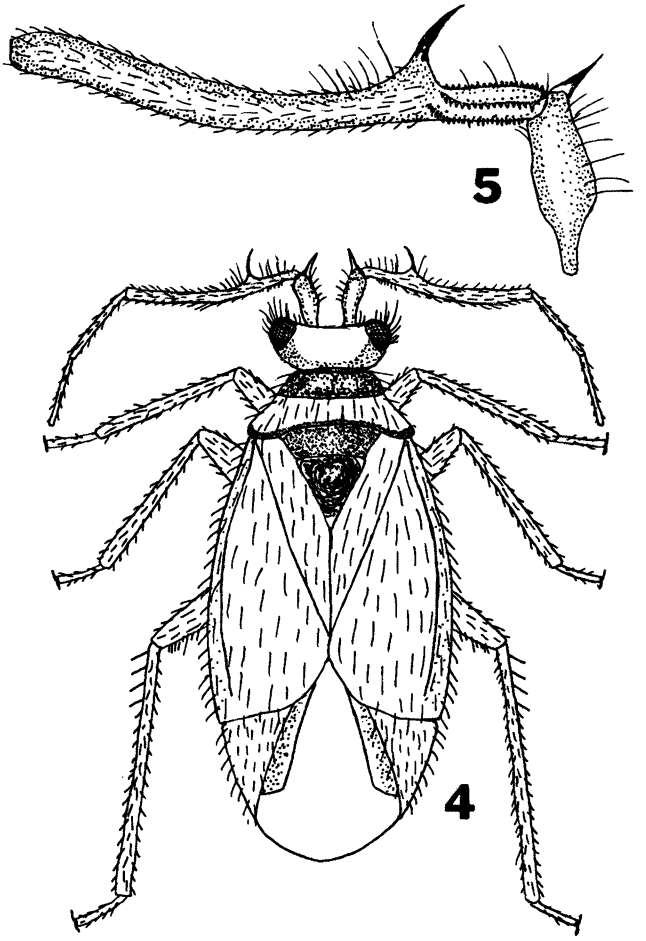
Remarks: This species may be separated by the male antennae, the hyaline hemelytra and the distinct greenish tinge on the dorsum. Van Duzee (1907) noted that *caviceps* was not uncommon at Mandeville, Balaclava, Montego Bay and Richmond, Jamaica.

Hyalochloria colombiana new species (Figs. 17, 26)

Holotype Male: length 3.08 mm, width 1.12 mm. *Dorsum*: translucent testaceous, clothed with short erect and semierect golden pubescence. *Head*: width 0.60 mm, setae on eyes short, no greater than diam of 1st antennal segment; vertex 0.36 mm, lightly infuscated along posterior margin of carina. *Rostrum:* testaceous (imbedded in glue). *Antennae*: (right antenna missing), I, length 0.34 mm, slender, widest on basal third, brownish, a short slender spine at apex that is much smaller than spine on second antennal segment; II, 1.12 mm, fuscous, slightly paler at base, a small bulbous area at base scarcely larger than diam of segment, basal area weakly emarginate to dorsal spine (0.22 mm from base), dorsal spine made of 3 or more fused setae, segment clothed with long, erect, slightly hooked setae, some as long as spine, basal area with a few fuscous microsetae (Fig. 17); III and IV broken. *Pronotum*: length 0.40 mm, width at base 0.92 mm; testaceous, lightly infuscated on calli and collar; disk separated from calli by a broad impressed line not quite reaching lateral margins; clothed with suberect golden setae. *Hemelytra*: testaceous, sparsely set with erect and suberect golden setae, inner margin of clavus narrowly fuscous. *Membrane*: transparent, fuscous along inner margin, areole punctate and finely pubescent on outer half. *Venter* and *Legs*: testaceous, hind tibiae with 3 or 4 distinct basal spines, hind tibiae becoming fuscous on apical third. *Genital Claspers*: (Fig. 26).

Allotype Female: length 3.04 mm, width 1.26 mm. *Head*: width 1.16 mm. *Rostrum*: imbedded in glue. *Antennae*: I, 0.30 mm, II, III, and IV imbedded in glue. *Pronotum*: length 0.40 mm, width at base 1.00 mm. Very similar to male in color, markings and pubescence.

HOLOTYPE: ♂, Colombia — El Triunfo, Cund. Dec. 11, 1965, J. A. Ramos, collector (NMNH Type No. 73945). *Allotype*: ♀, same data as holotype (UPR).



FIGS. 4-5: Fig. 4, adult male *H. denticornis*; Fig. 5, 1st and 2nd antennal segments.

Remarks: *H. colombiana* closely resembles *brasiliana* and *denticornis* but may be distinguished by the fuscous second antennal segment bearing long, erect setae, and the pale mesoscutum and scutellum.

Hyalochloria denticornis Hsiao (Figs. 4-5, 23)

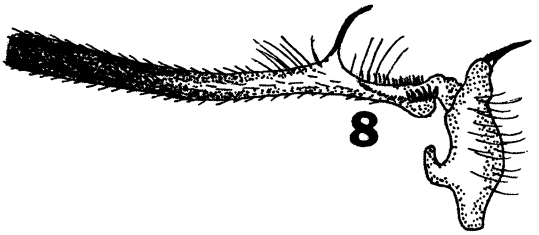
Hsiao 1945:24; Carvalho 1958:76; Beingolea 1959:51, 1960:1.

