

1943  
*Lewis Berner*

## NEW VENEZUELAN MAYFLIES

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### *Thraulus caribbeanus* sp. nov.

Male imago (holotype). Body 4½ mm.; wing 5 mm.

Turbinate eyes as in members of the subfamily Baetinae; very large, erect, on thick stalks; upper surface oval, the greatest diameter of eye being transverse, as shown in Fig. 1<sup>a</sup>; color, orange. Lower portion of eye blue-black. Head, thorax, and apical abdominal segments rather dark red-brown. Antennae broken. Black transverse line above lateral ocellus. Dusky streak laterally on pronotum. Mesonotal scutellum yellow, its tip dusky-shaded; lateral areas at sides of mesonotal shield also yellow; scutellum, and anterior half of shield, outlined with black. Legs missing. However, in vial in which all specimens were contained, are several legs which correspond to those of the female subimago of this species. Legs yellow, with wide red-brown apical band on femora. Wings hyaline; brown stain at extreme base of each wing, extending on to membrane only as far as humeral cross vein in fore wing, but slightly on to anal area in hind wing. Venation light red-brown; cross veins paler than longitudinal. In costal stigmatic space, 7 or 8 cross veins; oblique, almost colorless. Hind wing relatively short with acute costal angulation; vein Sc ends at prominent curved cross vein extending from this angulation; venation scanty; see Fig. 1b. First abdominal tergite purplish brown; sternite whitish with some grey shading. Segments 2-6, and base of 7, transparent yellowish white; posterior margin purplish brown, wider and darker on tergites than on sternites; two purplish black dots at stigmatic area,

and another smaller dot on pleural fold nearer anterior margin. Tergites 8-10, and apical half of 7, red-brown; sternites paler, yellowish. Tails missing. Genitalia as shown in in Fig. 2. The penes are quite distinctive, being more like those of some species of Nearctic *Paraleptophlebia* than like *Thraululus*. Also no process is visible between forceps and penes, arising from forceps base, as in most of the New World species of *Thraululus*.

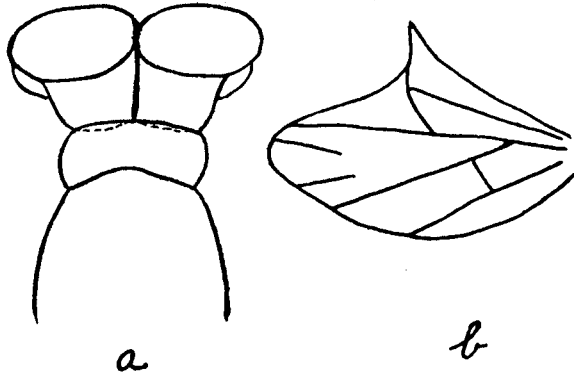


Fig. 1.—*Thraululus caribbeanus*. 1a—Head of male, from above (freehand sketch), showing tall turbinated eyes. 1b—Hind wing (freehand sketch.)

Female imago (allotype). Body 4½ mm.; fore wing, tails and legs missing (some of the aforementioned legs probably belong to this specimen). Head grey; purplish black band between eyes. Pronotum yellow, with grey-brown shading; a rose-colored spot at antero-lateral angle; sclerite outlined with reddish black. Prosternum white. Meso- and metanota light red-brown, narrowly outlined in dark brown; lateral areas between wing roots dark brown; mesonotal scutellum yellowish. A rose-colored spot anterior to wing root, two others on pleura below wing root. Pleura yellow with some brown shading. Anterior half of meso-sternum white; posterior half light red-brown. Rose-colored markings also at base of hind wing. Costal angulation of hind wing less acute than in male, otherwise similar. Legs presumably as described for male. Abdominal tergites 1-6, middle area of 7, and all of 9 and 10,

greyish rose. Anterior margin of tergite 2, antero-lateral corners of tergites 1-6, and all of 8 but a narrow rose-colored mid-dorsal line, white. Posterior margins of middle and apical tergites narrowly darker; blackish shading laterally next to pleural fold, on tergites 1-6. Sternites whitish with faint rose tinge; egg valve on 7, and margins of 9th sternite, tipped with orange. 9th sternite quite deeply cleft at apex; extends beyond tip of 10th tergite. Tails missing.

