

ELEVEN NEW LEAFHOPPERS WITH NOTES ON OTHERS (HOMOPTERA: CICADELLIDAE)

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Alconeura socorroana n. sp.

Near *A. planata* Ball and DeLong, but male with processes at apex of aedeagus shaft. Slender, vertex evenly rounded, pronotum one-third longer than vertex, second apical cell pedunculate.

Evenly olive green with pale areas as follows: Anterior margin of vertex and median narrow line; lateral and anterior margins of pronotum, also short antero-median line; scutellum, median line in basal half and lateral line either side defining inner margins of lateral angles; basal area and some irregular spots along claval vein, apical area along veins and two indefinite spots in outer apical cell. Disc of pronotum and inner base of scutellum darker; round black spot in fourth apical cell one-fourth distance from base near vein, and small area at base of cell darkened. Below, fumose but for anterior margin of head.

Inner male genitalia.—Aedeagus in lateral view three times as long as basal width discounting length of pair of apical dorsal retrorse processes which curve back toward shaft opening and are one-third length of shaft: three ventral basal processes parallel with shaft, one median ventral and two lateral, extending a little beyond shaft opening, lateral processes longer. Pygofer process heavy, in dorsal view as long as aedeagus, curved gently inward and tapered to apex.

Female.—Last ventral segment three times as long as middle as broad, narrowed on apical third, produced in a rounded lobe, pygofer narrow with line of six white spines either side of ovipositor, evenly distributed; ovipositor exceeding pygofer.

Length: 2.5 mm.

Male holotype, two male paratypes and allotype, Socorro Co., N. M., July 10, 1940, D. J. & J. N. Knull; three teneral specimens, Tucson, Ariz., May 13, 1941, D. J. & J. N. Knull.

Typhlocyba sciotoensis n. sp.

Resembling *T. luculla* Medler externally and near *T. piscator* McA. in type of inner male genitalia which are very complex.

Chalky white with yellowish tinge on head and pronotum, a darkened scutellum, darker in median basal area, and pronounced dark band over white crossveins, extending farther anteriorly than posteriorly. Eyes dark, vertex with thin impressed median longitudinal line reaching almost to apex, a round spot either side near apex; some subcutaneous darkening of pronotal disc and area adjacent to scutellum. A dark round spot at inner posterior end of M_4 , an intensely darkened streak below outer crossvein and another on outer R_3 .

Male genitalia.—Outer clasper broad basally, contracted below middle; pygofer truncate on outer margin, exceeded by claspers and aedeagal processes, style with sharp projecting heel and sharply pointed, up-turned toe. Aedeagus in ventral view, a pair of narrow ventral processes arises at base and extends ventrad to shaft for two-thirds its length, arms separated at base by three times width of shaft and parallel entire length. Apex of shaft broadened slightly and curved decidedly ventrad, a pair of incurving processes before apex, a lateral branched pair behind them, and a third longer pair curved sharply ventrad toward apex arises still further back. In lateral view, aedeagus shaft curved narrowing from broad base to complex apex, forming an incomplete semicircle. Shaft somewhat swollen at juncture of processes. Female segment roundly produced; ovipositor dark.

Length: 3 mm.

Male holotype and paratype, Scioto Co., Ohio, June 10 and 17, 1944, D. J. & J. N. Knull, and allotype, Delaware Co., Ohio, July 3, 1942, D. J. & J. N. Knull.

***Typhlocyba foliosa* n. sp.**

Near *T. piscator* McA., from which it differs chiefly in having a much paler dorsum.

Head, pronotum and scutellum ivory, eyes pale, tegmina whitish hyaline, sometimes faintly tinged with yellow; areas between sectors anterior to crossveins, slightly dark clouded, distinct black marks on veins at outer edge of R_1 and on claval margin at apex of vein M_4 . Below pale, ovipositor dark and dorsal abdominal segments sometimes narrowly black margined.