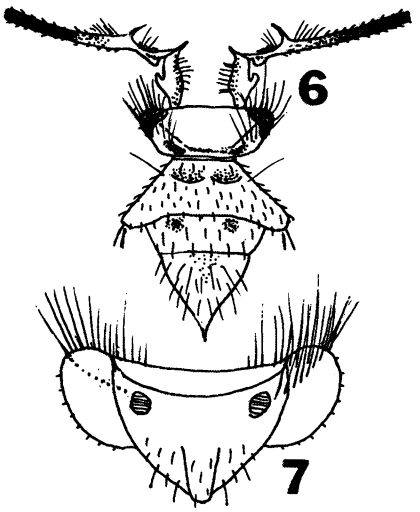
H. denticornis most closely resembles *fuscicornis* and *unicolor,* but may be separated by the fuscous markings on the calli, mesoscutum and scutellum and the absence of a lateral projection on the 1st antennal segment. The female is similar to the male, but differs in the slightly broader form, lack of pilose setae on the dorsal margin of eyes and the simple antennal segments. Beingolea (1959, 1960) investigated the life history of *denticornis* and found it to be an important predator of the lesser cotton leaf worm, *Anomis texana* (summer prey) and the cotton aphid, *Aphis gossypii* (winter prey). He found *denticornis* breeding on cotton and *Sida paniculata* and noted adults were often taken on beans, corn, and potatoes.

Specimens Examined: 1♂, Esquima, Peru, VII-1938, Cozz; 1 ♂, (Paratype USNM No. 51196), Lima, Peru, 11-43, Will-Berzerra, leaves of cotton and beans infest. with *Empoasca,* Lot No. 43-10866; 1 ♂, 5 ♀ ♀, Cenete, Peru, Feb. 10, 1941, E. J. Hambleton, on cotton (NMNH); 2 ♂, Lima, Peru, 20-5-64, Raven coll., SNA 256-64 (MN); 1 ♂, 1 ♀, Huaura, Peru, 2-6-64, Raven coll. (NMNH); 1 ♂, Pucala, 6-3-67, C. Korytkowski (MN).

Hyalochloria fuscicornis new species (Figs. 6-8)

Holotype Male: length 3.00 mm; width (wings spread, not measured). *Dorsum:* testaceous with a few fuscous markings. *Head:* width 0.64 mm, vertex 0.42 mm; marked with fuscous behind vertex; a row of long pilose setae (some longer (0.32 mm) than length of 1st antennal segment) beginning between antennal base and eye and extending across dorsal margin of eye to lateral margin of vertex (Fig. 7). *Rostrum:* length 0.94 mm; reaching posterior margin of metacoxae. *Antennae:* I, length 0.30 mm (excluding spine); thickened, with an upturned lateral projection present at middle; a distinct apical spine bending inwards; thickly clothed with rather long setae along inner margin (Fig. 8). II, 0.84 mm, globose at base, depressed dorsally from base to dorsal spine (spine 0.22 mm from base); clothed with short recumbent setae, short stout setae present along margins of depressed area, long fuscous setae present on either side of spine; apical two thirds of segment fuscous to black (Fig. 8). III, 0.48 mm, black. IV, broken. *Pronotum:* length 0.36 mm, width at base 0.84 mm; calli distinct, lightly marked with fuscous; an impressed line separating calli from disk; distinctly sinuate along basal margin; clothed with short, recumbent golden setae. *Hemelytra:* testaceous and translucent, inner margin of clavus fuscous; clothed with short golden pubescence, intermixed with long erect setae; mesoscutum with 2 brownish spots on either side of median





FIGS. 6-8: Fig. 6, adult male *H. fuscicornis;* Fig. 7, anterior view of head; Fig. 8, 1st and 2nd antennal segments.

line, scutellum convex and clothed with long pale setae. *Membrane:* clear, inner margin thinly bordered by fuscous, areole minutely punctate. *Venter:* testaceous. *Legs:* testaceous; hind tibiae with 2 or 3 distinct basal spines.

HOLOTYPE: ♂, Lules, Tucuman, Argentina, 13-II-1953 (collector unknown) (MN).

Remarks: *H. fuscicornis* most closely resembles *denticornis* Hsiao, but may be separated by the fuscous, apical two-thirds of the second antennal segment, the extremely long setae on dorsal margin of each eye and the upturned lateral nodule of the first antennal segment.

Hyalochloria longicornis new species (Figs. 9-10, 28)

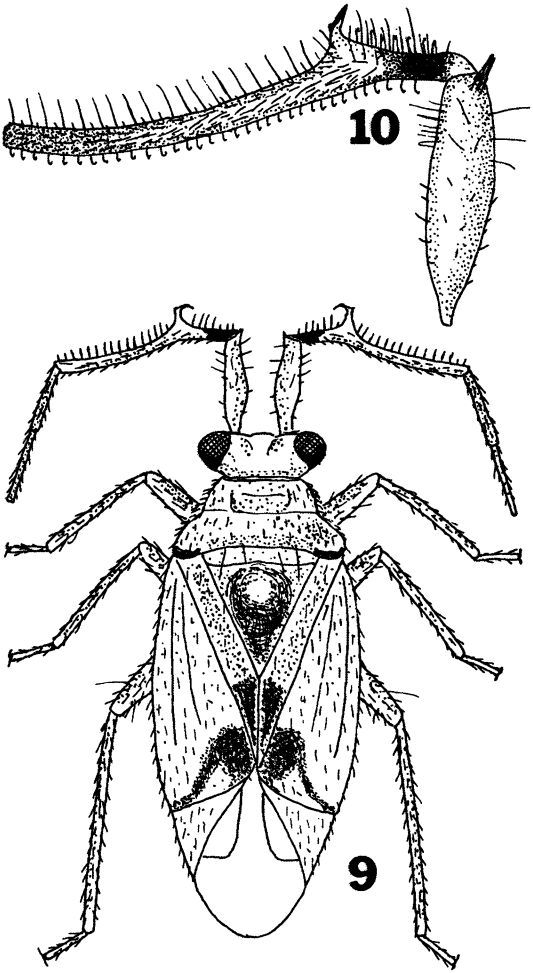
Holotype Male: length 2.56 mm, width 1.00 mm. *Dorsum*: generally testaceous, marked with fuscous. *Head*: width 0.58 mm, vertex 0.36 mm, testaceous; a distinct blunt tubercle present on either side of vertex. *Rostrum*: length 0.78 mm, reaching middle of metacoxae. *Antennae*: I, length 0.48 mm, linear and simple, gradually enlarged towards base (Fig. 10); clothed with a few simple setae; II, 0.76 mm, a stout spine flattened apically (0.22 mm from base); testaceous with a fuscous annulus at base; clothed with long (0.06 mm) simple setae (slightly curved at apex) on dorsal aspect and short distinctly hooked setae on ventral aspect (Fig. 10); III, 0.36 mm, fuscous; IV, 0.30 mm, fuscous. *Pronotum*: length 0.36 mm, width at base 0.90 mm; strongly narrowed on anterior half; basal margin distinctly sinuate; calli indistinct and depressed, an impressed line completely separating calli from disk; uniformly testaceous with basal angles marked with fuscous; clothed with simple golden or testaceus pubescence, intermixed with a few pilose setae. *Hemelytra*: testaceous and hyaline, especially on the corium; lightly fuscous on apical half of clavus, a fuscous blotch at apex of corium; scutellum slightly convex (ca 0.08 mm, intermediate between *schuhi* and *scutellata*), lightly fuscous in center. *Membrane*: opaque yellow; veins same color as membrane; areoles minutely punctate; inner basal margin with a short brown line. *Venter*: testaceous; abdomen lightly darkened with brown or gray. *Legs*: testaceous; hind tibiae without distinct spines, pubescence short, recumbent. *Genital Claspers*: (Fig. 28).