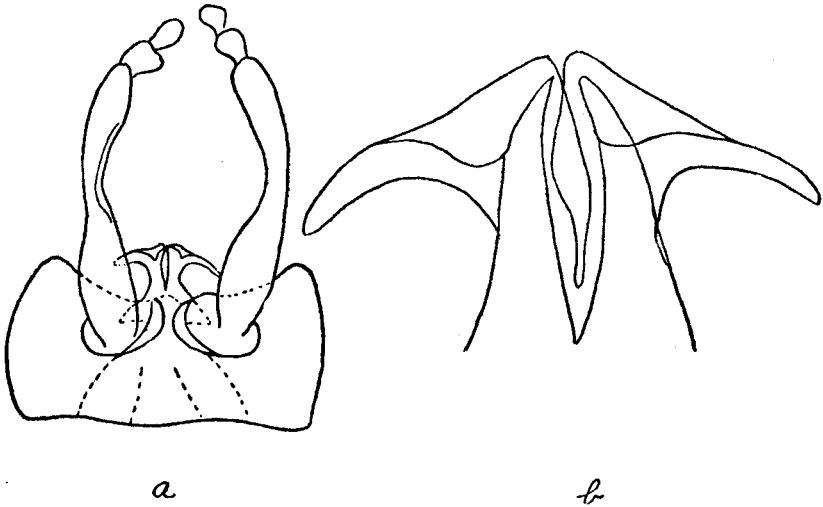


Fig. 2. — *Thraulius caribbeanus*. 2a — Male genitalia, showing penes, forceps and basal plate. 2b — Penes, enlarged.

Female subimago. Too teneral to warrant description; dark markings which are present correspond well to those of imago. Important only due to the fact that all three legs on one side are still attached. Yellowish, with wide pre-apical band on femora, which shows indication of extending toward tip of that structure; fore tibia also dark-tipped.

Holotype- Male imago. Antimano, Venezuela, 900 meters; Jan. 13, 1940. Rene Lichy, collector. In private collection of J. R. Traver.

Allotype- Female imago. Same data. In National Museum, Caracas.

Paratype- Female subimago. Same data; in National Museum, Caracas.

In type of hind wing, and in the fact that the appendages of the penes extend laterad, this species seems most nearly allied to *maculatus* Ndhm. and Murphy. The structure of the penes is unique, however, among Neotropical members of this genus.

*Leptohyphes nigripunctum*, sp. nov.

Male subimago (almost ready to shed cuticle).

Body 4 mm.; wing 4 mm.; tails 10 mm. Head grey above, white below; a pale triangular area between ocelli. Bases of antennae white; filament dusky, tip white. Pronotum yellowish white, shaded with pale grey; narrow pale mid-dorsal and submedian lines; lateral margins with blackish shading and lines, also black margining, leaving several pale areas; heavy shading above leg base. Meso- and metanota quite bright reddish brown; mesonotal scutellum faintly grey-tinged. Considerable grey shading on pleura, anterior to wing base and around leg bases. An oblique black line anterior to base of hind leg. Middle area of thoracic sternum rather dark grey. A small but conspicuous black dot at apex of each trochanter. Fore femur yellow; heavy longitudinal dark grey stripes on each side; black line along dorsal crest; indications of interrupted blackish subapical band. Tibia greyish black; apex, base and margins narrowly pale. Tarsus somewhat paler than tibia; claw almost white. Middle and hind femora yellow streaked with grey and with broken subapical band, but paler than fore femur. Tibia and tarsus immaculate, whitish. Hind wing as in Fig. 3. Faint traces only, of two longitudinal veins; costal projection slightly curved, of moderate length. Fore wing whitish, C, Sc and R; faintly grey-lavendar in basal half; all other veins white. Cross veins numerous. Abdominal segments 2-6 yellowish white, basal and apical segments light reddish brown with yellow tinge; tergum and sternum same color. Pleural area largely pale except for a few very faint grey pencilings. A pale grey transverse band occupies most

of the middle area of each segment, both tergites and sternites, leaving pale areas at anterior and near posterior borders. Posterior margins of all segments narrowly black. Tails whitish, not darker at joinings. Genitalia of the *peterseni* type; unfortunately these were lost while being prepared for mounting.