Male genitalia.—Similar to those of preceding and also to those of *T. piscator* McA. in general form. In this species, however, aedeagus has ventral basal processes distinctly curved, S-curved in lateral view, and shaft is swollen at base and apex. Two pairs of apical processes, apical shorter, almost complete a circle in lateral view. In ventral view apical processes appear straight and pointed, the others are enlarged leaf-like and curved forward.

Length: 3 mm.

Male holotype and paratypes, four male and one female, Shawnee Forest, Scioto Co., Ohio, June 9, 1943, D. J. & J. N. Knull; allotype and two female paratypes, June 17, 1944; four male paratypes, June 10, 1944; paratypes from other localities: two males, Hocking Co., Ohio, September 16, 1943; one male, Delaware Co., Ohio, June 27, 1943; one female, Lucas Co., Ohio, June 30, 1943; and one male paratype, Great Smoky Mt. National Park, Tenn., June 21, 1942 (this specimen decidedly yellow-tinged), all collected by D. J. & J. N. Knull. Six paratypes in collection of The Ohio State University.

***Erythroneura stupkaorum* n. sp.**

In the maculata group near *E. triangulata* Beamer, but with a distinctly different style in inner male genitalia.

General ground color creamy white, yellowish semihyaline elytra marked with orange. Vertex with three basal pale spots, lateral round and median elongate, surrounded by continuous orange bands; pronotum with median rectangular spot not reaching margins, with translucent anterior lateral arms forming rough Y, spot back of each eye, eyes tan; apex of scutellum orange, remainder pale; clavi with three indistinct spots, not joined, coria with similar spots, one on costa before humeral angle, three around plaque and one near apex of clavus; crossveins faintly reddened, small black spot in base of cell M_4 .

Male genitalia.—Pygofer hook single, distinctly S-curved, exceeding pygofer by one-half its length, noticeably thickened on middle half, inner edge of thickened portion serrate. Style with large foot, heel scarcely projecting, almost a right angle, posterior point longer than base of foot, slender, curved very slightly out, sharp. Aedeagus short, heavy, bluntly square, the knob-like apex with lateral wing-like projection, in lateral view narrow, roughened, straight.

Length: 3.25 mm.

Male holotype, allotype and paratypes, Smoky Mt. National Park, Tenn., collected in June by D. J. & J. N. Knull. Three paratypes in collection of The Ohio State University.

Named for Mr. Arthur Stupka, Park Naturalist, and his family.