HOLOTYPE: ♂, Peru, Loreto, km 3, Tournavista Rd., 34 km W. Pucallpa, 300 meters, Dec. 16, 1971, at light, R. T. and J. C. Schuh (AMNH). PARATYPES: 2 ♂♂, same data as holotype (date Dec. 17, 1971).

Remarks: This species may be separated by the elongate first antennal segment, the black basal annulus and long dorsal setae of the second antennal segment, and the fuscous scutellum.

Hyalochloria mexicana new species (Figs. 18, 25)

Holotype Male: length 3.20, width 1.50 mm. *Dorsum*: generally testaceous to brownish, accented with brown or fuscous. *Head*: width 0.70 mm; vertex 0.34 mm; brownish, dorsal margin of eyes and posterior margin clothed with golden, pilose setae. *Rostrum*: length ca 0.92 mm (imbedded in glue), reaching near posterior margin of mesocoxae. *Antennae*: testaceous to brownish, I, length 0.38 mm, widest on basal third, tapering towards apex; a short, slender dorsal spine at apex; II, 0.96 mm, bulbous base equal to diam of 1st segment, narrowed beyond; large stout fuscous dorsal spine present 0.24 mm from base (apparently a fusion of several slender spines), 2-3 stout setae just past dorsal spine; 2 pilose dorsal setae (3× diam of segment) before dorsal spine, bulbous area covered with stout microsetae, clothed with recumbent golden setae (Fig. 18); III, 0.40 mm, fuscous, IV, 0.34 mm. *Pronotum*: length 0.42 mm, width at base 1.00 mm, calli distinct, separated from disk



FIGS. 9-10: Fig. 9, adult male *H. longicornis*; Fig. 10, 1st and 2nd antennal segments.

by a narrow impressed line that nearly reaches lateral margins; disk with median area adjacent to calli; depressed posterior margin, especially basal angles, fuscous, clothed with recumbent golden setae, disk scattered with more erect pilose setae; mesoscutum fuscous, paler at lateral angles; scutellum fuscous. *Hemelytra*: testaceous, hyaline to translucent, clothed with erect golden setae; emboliar margin fuscous, clavus fuscous, paler along commissure, an elongate fuscous patch on

apical 3rd of corium. *Membrane*: clear to smoky yellow, inner margin with wide fuscous areoles coriaceous. *Venter*: testaceous, ostiolar peritreme pale. *Legs*: testaceous, hind tibial spines distinct. *Genital Claspers*: (Fig. 25).

Allotype Female: length 3.16 mm, width 1.44 mm. *Head*: width 0.64 mm, vertex 0.36 mm. *Rostrum*: 0.92 mm, reaching near posterior margin of mesocoxae. *Antennae*: fuscous, I, 0.28 mm; II, 0.76 mm; III, 0.34 mm; IV, broken. *Pronotum*: length 0.42 mm, width at base 1.00. Very similar to male in color and markings.