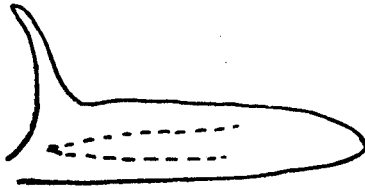


Fig. 3.—*Leptohyphes nigripunctum*. Hind wing (free-hand sketch).

This species seems most nearly allied to *costaricanus* Ulmer, described from female specimens. Differs from that species as follows: (1) cross veins of fore wing much more numerous; (2) tibia and tarsus of middle and hind legs wholly pale, tibia not darker at base; (3) abdominal sternites not paler than tergites.

Holotype- Male subimago. Antimano, Venezuela. Jan. 13, 1940; 900 meters. R. Lichy, collector. In National Museum, Caracas.

*Tricorythodes lichyi* sp. nov.

Body of male 3-4 mm.; wing 4½ mm. (dried specimens).  
Male imago (holotype). Body 3½ mm.; wing 4½ mm.

Antennae broken; brownish at base. Head, pronotum and mesonotum very dark red-brown; mesonotum shiny, quite sharply set off from the pale red-brown pleura adjoining. Pronotum duller, blackish brown. Patches on pleura, and areas on each side of mid-line of meta-sternum, somewhat brighter red-brown. Wings hyaline; in some lights a very faint pale smoky tinge is evident, most noticeable near apex and along margin. Venation distinct. Longitudinal veins blackish, paler in cubital and anal regions; Sc and R most heavily colored, with distinct infuscation in narrow area on each side of each

vein. Cross veins in third and fourth spaces likewise distinctly blackish; costal cross veins near bulla paler, but distinguishable; all others pale. All femora rather pale red-brown, with some paler streaking. Knees (extreme base of tibia) distinctly blackish. Fore tibia pale smoky brown at base, becoming paler apically; narrowly black-margined on ventral edge. Fore tarsus pearly grey, brownish at tip of distal joint; very narrow black line at each joining and along ventral edge. Middle and hind tibiae concolorous with femora; tarsi slightly paler at base of joints, and reddish brown at distal ends; joinings as in fore leg. Ground color of abdomen pale yellowish to reddish brown; basal and apical tergites and middle area of middle tergites heavily shaded with black; all joinings narrowly paler. 9th sternite with yellowish apical triangle; basal portion shiny red-brown, slightly darker than 8th. Forceps base with moderately deep excavation apically. Tails hyaline whitish; basal joints smoky grey; margins and joinings of lateral tails narrowly blackish, and of middle tails red-brown, in basal half, becoming paler apically.

Female imago (allotype). Body 4 mm.; wing  $5\frac{1}{2}$  mm.

Head and thorax rather dark red-brown, only slightly paler ventrally. Legs light red-brown; knees black; fore tibia shaded with smoky. Wing faintly grey-tinged thruout; apical costal space and entire outer margin more distinctly shaded with grey. All veins more distinct than in male; black. Sc and R more widely infuscated on each side. Abdomen (filled with eggs) light red-brown; tergites blackshaded as in male; joinings of middle tergites red-brown. Apical margin of 9th sternite truncate. Tails light red-brown; joinings blackish.