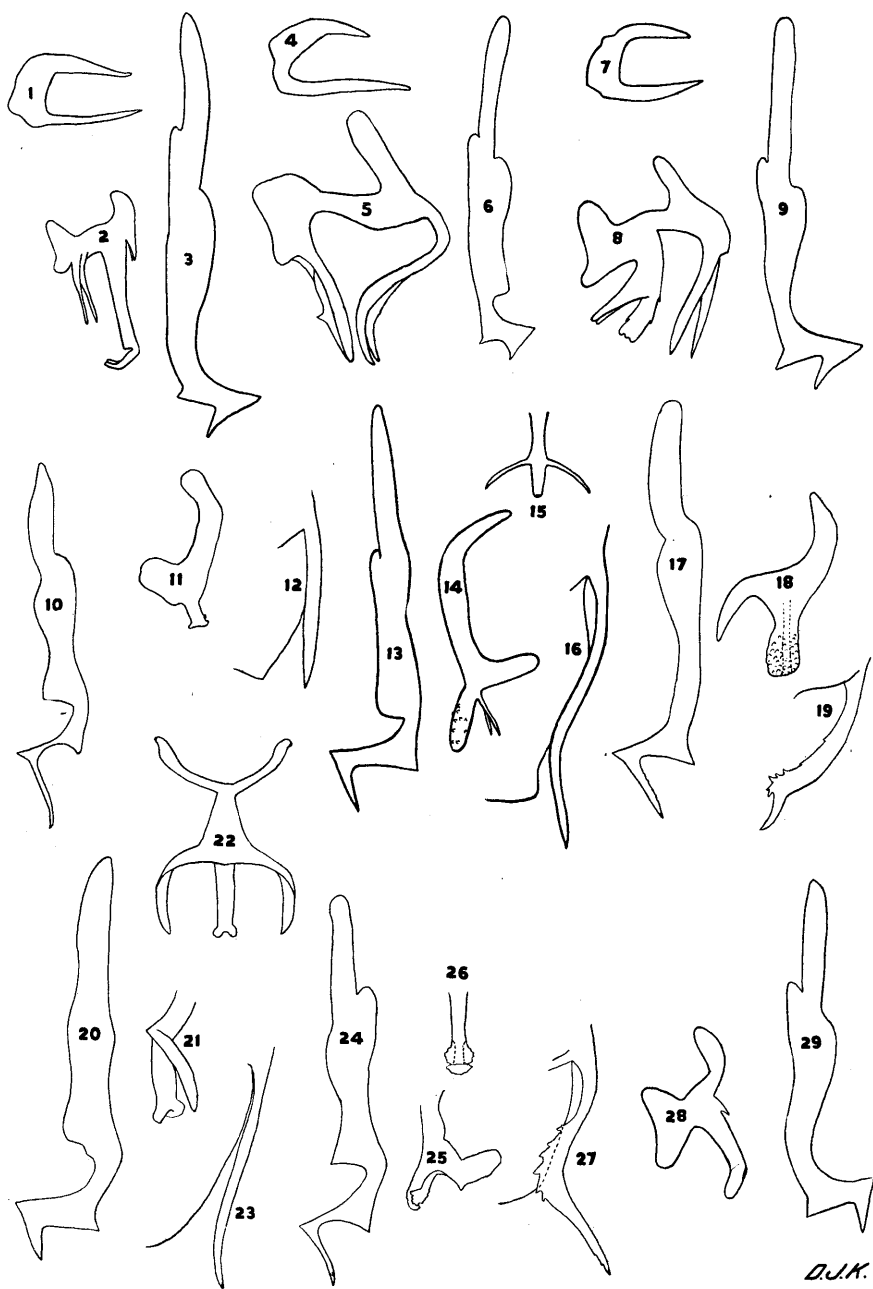
***Erythroneura trautmanae* n. sp.**

In the maculata group, resembling *E. knighti* Beamer, but with unique pygofer hook.

Creamy white on anterior parts and below, elytra yellowish semihyaline, with orange and

EXPLANATION OF PLATE I

- Erythroneura kennedyi* n. sp. Figs. 1, pygofer hook; 2, lateral view aedeagus; 3, style.
Erythroneura noncincla Johnson. Figs. 4, pygofer hook; 5, lateral view aedeagus; 6, style.
Erythroneura vagabunda n. sp. Figs. 7, pygofer hook; 8, lateral view aedeagus; 9, style.
Erythroneura corylorubra n. sp. Figs. 10, style; 11, lateral view aedeagus; 12, pygofer hook.
Erythroneura geronimoi n. sp. Figs. 13, style; 14, lateral view aedeagus; 15, ventral view aedeagus; 16, pygofer hook.
Erythroneura trautmanae n. sp. Figs. 17, style; 18, lateral view aedeagus; 19, pygofer hook.
Erythroneura paraesculi n. sp. Figs. 20, style; 21, lateral view aedeagus; 22, ventral view aedeagus; 23, pygofer hook.
Erythroneura stupkaorum n. sp. Figs. 24, style; 25, lateral view aedeagus; 26, ventral view aedeagus; 27, pygofer hook.
Erythroneura ohioensis n. sp. Figs. 28, lateral view aedeagus; 29, style.



apically orange-red markings. Vertex with three basal white spots, median longer, bordered by even band, pronotum with median Y-shaped mark, the arms reaching anterior margin, a large angular spot behind eye reaching halfway to posterior margin, scutellum with basal angles and apex orange; elytral markings diffuse and indistinct, in some specimens reddened on apical half. Clavi with basal anchor-shaped spot and one at apex; coria with indefinite area at base, spot opposite hyaline area of clavus and one at apex of clavus, plaque area irregularly colored. Crossveins and longitudinal veins brightly reddened, giving the elytral apices a reddish hue, small round black spot in base of cell M_4 .