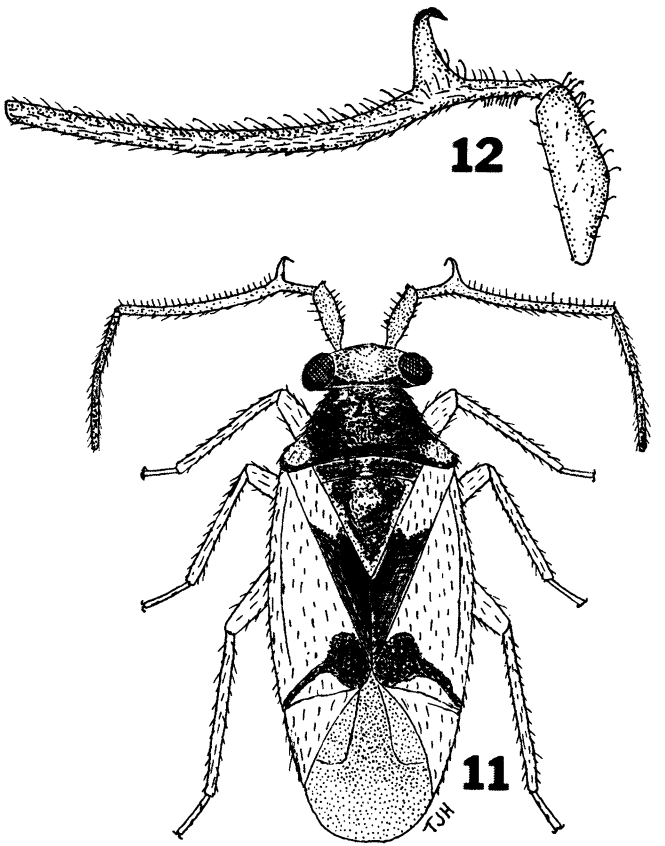
HOLOTYPE: ♂, Real de Ariba, Temescaltepec, Mexico, Mex., VII-14-1933, H. E. Hinton and R. L. Usinger collectors (CAS). ALLOTYPE: ♀, same data as for holotype. PARATYPES: 1 ♂, 7 ♀♀, same data as for holotype; 3 ♀♀, Temescaltepec, Mexico, Mex., VII-11-1933, Hinton and Usinger collectors; 1 ♂, Santa Tecla, El Salvador, July 1960, R. Callejas (UPR) 1 ♂, 12 mi. n. Ocozocoautla, Chiapas, Mex., July 10, 1971, taken at light, Clark, Murray, Hart and Schaffner collectors (TAM).

Remarks: *H. mexicana* may be separated by the larger size, the brown head, pronotum, scutellum and clavus and the male antennae.

One specimen at hand (TAM) collected at Chiapas, Mexico in 1966 appears to be *mexicana*. However, it differs in being slightly larger, distinctly green on the dorsum, and has a curved and more slender right clasper. More specimens must be examined before any further decisions can be made on its status.

Hyalochloria schaffneri new species (Fig. 19)

Holotype Male: length 2.72 mm, width 0.60 mm. *Dorsum*: testaceous, tinged with green. *Head*: width 0.76 mm, vertex 0.28 mm; inner margin of eye and carina clothed with long, erect, golden setae, these becoming more pilose along basal angles of the carina. *Rostrum*: length 0.76 mm, reaching posterior margin of mesocoxae. *Antennae*: I, length 0.26 mm, slender, narrowed just past middle, testaceous, lightly tinged with brown, clothed with a few erect golden setae; II, 0.80 mm, slender with slender dorsal spine 0.22 mm from base, brown to fuscous, slightly paler near spine, clothed with recumbent golden setae (Fig. 19); III, 0.34 mm, fuscous; IV, 0.30 mm, fuscous. *Pronotum*: length 0.38 mm, width at base 0.94 mm; testaceous, calli distinct, separated from disk by a broad impressed line not quite reaching lateral margins; basal angles margined with fuscous; minutely punctate; clothed with erect and suberect golden setae; mesoscutum and scutellum testaceous, clothed with long golden setae. *Hemelytra*: hyaline, tinged with green, several irregular greenish patches in middle of corium; clothed with erect golden setae. *Membrane*: transparent; inner margin lightly bordered with fuscous, areoles lightly coriaceous and finely pubescent. *Venter*: testaceous, ostiolar peritreme brownish to fuscous,



FIGS. 11-12: Fig. 11, adult male *H. scutellata*; Fig. 12, 1st and 2nd antennal segments.

dorsal margin of abdomen lightly tinged with brown. *Legs*: testaceous, basal third of protibiae lightly tinged with brown; tibial spines indistinct.

HOLOTYPE: ♂, Mexico: Chiapas, 29 mi. sw Cintalapa, July 7, 1971, taken at light, Clark, Murray, Hart and Schaffner collectors (NMNH Type No. 73946).

Remarks: *H. schaffneri* may be separated from other species by the uniformly testaceous color with a light greenish tinge on the dorsum, the fuscous single-spined antennae, and the fuscous basal angles of the pronotum. This species is named after Dr. J. C.

Schaffner (TAM) who kindly provided several of the new species used in this study.

Hyalochloria schuhi new species (Figs. 13-14, 27)

Holotype Male: length 2.32 mm, width 1.00 mm. *Dorsum*: uniformly testaceous; clothed with simple golden setae with a few more pilose setae on pronotum and scutellum. *Head*: width 0.60 mm; vertex 0.34 mm; a distinct blunt tubercle present on the inner posterior margin of each eye. *Rostrum*: length 0.70 mm, reaching middle of metacoxae. *Antennae*: length I, 0.34 mm, a small group of stout setae or spines present on ventral side of apex (Fig. 14); II, 0.86 mm, a spine, slender apically, present 0.10 mm from base; clothed with long hooked dorsal setae and short recumbent ventral setae (Fig. 14); III, 0.34 mm, fuscous; IV, 0.30 mm, fuscous. *Pronotum*: length 0.32 mm, width at base 0.84 mm; calli slightly raised; a shallow depressed line completely separating calli from disk; disk clothed with golden pilose setae. *Hemelytra*: testaceous and translucent, more brownish on clavus; scutellum less than height of pronotal disk; cuneus nearly transparent. *Membrane*: smoky-yellow; veins slightly darker. *Venter*: testaceous, more brown on sternum and abdomen. *Legs*: testaceous; hind tibial spines evident, not as recumbent as in *longicornis*. *Genital Claspers*: (Fig. 27).