Male paratypes. Considerable variation in coloring, ranging from specimens as dark as holotype to those which are distinctly paler red-brown on legs, thorax and abdomen, with little difference in color between mesonotum and pleura; abdominal tergites less heavily dark-shaded. In many paratypes, the middle tail is dark-margined like the laterals. Wing membrane varies from untinted hyaline to pale red-brown tinge thruout entire wing. Antennae brown basally, tips silvery white. Specimens in alcohol show a distinct whitish trans-

verse band near base of fore femur, and large pale areas or thorax: anterior to wing root, between middle and hind leg bases, and on sternum between bases of hind legs. Large yellowish area on each side of and anterior to mesonotal scutellum. A large squarish yellow area surrounds base of middle leg; included within this area is one small dark brown sclerite. Head bright red-brown, not shaded with black; pronotum definitely shaded and marked with black. Costal margin of wing distinctly grey-tinged; outer margin distinctly smoky except in anal area.

This species seems rather closely allied to the Nearctic species *fictus* Trav. Differs by its smaller size; more distinct red-brown markings on thoracic sternum; less black shading on thoracic pleura; less extensive pale intersegmental abdominal markings; more extensive light area on 9th sternite; smoky tinges on wing membrane. It is paler and smaller than *explicatus* (Etn), the only Neotropical species thus far described.

Holotype- Male imago. Antimano, Venezuela; 900 meters; Jan. 13, 1940. R. Lichy, collector. In private collection of J. R. Traver.

Allotype- Female imago. Same data. In National Museum, Caracas.

Paratypes- 33 male imagos, same data. 12 of these in private collection of J. R. Traver; remainder in National Museum, Caracas.

*Baetis alcyoneus* sp. nov.

Male imago (holotype). Body 4 mm.; wing 4 mm.

Upper part of body light red-brown, venter paler, whitish. Head, antennae, dorsum of thorax to a dividing line above leg bases, and apical abdominal segments, light red-brown. Turbinate eyes large, on short thick stalks; upper surface oval, the two eyes not quite contiguous; pale orange. Lateral margins of pronotum, sutures of meso- and metanota and of pleura, dark brown; pale yellowish square area around base of fore

wing; short longitudinal streak laterally on basal half of metanotum. Slight dusky shading anterior to fore wing. Thoracic sternum pale creamy white, sharply marked off from the reddish upper portion. Legs missing. Wings hyaline; longitudinal veins light brown, cross veins paler. Stigmatic area milky white; four oblique cross veins, of which two are incomplete. Marginal intercalaries paired; of moderate length; none in first interspace, those of second interspace very short. Hind wing narrow, somewhat pointed at apex; with but two longitudinal veins and no traces of cross veins; costal angulation short, acute, as shown in Fig. 4b. Abdominal segments 2-6 semi-translucent; tergites pale olive brown, sternites creamy whitish. Apical segments light red-brown, sternites paler than tergites. Posterior margins of all tergites narrowly dark purplish brown. Smoky shading in antero- and posterolateral angles, parallel to pleural fold, and forming a mid-dorsal triangle in apical half of tergite 3. Black parallel tracings along pleural fold; small dark circle at each stigma. Tails missing. Genitalia broken except basal portion, which is shown in Fig. 4a.

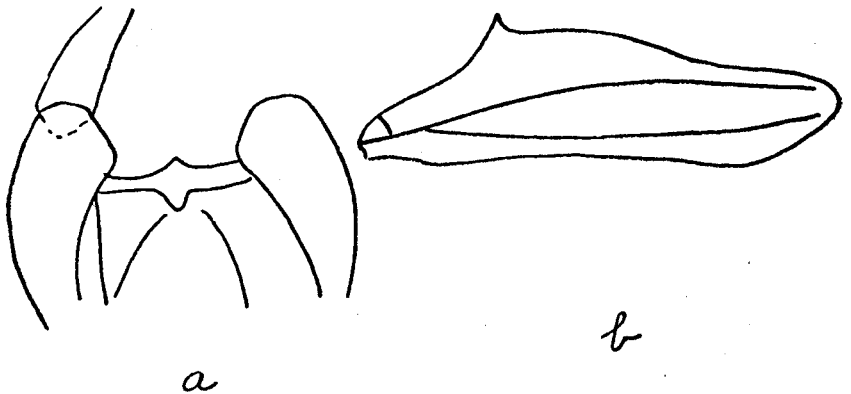


Fig. 4.—*Baetis alcyoneus*. 4a—Male genitalia (one entire forceps missing, likewise tip of the other). 4b—Hind wing.