Inner male genitalia.—Pygofer hook single, point extending very slightly beyond pygofer, broad and parallel-sided to apical half where it is toothed on inner margin, turned sharply out near apex, then from turn narrowed abruptly to sharp spine-like apex. Style with rather small foot; heel large; base curved; anterior point projecting sharply laterad, posterior point longer than base of foot, straight, tapering to apex; aedeagus long, narrow and straight in ventral view; broad in lateral view.

Length: 2.9 mm.

Named for Dr. Mary Auten Trautman who collected the type series. Male holotype, July 17, allotype, July 18, and paratypes July 18 and 21, Hartwick St. Park, Mich.; paratype, Great Smoky Mt. National Park, Tenn., June 14, 1942, D. J. & J. N. Knull.

Erythroneura paraesculi n. sp.

A large brightly colored species of the maculata group near *E. aesculi* Beamer in external appearance.

Ground color creamy white on anterior parts and below, yellowish white on semihyaline elytra. Eyes gray, sometimes brown, markings of vertex, pronotum and scutellum pale orange and of usual maculata group type. A triangle of dark red occupies basal third of clavus based on claval vein and with apex at scutellar apex; another red vitta forms a heavy irregular U-shaped mark on elytra together, with its base including area just above apices of clavi and arms extending on coria not to costal margin; a small black dot anterior to costal plaque and outer crossvein reddened, an elongate black spot in base of inner apical cell. Elytra markings may be faint in specimens taken in June.

Male genitalia.—The unusual form of aedeagus readily separates this species. Style, posterior point almost half as long as base, sharply pointed and curved in; anterior point sharp, less than a right angle, slightly projecting; heel sharp, scarcely projecting, base thick. Pygofer hook long, slender, straight, tapering to fine point exceeding pygofer by one-sixth its length, curved gently ventrad. Aedeagus in lateral view with broad shaft bulging at middle, a ventral spine at middle and apex roughened with ventral and dorsal projections, heavy basal lateral processes as long as shaft extend laterad and ventro-caudad. In ventral view shaft narrow, broadened at apex where it is roughened and has lateral wing-like projections; heavy lateral processes extend straight out from base for half their length, then, broadened a little, extend down and forward, the whole forming a large m-shaped figure.

Female.—Last ventral segment long with median third well produced in a narrow lobe.

Length: 3.5 mm.

Male holotype, allotype and paratypes, Indian Gap, Smoky Mt. National Park, Tenn., June, 1942, D. J. & J. N. Knull, from *Aesculus*, and paratypes same locality, September 3, 1939, Mary Auten. Six paratypes in collection of The Ohio State University.

EXPLANATION OF PLATE II

(Line = 1 mm.)

Fig. 30, *Erythroneura ohioensis* n. sp.

Fig. 31, *Erythroneura corylorubra* n. sp.