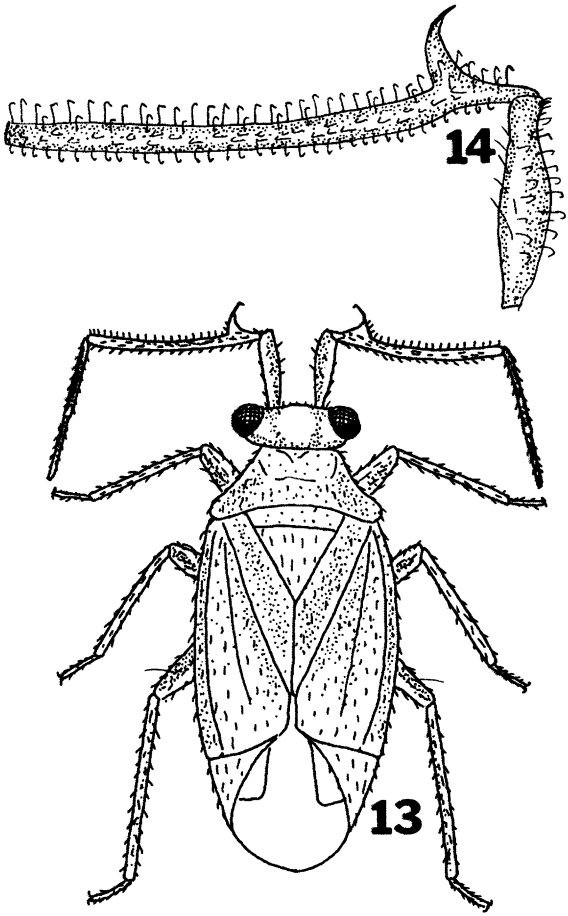
HOLOTYPE: ♂, Peru, Loreto, km 3, Tournavista Rd., 34 km W. Pucallpa, 300 meters, Dec. 16, 1971, at light, R. T. and J. C. Schuh (AMNH). PARATYPES: 11 ♂♂, same data as holotype (AMNH).

Remarks: *R. schuhi* may be separated by the uniform testaceous color, the single well-developed spine on the 2nd antennal segment, the shorter rostrum and the peculiar hooked setae on the 2nd antennal segment.

This species is named after Dr. R. T. Schuh (AMNH) who collected 3 of the new species described in this study.

Hyalochloria scutellata new species (Figs. 11-12)

Holotype Male: length 2.60 mm; width 1.00 mm. *Dorsum*: generally fuscous to black. *Head*: width 0.60 mm; vertex 0.38 mm, uniformly fuscous, blunt pubescent tubercle present on inner posterior margin of each eye, but less conspicuous than in *longicornis* or *schuhi*. *Rostrum*: length 0.86 mm, reaching 2nd abdominal segment. *Antennae*: I, length 0.30 mm, broadest at middle, tapering at apex and base; sparsely clothed with hooked setae (Fig. 12); II, 0.94 mm, reddish-brown, becoming more fuscous towards apex, dorsal spine strongly recurved at apex, present 0.16 mm from base, clothed with hooked dorsal setae and simple recumbent ventral setae (Fig. 12); III, 0.40 mm, fuscous; IV, 0.38 mm, fuscous. *Pronotum*: length 0.40 mm; width at base 0.86 mm; fuscous with a pale spot at humeral angles; calli prominent; an impressed line separating calli from disk, but not reaching lateral margins; disk



FIGS. 13-14: Fig. 13, adult male *H. schuhi*; Fig. 14, 1st and 2nd antennal segments.

clothed with pilose setae; basal margin sinuate. *Hemelytra*: translucent yellow, marked with fuscous on posterior half of clavus, and on mesoscutum and scutellum; a fuscous blotch at apex of corium with a narrow line connecting to apex of embolium; scutellum distinctly higher than pronotal disk (0.20 mm). *Membrane*: fumate, veins scarcely darker. *Venter*: testaceous; sternum and anterior half of propleura brownish or fuscous. *Legs*: testaceous; hind tibial spines semi-erect, golden to brown.

HOLOTYPE: ♂, Peru, Loreto, km 3, Tournavista Rd., 34 km W. Pucallpa, 300 meters, Dec. 17, 1971, at light, R. T. and J. C. Schuh. PARATYPES: 4 ♂♂, same data as holotype (dates Dec. 16 and 17, 1971) (AMNH).

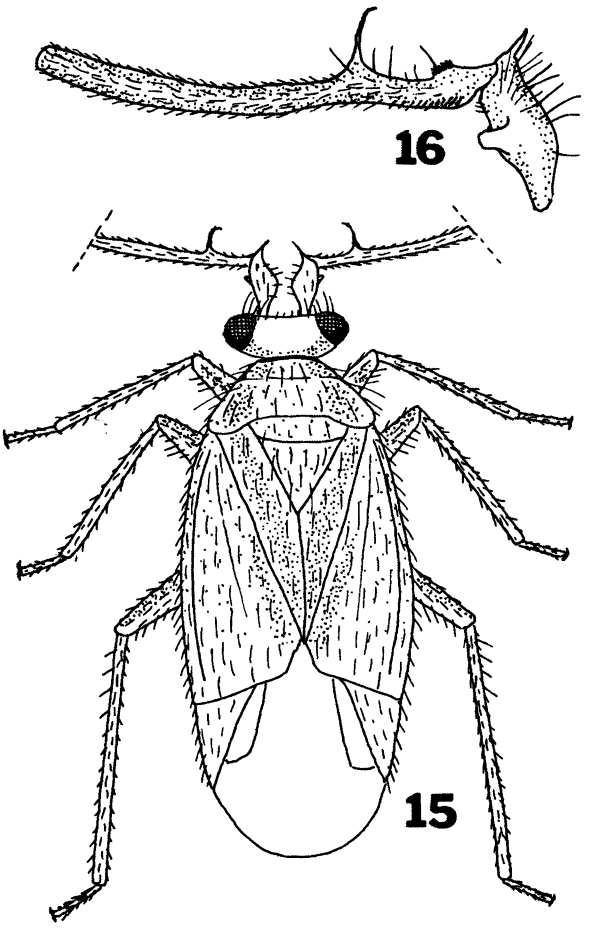
Remarks: This species may be separated by the strongly convex scutellum rising above pronotal disk, the fuscous head and pronotum and the long rostrum.