Female imago (allotype). Body 5 mm.; wing 5 mm. Very similar to male. Head slightly paler than dorsum of thorax. Dorsum of abdomen concolorous with thoracic dorsum when eggs are present, elsewhere pale fawn-colored. Sternites 6-10 paler fawn-colored than dorsum; sternites 1-5 pale yellowish white. Dark posterior margins of tergites less conspicuous than in male, in most tergites, do not attain mid-dorsal line. Femora yellowish white, tibiae and tarsi amber-tinged. Narrow dark longitudinal streak the length of fore femur. All joinings very narrowly darker. Venation somewhat darker than in male, all cross veins better defined. Three or four complete stigmatic cross veins. No marginal intercalaries in first two interspaces.

Holotype- Male imago. Antimano, Venezuela, 900 meters; Jan. 13, 1940. R. Lichy, collector. In private collection of J. R. Traver.

Allotype- Female imago; same data. In National Museum, Caracas.

Paratype- Female imago; same data. In National Museum, Caracas.

This species seems quite closely allied to *tantillus* Ndhm. and Murphy; related also to *dryops* Ndhm. and Murphy, and to *inops* Nav., by characters of the hind wing. Differs from the first mentioned, of which only the female is known, by reason of its somewhat larger size, lack of any traces of cross veins in hind wing, and slight differences in longitudinal veins of that wing. Type material of *tantillus* shows no indication of the sharp dividing between dorsum and venter, which is so pronounced in *alcyoneus*; body  $3\frac{3}{4}$  to 4mm., (females), wing 4 mm. in each specimen. Lower of the two longitudinal veins in hind wing, in *tantillus*, slightly shorter than upper, not quite reaching apex of wing.

*Pseudocloeon anduzei* sp. nov.

Male imago (holotype). Body 4 mm.; wing 4 mm.

Turbinate eyes very large, erect, almost contiguous apically; upper surface almost round; light red-brown, somewhat darker in basal half of stalk. Lower portion of eyes purplish black. Antennae whitish; two basal joints with narrow dark rings at apices. Head and thorax clear yellow. Outlines of mesonotal shield and margins of pleural sclerites light amber-brown; paler whitish areas anterior to base of middle leg. Legs yellowish white. Tip of femur, a small dot at apex of tibia, and apical margin of trochanter, narrowly brownish; tarsal joinings very slightly smoky. Short inconspicuous reddish streak near apex of femur. Fore tibia about one and one-third as long as femur; tarsus slightly longer than tibia. Long second tarsal joint almost equal to third and fourth combined. Basal tarsal joint of hind leg almost as long as the three following joints combined this joint somewhat less than half the length of the hind tibia.

Wings hyaline; venation light brown; costal margin at base dark brown; same color extends a short distance on veins Sc, R and Cu, and on arcuate brace at base of anal veins. Two series of cross veins and a third incomplete series nearer wing base. Three complete stigmatic cross veins, slightly oblique. No marginal intercalaries in the first two interspaces behind costal space; two such intercalaries in most other spaces as far as cubitus, altho in some spaces but one may occur. Abdomen transparent white, apical segments yellowish. Inconspicuous thin dark penciling directly above pleural fold; narrow brown dash on posterior margins of pale segments, on each side only, not reaching mid-dorsal line. Tails missing, on holotype. On one of the paratypes, these are whitish, very faintly smoky at base, not darker at joinings. Genitalia as shown in Fig. 5<sup>a</sup> and b.