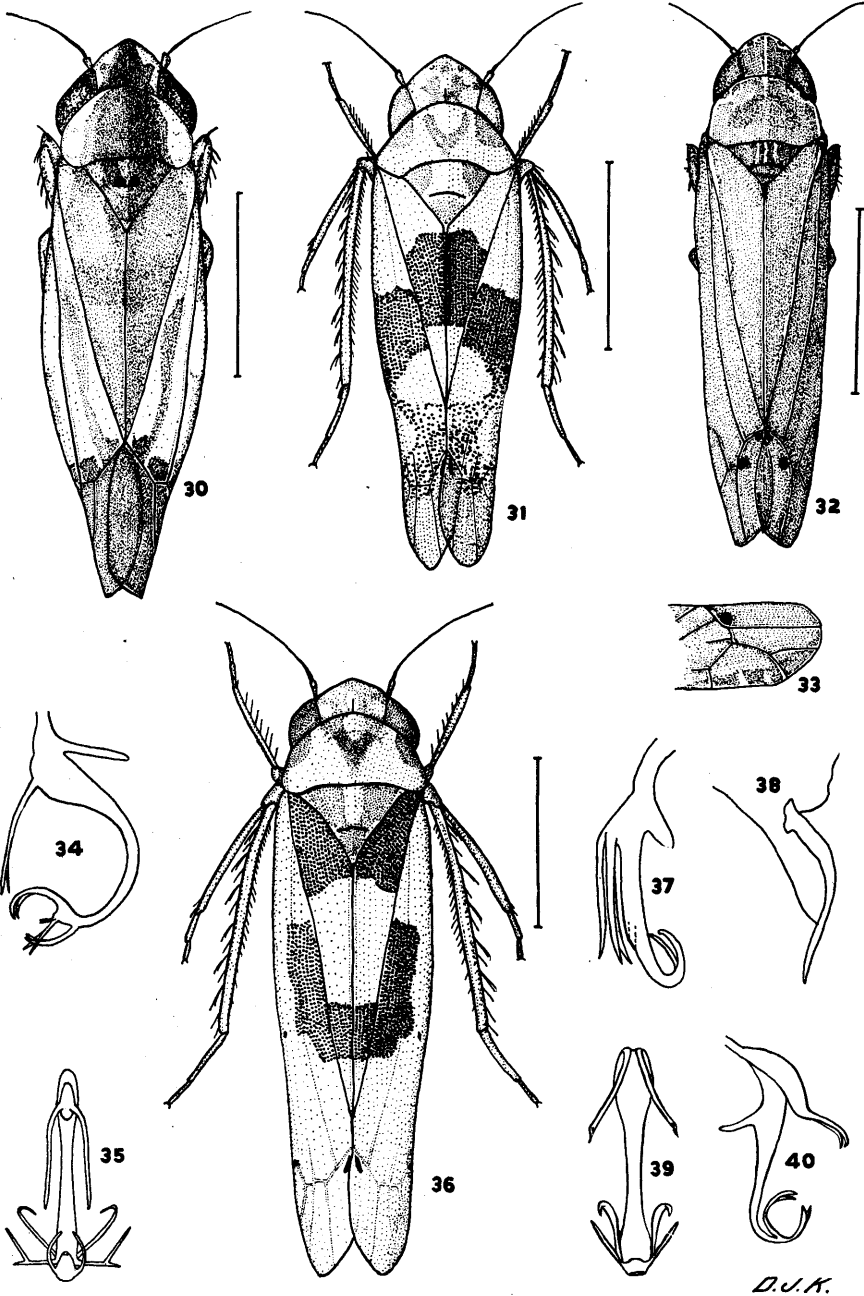
Alconeura socorroana n. sp. Figs. 32, dorsal view; 33, tip of elytron.

Typhlocyba sciotoensis n. sp. Figs. 34, lateral view aedeagus; 35, ventral view aedeagus.

Fig. 36, *Erythroneura paraesculi* n. sp.

Alconeura socorroana n. sp. Figs. 37, lateral view aedeagus; 38, pygofer hook.

Typhlocyba foliosa n. sp. Figs. 39, ventral view aedeagus; 40, lateral view aedeagus.



***Erythroneura corylorubra* n. sp.**

This rare, minute, brightly ornamented species has been taken on *Corylus*, and belongs in the maculata group.