Hyalochloria tuberculata new species (Figs. 20, 22)

Holotype Male: length 2.96 mm; width 1.32 mm. *Dorsum*: uniformly yellow to testaceous. *Head*: width 0.70 mm, posterior angles clothed with long golden setae; vertex 0.42 mm, either side with a distinct pubescent tubercle. *Rostrum*: length 1.12 mm, reaching middle of metacoxae. *Antennae*: testaceous, I, length 0.26 mm, short, and subquadrate, a short, sharp spine near apex, a lateral finger-like process produced laterally at apex; sparsely set with erect yellowish setae (Fig. 20). II, 0.84 mm, emarginate at base, a stout tubercle at middle of emargination with a fuscous spine at apex, distal end of emargination with a truncate flap-like process recurving towards base and a longer more slender process curving anteriorly around segment; two stout fuscous setae arising from base of flap-like process recurving towards base and a longer more slender process curving anteriorly around segment; two long fuscous, spines 0.24 mm from base of segment on either side of segment, each apparently made up of 2 fused, stout spines; sparsely clothed with long, erect, pale setae on basal 3rd and short, recumbent setae beyond (Fig. 20). III, 0.60 mm, brown; IV, 0.46 mm yellowish to brown. *Pronotum*: length 0.39 mm, width at base 0.82 mm, shiny, whitish yellow, with a narrow fuscous mark at basal angles; clothed with fine, erect, golden setae; finely punctate; calli separated from disk by a narrow impressed line not reaching lateral margins. *Hemelytra*: hyaline, yellowish, very lightly accented with green, moderately arcuate, sparsely clothed with long, erect, golden setae, especially along emboliar margin. *Membrane*: translucent, inner margin lightly bordered with brown, areoles coriaceous. *Venter*: uniformly whitish yellow to testaceous. *Legs*: testaceous, mesofemora with a group of stout, fuscous to black rod-like setae on posterior aspect of apical 3rd; tibial spines weak and difficult to separate from setae.

HOLOTYPE: ♂, 8 miles west of El Limon, Tamaulipas, Mexico, July 20, 1970, taken at light, Murray, Phelps, Hart., Schaffner, coll. (NMNH type No. 73947).

Remarks: The male antennae make *tuberculata* the most distinct species of the genus. This plant bug may also be separated from other species by the well-developed pubescent tubercles on the vertex and the black rod-like setae on mesofemora.



FIGS. 15-16: Fig. 15, adult male *H. unicolor*; Fig. 16, 1st and 2nd antennal segments.

Hyalochloria unicolor Reuter (Figs. 15-16)

Reuter 1907:20; Van Duzee 1907:20.

Male: length 2.68 mm; width 1.12 mm. *Dorsum*: uniformly testaceous; clothed with simple pale setae. *Head*: width 0.60 mm; vertex 0.32 mm, testaceous; a single row of long setae (ca one half length of 1st antennal segment) present from antennal base dorsally over anterior three-fourths of eye, a few long setae present at lateral margin of vertex. *Rostrum*: length 0.88 mm, reaching posterior margin of meta-

coxae. *Antennae*: I, length 0.28 mm (not including apical spine), narrow at base, gradually enlarged to middle; apical spine curving inward, lateral nodule stout and straight (Fig. 16). II, 0.80 mm, dorsal spine 0.22 mm from base, basal area emarginate, marginal ridge with short spinules or microspines; clothed with short recumbent setae, a small group of longer setae present between base and spine (Fig. 16). III and IV broken. *Pronotum*: length 0.34 mm; width at base 0.82 mm; testaceous, calli separated from disk by a broad deeply impressed line not quite reaching lateral margins; basal margin sinuate. *Hemelytra*: hyaline, veins and margins testaceous; scutellum slightly convex; clothed with erect and suberect, simple pale setae. *Membrane*: transparent, inner margin tinged with brown. *Venter*: testaceous. *Legs*: testaceous, hind tibiae with 4 basal spines erect and distinct.

Specimens Examined: 1 ♂, Moneague, Jamaica, Feb., W. S. Brooks (AMNH).

Remarks: *H. unicolor* most closely resembles *denticornis* and *fuscicornis,* but may be separated by its uniform testaceous color, shorter setae on eyes and the short blunt nodule on the 1st antennal segment.

ACKNOWLEDGEMENTS

I wish to thank Drs. K. R. Valley (PDA) and A. G. Wheeler, Jr. (PDA) for reading the manuscript and making useful suggestions. Also I thank Drs. J. C. M. Carvalho (MN), J. L. Herring (USDA, ARS), K. C. Kim (PSU), J. Maldonado C. (UPR), J. C. Schaffner (TAM) and R. T. Schuh (AMNH) for lending specimens.