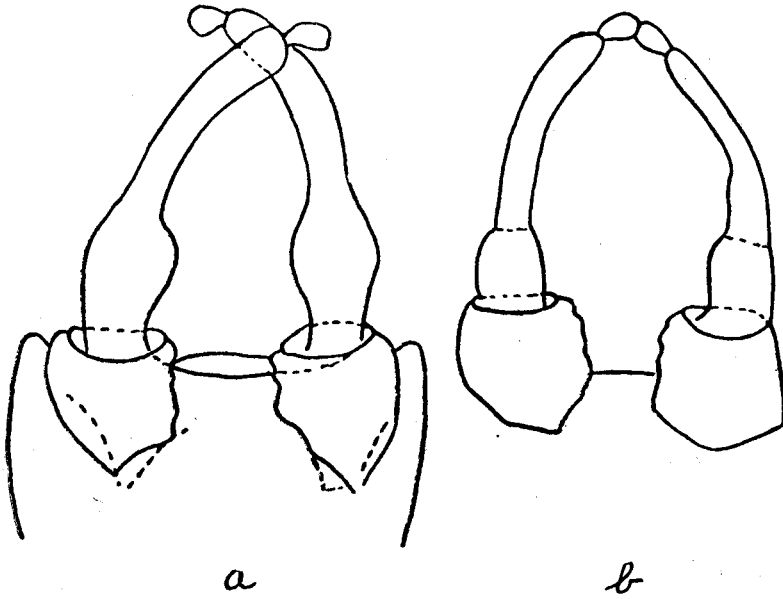


Fig: 5.—*Pseudocloeon anduzei*. Male genitalia. 5a—Holotype (red-eyed specimen). 5b—Paratype (white-eyed specimen).

Male paratypes similar, except that the turbinate eyes are paler almost flesh-colored. Tails 10 mm. in length.

The large turbinate eyes and the lengths of the leg joints are reminiscent of the Puerto Rican genus *Cloeodes*, which is distinguishable from *Pseudocloeon* mainly on nymphal characters. Note that the genitalia bear some resemblance to those of *C. maculipes*, the type of the genus *Cloeodes*, except for the swollen area at base of the long forceps joint. It is quite possible that the genus *Cloeodes* may occur in South America and this and some species now placed in *Pseudocloeon* should be transferred to it. Genitalia rather similar also to *turbinops* Ndhm. and Murphy, which is a smaller brownish species from British Guiana.

Holotype- Male imago. Antimano, Venezuela; 900 meters; Jan. 13, 1940. R. Lichy, collector. In private collection of J. R. Travers.

Paratypes- Two male imagos, same data; one of these in private collection of J. R. Traver, the other in Nat. Mus., Caracas.

Additional specimens: four male and four female subimagos, teneral.

*Pseudocloeon arawak* sp. nov.

Male imago (holotype). Body  $3\frac{1}{2}$  mm.; wing  $3\frac{1}{2}$  mm.

Turbinate eyes moderately large, erect, upper surfaces almost round, not contiguous apically; yellowish orange in color. Lower portion of eyes purplish black. Antennae broken; basal joints pale red-brown. Head, thorax and apex of abdomen light red-brown. Somewhat paler areas on pleura, at bases of legs and wings. Posterior half of mesonotal shield narrowly outlined in yellow, which in turn is margined with dark brown. Scutellum outlined with dark brown; an oblique brown line laterally on metanotum, above leg base. Metasternum somewhat paler red-brown, other parts of sternum concolorous with dorsum. Legs missing. Wings hyaline; venation yellowish, cross veins very indistinct. Brownish stain at extreme base, extending a short distance out on veins C, Sc, and R. Stigmatic area faintly milky; cross veins there very indistinct, but three can be made out with difficulty. No marginal intercalaries in first interspace behind costal space, on one wing, but on the other a single short stub is present. From here to cubitus, intercalaries paired, moderately short. Abdominal segments 2- 6 and base of 7 white, translucent; tiny blackish stigmatic dots on pale segments are the only markings. Tails missing. Genitalia as in Fig. 6.