Head roundly produced one-half its length beyond eyes, eyes black, markings of head, pronotum and scutellum typical for this group, faint, yellow translucent and irregular (in one specimen collected in April these are distinct and orange); on each elytron an oblique vermilion vitta starts on clavus at apex of scutellum and covers a little more than median third, is continued across elytron from just above middle of claval vein to outer margin where it is broadened, a tiny black spot in lower posterior corner of vitta and a large one in base of inner apical cell. Crossveins and adjacent longitudinal veins both anteriorly and posteriorly broadly reddened giving appearance of vitta across apical area, apices yellowish semihyaline. Above white, semihyaline, shining. Below creamy white, apex of beak red, tarsal claws black.

Male genitalia.—Style with large slender foot, posterior point longer than basal width of foot and curved out at apex, serrate on inner apical two-thirds; anterior point projecting laterad, less than a right angle; heel prominent, rounded; base evenly curved, forming semicircle with basal half of posterior point. Aedeagus short and straight, in ventral view square-shafted with heavy curved lateral projections from apex, in lateral view with small dorsal tooth before apex and prominent lateral apical processes projecting dorsad; pygofer process heavy, almost straight, turned slightly ventrad, apex slightly exceeding pygofer, pointed, inner margin serrate.

Length: 2.5 mm.

Described from specimens from Hocking Co., Ohio, collected by D. J. & J. N. Knull. Male holotype, April 17, 1938; paratype, June 1, 1938; June 28; allotype and paratypes, August 31, 1944; September 14, 1944, and September 16, 1943.

***Erythroneura geronimoi* n. sp.**

In maculata group near *E. biramosa* Beamer and *E. bigemina* McA., but with different head and pronotal markings; aedeagus with spines, and style differently formed.

White ground color with bright orange markings as follows: vertex with short transverse bar before apex, a pair of median basal prongs extending just above middle; eyes pale; pronotum with short blunt median Y on disc, triangular vitta behind either eye; scutellum with basal angles yellow, narrowly outlined with red, apex orange. Elytra: clavi with narrow basal hook-shaped mark and apical fourth; coria with small rounded spot on costa before humeral angle, angulate vitta surrounding costal plaque, becoming enlarged to somewhat diffuse before red crossveins; a large black spot at posterior end of plaque and a large one in base of cell M₄. Apical cells fumose. Below orange markings above antennal sockets, remainder creamy white.

Male genitalia.—Style with broad base, heel about a right angle, anterior point less than right angle, posterior point more than half as long as base of foot, narrow, sharp, meeting base at less than right angle curve. Pygofer hook long and slender, reaching beyond pygofer, curved gently in from base, then out on apical half. Aedeagus of medium length, straight in lateral and ventral view, a pair of lateral narrow spines arises at base behind aedeagus and extends latero-dorsad. These spines vary in length but are usually evident. Those of the holotype which are figured are more pronounced than in most specimens.

Length: 3.25 mm.

A large series taken from oak, Chiricahua Mts., Arizona, by D. J. & J. N. Knull. Male holotype, allotype and paratypes, September 14, 1938, and additional paratypes, July 26, 1937. Ten paratypes in collection of The Ohio State University.

Named for Geronimo, chief of the Chiricahua band of Apaches.

***Erythroneura ohioensis* n. sp.**

In the obliqua group, resembling *E. rufostigmosa* Beamer and *E. juncea* Beamer, but aedeagus with ventral basal spine and style with shorter, stouter posterior point.

Robust, pronotum one-third longer than vertex, venation of obliqua type. Eyes black, ground color creamy white with red dorsal stripe darkened interiorly, apical cells and spots before reddened crossveins fumose. On vertex, stripe, which extends over to face, projects laterally toward anterior corner of eye, and almost touches eye at base; gradually broadens on pronotum, somewhat irregular on sides; scutellum entirely dark; all of clavus except small pale humeral

area, orange red, darkened in scutellar area and inner middle, narrow orange red stripe on corium along inner vein on posterior two-thirds, stripe along costal margin from base to translucent orange plaque, broader and more opaque below plaque to crossveins. Below face reddish, lateral pale area above eyes in which is included a red prong above each antennal socket; cheeks pale, also venter and legs in female, in male abdomen darkened slightly ventrally, dorsum of abdomen with anterior segments black, showing through elytra.