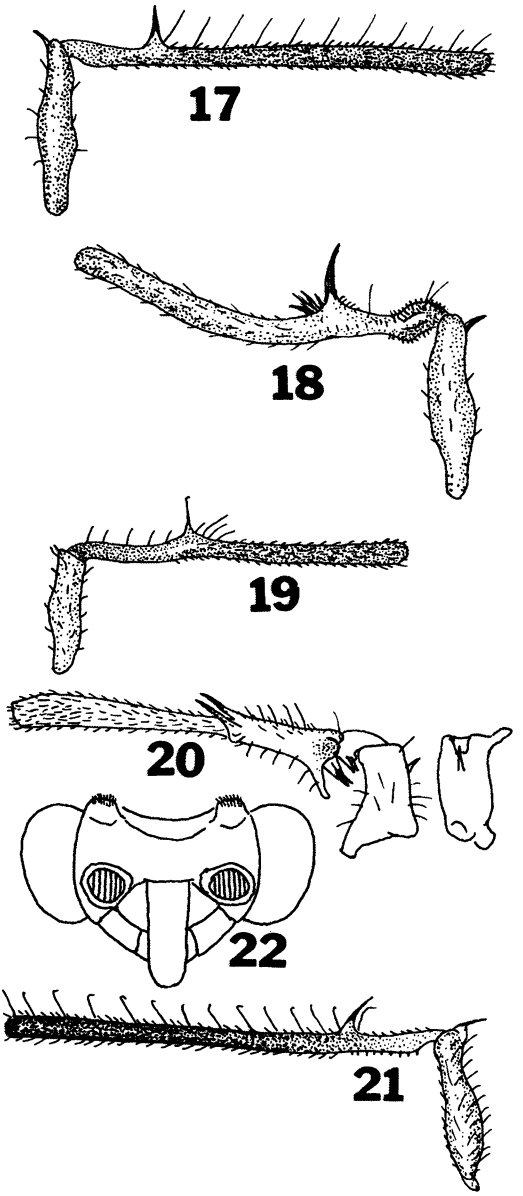
REFERENCES

BEINGOLEA G., O. 1959. Notas sobre *Hyalochloria denticornis* Tsai Yu-Hsiao (Hemip.:Miridae) predator de los huevos de *Anomis texana* Riley (Lepidop.: Noctuidae). Rev. Per. Ent. Agr. 2(1):51-59.

_____. 1960. Notas adicionalea sobre *Hyalochloria denticornis* Tsai Yu-Hsiao (Hemipt:Miridae), predator de los huevos de *Anomis texana* Riley (Lep: Noctuidae). Rev. Per. Ent. Agr. 3(1):1-5.

BLATCHLEY, W. S. 1926. Heteroptera or true bugs of eastern North America, with especial reference to the faunas of Indiana and Florida. Nature Pub. Co., Indianapolis. 1,116 pp.

CARVALHO, J. C. M. 1952. On the major classification of the Miridae (Hemiptera), (With keys to subfamilies and tribes and catalogue of the world genera). An. Acad. Brasil. Ci. 24(1):31-110.



FIGS. 17-21:17-20, 1st and 2nd antennal segments of *Hyalochloria* spp.: Fig. 17, *colombiana*; Fig. 18, *mexicana*; Fig. 19, *schaffneri*; Fig. 20, *tuberculata*; Fig. 21, *brasiliana*; Fig. 22, anterior view of head *H. tuberculata*.

_____. 1953. Neotropical Miridae, 70: On the genus *Saileria* Hsiao, with descriptions of a new species (Hemiptera). An. Acad. Brasil. Ci. 25(4):473-576.

_____. 1955. Keys to the genera of Miridae of the world (Hemiptera). Bol. Mus. Goeldi. 11(2):1-151.

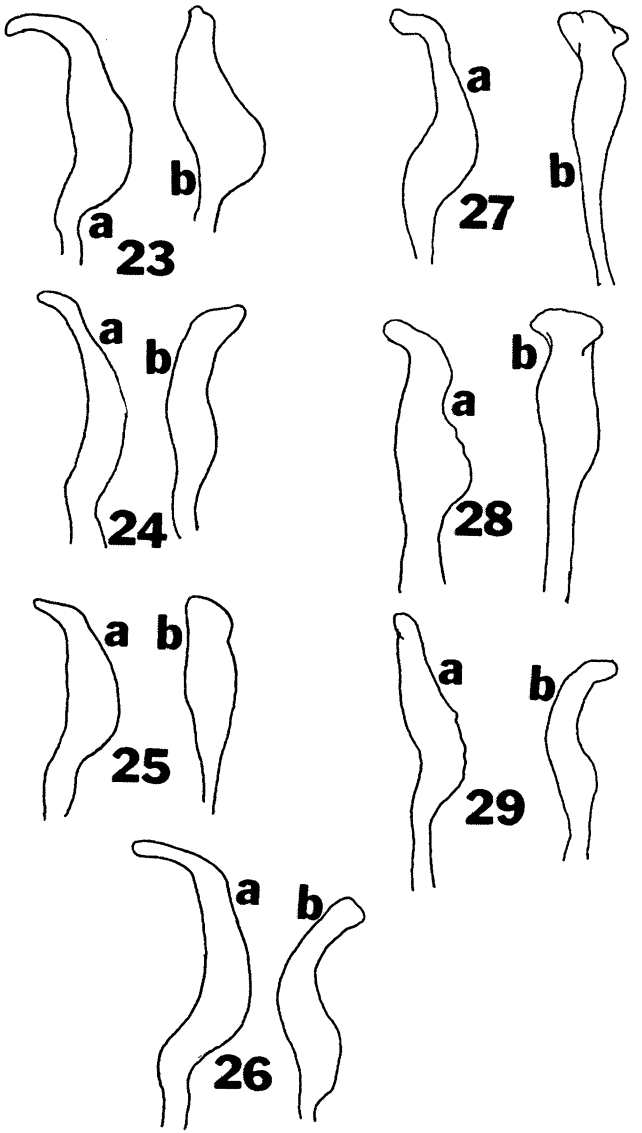
_____. 1958. Catalogue of the Miridae of the world. Part III. Subfamily Orthotylinae, Arq. Mus. Nac., Rio de J. 47(3):1-161.

HSIAO, T. Y. 1945. A new plant bug from Peru, with note on a new genus from North America (Miridae, Hemiptera). Proc. Ent. Soc. Wash. 47(1):24-27.

REUTER, O. M. 1907. Capsidae novae in insula Jamaica mense Aprilis 1906 a D. E. P. van Duzee collectae. Öfv. F. Vet. Soc. Förh. 49(5):1-27.

VAN DUZEE, E. P. 1907. Notes on Jamaican Hemiptera: a report on a collection of Hemiptera made on Island of Jamaica in the Spring of 1906. Bull. Buffalo Soc. Nat. Sci. 8(5):3-79.