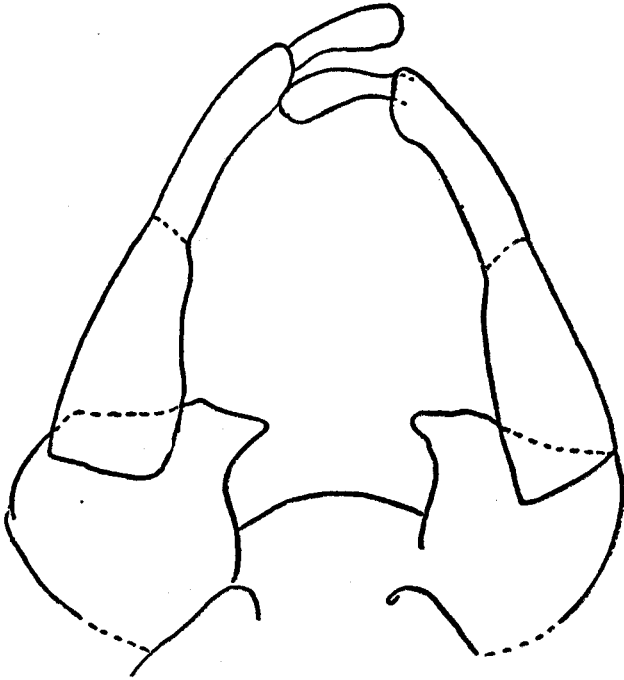


Fig. 6.—*Pseudocloeon arawak*. Male genitalia.

A teneral male subimago is probably of the same species. It is not possible to determine whether or not any of the several females of this genus may belong with the above males.

Holotype- Male imago. Antimano, Venezuela; 900 meters; Jan. 13, 1940. R. Lichy, collector. In private collection of J. R. Traver.

This species is smaller than any others thus far described in the South American fauna, except the brownish *turbinops* Ndhm and Murphy from British Guiana and the yellowish *bruchii* Nav. from Argentina.

The inward-projecting process at base of forceps is unlike that of genitalia of any other species figured from South America.

*Pseudocloeon venezuelensis* sp. nov.

Male imago (holotype). Body  $2\frac{3}{4}$  mm., wing  $2\frac{1}{2}$  mm.

Turbinate eyes of male cylindrical, erect, diameter at top slightly greater than at the bottom; each eye slightly taller than one-half the greatest width of head (including basal portion of eye). These tall turbinate eyes are reminiscent of *P. binocularis* Ndhm. and Murphy, a Peruvian species in which the eyes are considerably taller, and body and wing almost twice the size of the present species. At base, turbinate eyes are orange, becoming yellow in apical half. Head yellow; bases of ocelli and markings on frontal margin, red-brown; basal portion of eyes black. Basal joints of antennae light red-brown; filament slightly paler. Thorax red-brown dorsally, prothorax somewhat paler than other parts; quite extensive yellow areas on pleura around leg and wing bases, and anterior to middle leg. On pronotum, lateral margins and a transverse narrow line near middle of sclerite, black; black line at base of fore leg; scutella and margins of meso- and meta-nota outlined with black. Near lateral margin of meta-notum in basal half, a longitudinal yellow streak. Thoracic sternum paler than dorsum; prosternum outlined in black. All coxae red-brown. Fore leg whitish, tip of tibia faintly smoky; other legs missing. Wing hyaline; dark brown at extreme bases of C, Sc and R, and on membrane basad of other longitudinal veins. Longitudinal veins pale brown; cross veins and intercalaries colorless. Very faint milky tinge in apical half of stigmatic area, in costal and subcostal spaces. 2 or 3 complete, and 3 to 4 incomplete stigmatic cross veins, all somewhat oblique. In first seven interspaces behind costal space, marginal intercalaries wholly lacking, or if present in fourth and seventh space, very short; none in cubital or anal areas. In remaining marginal area, intercalaries paired, moderate in length; in each of the interspaces next behind  $R_5$  may be single or paired. Abdominal tergites 2-6 silvery white, translucent; apical segments red-brown, slightly paler than thorax. Segment 1 largely pale reddish, but posterior margin of tergite and area behind hind leg, white. A double black wavy line longitudinally along pleural fold, on pale

segments; most distinct over stigma. Faint brownish shading in antero-lateral angles on pale tergites, extending a short distance along anterior margin. Tails missing. Genitalia as shown in Fig. 7. Note the very short median spine on apical margin of subgenital plate.