Male genitalia.—Aedeagus from lateral view short, slender, gently curved dorsad, a short sharp baso-ventral prong; from ventral view straight, narrow, sharply pointed apex; style with medium foot, heel sharply projecting, base broad, anterior point projecting slightly laterad, about a right angle, posterior point broad at base, about half as long as base of foot, sharp.

Female.—Last ventral segment five times as long as preceding at middle, narrowed abruptly on apical third to produced median rounded lobe; black-tipped ovipositor slightly exceeding pygofer.

Length: 3 mm.

Male holotype, allotype and paratypes, Delaware Co., Ohio, April 30, 1944, D. J. & J. N. Knull; other paratypes same locality on following dates: April 25, 1943; April 26, 1944; May 6, 1943; July 8, 1942; September 19, 1943, and October 3, 1943. Six paratypes in collection of The Ohio State University.

***Erythroneura kennedyi* n. sp.**

A member of the comes group in which it is near to *E. vaga* Johnson in male genital characters and between *E. omaska* Robinson and *E. beameri* Robinson in external appearance.

General ground color white marked with red. Vertex with median pale longitudinal oval reaching almost to apex of head and lateral basal oval spots, half size of median, entirely red margined, eyes dark. Pronotum with median Y-shaped mark, base narrow and longer than arms, touching both margins, a long even mark behind each eye, almost reaching hind margin. Scutellum, basal angles yellow, narrowly red-margined, apex red with a transverse white bar above it and space between basal angles white. Elytra with irregular zigzag vittae from humerus to crossveins with lateral narrow oblique extension below base and at anterior margin of plaque, a black dash parallel to them at lower edge of plaque; apex of clavus red, crossveins and adjacent longitudinal veins carmine; apical cells distinctly infuscated a short distance below crossveins, M_4 paler on disc; black spot at base of M_4 scarcely distinguishable from infuscation; and small distinct round spot at apex of R_3 . Below, oval area either side on apex of head pale, red-margined, face pink, especially on margins, and clypeus red, remainder yellowish white, mesosternum and abdomen somewhat darkened; in male lateral portions of valve darker, and apices of plates black; in female apex of ovipositor black.

Genitalia.—Pygofer hook U-shaped, outer process almost as long as inner and about twice as broad. Foot of style small, heel prominent, base curved, anterior point very large, constituting about one-third width of foot, posterior point as long, but much narrower. Aedeagus long and slender, bifid at apex, arms forming transverse curved bar from ventral view and each arm one-fourth length of shaft, shaft straight, a pair of heavy dorsal spines arises behind shaft and extends parallel with it about two-thirds its length; separated from shaft at base by twice width of shaft. In some specimens a pair of stout spines arises anterior to base of shaft, in others this appears only as a lump.

Length: 3 mm.

This interesting leafhopper is named for Professor C. H. Kennedy.

Male holotype, allotype and paratypes, Pickaway Co., Ohio, February 20 and March 31, 1934, J. S. Caldwell; paratypes, Richland Co., Ohio, October 6, M. Auten. Five paratypes in collection of The Ohio State University.

***Erythroneura vagabunda* n. sp.**

In the comes group near *E. aza* Robinson in genital characters and near *E. delicata* var. *accepta* McA. externally.