_____. 1916. New or little known genera and species of Orthotylini (Hemiptera). Univ. Calif. Pub., Ent. Tech. Bull. 1(4):217-227.



FIGS. 23-29 — male genital claspers of *Hyalochloria* spp., a, left clasper, b, right clasper; Fig. 23, *denticornis*; Fig. 24, *caviceps*; Fig. 25, *mexicana*; Fig. 26, *colombiana*; Fig. 27, *schuhi*; Fig. 28, *longicornis*; Fig. 29, *brasiliana*.

PUBLICATIONS
OF
THE AMERICAN ENTOMOLOGICAL SOCIETY

TRANSACTIONS OF THE AMERICAN ENTOMOLOGICAL SOCIETY

A quarterly containing important papers on structural and systematic entomology. Subscription price per annual volume, $18.00.

MEMOIRS OF THE AMERICAN ENTOMOLOGICAL SOCIETY

An irregular serial, containing monographic papers by students of authority in their respective subjects.

No. 1. The Cresson Types of Hymenoptera. Ezra T. Cresson. 1916. $3.00. No. 3. A Venational Study of the Suborder Zygoptera (Odonata), with Keys for the Identification of Genera. Philip A. Munz. 1919. $2.00. No. 4. The Blattidae of Panama. Morgan Hebard. 1920. $3.00. No. 5. The Types of Hymenoptera in the Academy of Natural Sciences of Philadelphia other than those of Ezra T. Cresson. Ezra T. Cresson. 1928. $2.00. No. 6. Revision of the Rhipiphoridae of North Central America (Coleoptera). Ezekiel Rivnay. 1929. $2.00. No. 7. A Revision of the Dipterous Family Rhagionidae (Leptidae) in the United States and Canada. Mortimer D. Leonard. 1930. $4.50. No. 8. The Eumastacinae of Southern Mexico and Central America. James A. G. Rehn and John W. H. Rehn. 1934. $2.50. No. 9. The Generic Names of the Sphecoid Wasps and their Type Species. V. S. L. Pate. 1937. $2.50. No. 10. A Revision of the North American Species Belonging to the Genus Pegomyia. H. C. Huckett. 1941. $3.00. No. 11. Catalogue and Reclassification of the Nearctic Ichneumonidae. Henry K. Townes, Jr. 1944. $15.00. No. 13. Elachistidae of North America (Microlepidoptera). Annette F. Braun. 1948. $4.50. No. 14. Classification of the Blattaria as Indicated by their Wings. John W. H. Rehn. 1951. $5.00. No. 15. The Neotropical Species of the "Subgenus Aeschna" Sensu Selysii 1883 (Odonata). Philip P. Calvert. 1956. $10.00. No. 16. A Taxonomic Study of the North American Licinini with Notes on the Old World Species of the Genus Diplocheila Brulle (Coleoptera). George E. Ball. 1959. $10.00. No. 17. A Taxonomic Study of the Milliped Family Spirobolidae (Diplopoda: Spirobolida). William T. Keeton. 1960. $5.50. No. 18. The Genus Bucculatrix in America North of Mexico (Microlepidoptera). Annette F. Braun. 1963. $8.50. No. 19. The Butterflies of Liberia. Richard M. Fox, et al. 1965. $12.50. No. 20. A Revision of the Mexican and Central American Spider Wasps of the Subfamily Pompilinae (Hymenoptera: Pompilidae). Howard E. Evans. 1966. $12.50. No. 21. A Taxonomic and Zoogeographic Survey of the Scarabaeinae of the Antilles (Coleoptera: Scarabaeidae). Eric G. Matthews. 1966. $4.00. No. 22. A Monograph of the Ithomiidae (Lepidoptera) Part III. The Tribe Mechanitini Fox. Richard M. Fox. 1967. $9.00. No. 23. A List of New North American Spiders 1940-1966. Beatrice R. Vogel. 1967. $9.00. No. 24. The Higher Classification, Phylogeny and Zoogeography of the Satyridae (Lepidoptera). Lee D. Miller. 1968. $7.00. No. 25. The Schizopteridae (Hemiptera: Heteroptera) with the Description of New Species from Trinidad. Michael G. Emsley. 1969. $6.50. No. 26. A Taxonomic Revision of the Aquatic Beetle Genus Laccophilus (Dytiscidae) of North America. James R. Zimmerman. 1970. $12.00. No. 27. A Revision of the Nearctic Species of the Tribe Parydrini (Diptera: Ephydridae). P. J. Clausen and E. F. Cook. 1971. $7.00. No. 28. Tischeriidae of America North of Mexico (Microlepidoptera). Annette F. Braun. 1972. $7.00. No. 29. The Shield-backed Katydids of the Genus Idiostatus. D. C. Rentz. 1973. $9.50. No. 30. The Systematics and Morphology of the Nearctic Species of Diamesa Meigen, 1835 (Diptera: Chironomidae). D. C. Hansen and E. F. Cook. 1976. $10.00. No. 31. The Stoneflies (Plecoptera) of the Rocky Mountains. R. W. Baumann, A. R. Gaufin & R. F. Surdick. 1977. $10.50.

ENTOMOLOGICAL NEWS

A monthly containing articles of interest to all entomologists. Annual subscription $18.00.

Quarterly numbers and volumes of the Transactions, if in stock, can be supplied upon application.

In making inquiries relative to publications, address:

THE AMERICAN ENTOMOLOGICAL SOCIETY
1900 Race St., Philadelphia, Pa. 19103

On the date of issue the present publication was mailed to the following institutions with the request that it be placed in their libraries for reference:

Entomological Society of London
Entomological Society of Ontario
American Museum of Natural History
Museum of Comparative Zoology
Transvaal Museum
Sociedad Entomologica Argentina
California Academy of Sciences
Instituto Oswaldo Cruz
Smithsonian Institution
Australian Museum