Background yellowish white, with orange to red markings. Vertex with median oval pale area and smaller circular area either side, narrowly red-margined. Pronotum, median Y with short base, longer arms not reaching anterior margin, dark color beneath showing through on

disc, broad irregular mark behind each eye. Scutellar basal angles yellow, narrowly red-margined, tip red. Elytra semihyaline, markings narrow, irregular, broken. Clavus with usual anchor-shaped basal mark, a black spot at suture, and small spot filling apex; corium with oblique dash on costal margin near base, another arising at anterior end of costal plaque enlarging toward middle of claval suture and angling to base of cell M_4 . An oblique black dash at posterior end of plaque, obscure black spot in base of cell M_4 , a definite one in apex of R_3 , and apical cells infuscated some distance below red crossveins. Longitudinal veins white below crossveins, reddened a short distance above crossveins. Below sordid yellowish white, dorsum of abdomen and mesonotum black. Edges of front, clypeus and area around bases of antennae reddened.

Male genitalia.—Aedeagus from ventral view three-pronged, the median or shaft prong rough apically; pair of stout ventral processes straight, as long as shaft and parallel to it; pygofer hook U-shaped, outer arm a little thicker than and almost as long as inner. Foot small, heel prominent, base straight, anterior point short, about size of heel; posterior point heavy and twice as long as anterior point, shorter than base and meeting it at less than right angle.

Distinguished particularly by black dorsum of abdomen showing through elytra, black mesonotum and black spot at middle of clavus at elytral suture.

Length: 3 mm.

Male holotype, Lawrence Co., Ohio, April 29, J. S. Caldwell; allotype, Scioto Co., Ohio, June 17, 1944, D. J. & J. N. Knull; and paratypes from Hocking Co., June 1, 1938, D. J. & J. N. Knull; Jackson, Ohio, April 1, 1934, J. S. Caldwell; Chesapeake, Ohio, April 29, 1934, J. S. Caldwell; and Decatur, Ga., May 5, 1934, M. Auten. Two paratypes in collection of The Ohio State University.

Erythroneura noncincta Johnson

E. tricineta var. *noncincta* Johnson, Ohio Jour. Sci. 34: 261, 1934.

E. calycula var. *noncincta* Beamer, Univ. Kans. Sci. Bull. 24: 271, 1936.

Dr. Beamer stated in the above reference: "This is a variety of doubtful validity. . . ." As a fairly large series has been collected since its description, and also since the inner male genitalia show distinct characters, this variety is raised to specific rank and perhaps the shadow of doubt concerning its validity may be erased.

Male genitalia.—Pygofer hook U-shaped, with outer arm very short, scarcely one-fifth length of arm and of equal thickness; foot of style medium, heel small, base evenly curved; anterior point broad, longer than width of foot at narrowest place; posterior point short and sharp; aedeagus on dorsoventral view broad; shovel-shaped, with short lateral spine projecting either side, one-half distance from base, ventral processes curved toward shaft, slightly exceeding it, enlarged on outer half to twice basal width and tapering to sharp apices.

A male from Hocking Co., Ohio, April 15, 1934, J. S. Caldwell, is made an allotype and placed in the collection of The Ohio State University.

Xestocephalus piceus Osborn

Ohio Biological Survey Bulletin 14, p. 244, 1932.

The male is robust, uniformly dark brown above with exception of paler head, hyaline dots at inner middle and apex of clavus, and center of inner apical cell, square brown spot at costal margin just above crossvein surrounded by semicircular hyaline area. Below face, thorax and legs but for darker hind tibiae, straw-colored, abdominal segments dark with pale margins, and hairs of plates pale.

Resembles *X. brunneus* V. D. but is darker in color, larger and more robust. Taken in association with females exactly like type.

Length: 3.1 mm.

Male allotype, Hocking Co., Ohio, August 31, 1944, D. J. & J. N. Knull, and two males, September 14, 1944, in collection of The Ohio State University.

Dr. E. D. Ball, Jour. Wash. Acad. Sciences 22: 19, 1932, made *Twiningia irrorata* (Osborn) a synonym of *T. pellucida* (Ball). Examination of the type shows *T. irrorata* (Osbn.) to be distinct and readily separable from *T. pellucida* (Ball) in a number of characters.

Unless stated otherwise type material is in collection of author.