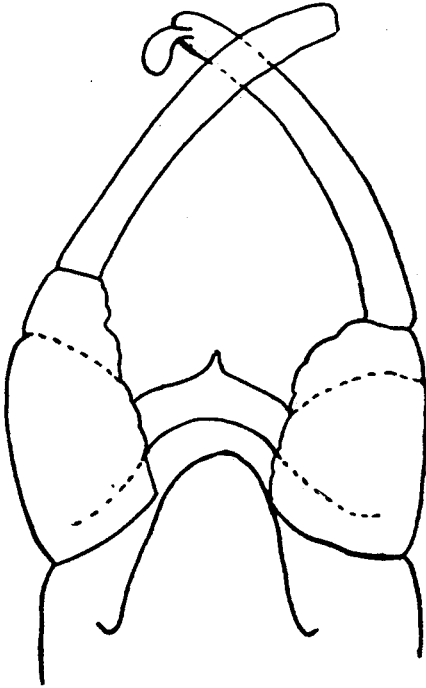


Fig. 7.—*Pseudocloeon venezuelensis*. Male genitalia.

Male subimagos too teneral to show any color pattern.

Female imago (allotype). Body  $2\frac{3}{4}$  mm., wing  $2\frac{1}{2}$  mm.

Head and thorax light yellowish brown. Eyes and ocelli black. Antennae yellow. A wide transverse band, pale red-brown, occupies most of pronotum. Mesonotum outlined in brown; a brown patch on each side, in posterior region; darker brown triangular area on each side of scutellum. Metanotum also narrowly dark-margined; whitish lateral streaks

in basal half, as in male. Brown markings on pleura above leg bases. Legs yellowish. Wings much as in male, but longitudinal veins slightly more distinct. Marginal intercalaries lacking from first four interspaces, but in 5 and 6 one or two very short ones may be present, and a pair of short ones in seventh space. Abdomen dorsally pale rosy brown, where no eggs remain; eggs deep orange. Anterior margins of tergites narrowly pale, so that abdomen appears slightly banded. Slightly paler ventrally. Tails missing.

Holotype- Male imago. Antimano, Venezuela; 900 meters; Jan. 13, 1940. R. Lichy, collector. In private collection of J. R. Traver.

Allotype- Female imago; same data.

Paratypes- One male and two female imagos. Same data. One female in private collection of J. R. Traver, others in National Museum, Caracas.

In genitalic type, this species seems allied to *brunneum* Esb. Pet. Has turbinate eyes of the *binocularis* type; smaller and paler than either of these species. Smaller than any described species except *bruchii* Nav.

*Baetodes spiniferum* sp. nov.

This genus was described from a peculiar Brazilian nymph, *B. serratus* Ndhm. and Murphy. The adult is not known. The following specimens are believed to represent this unknown adult stage, because: (1) of the presence of mid-dorsal abdominal spines on tergites 2-5, a feature of the nymph of *serratus*; (2) of the very long tibia, a joint which is also long in the nymph of *Baetodes*; (3) of the fact that the above characters plus lengths of leg joints do not fit into the pattern of *Pseudocloeon* or *Cloeodes*, the other two genera of Baetines possessing paired intercalaries and lacking hind wings. The species is too small for *serratus*. An undescribed species of *Baetodes* nymph from Mexico, collected by Dr. Lewis Berner, is nearer the size of this adult, and differs



from *serratus* in color pattern, size, and in the presence of gill filamente at the bases of the legs. It is probable that the genus *Baetodes* is rather widely distributed in the neotropical region.

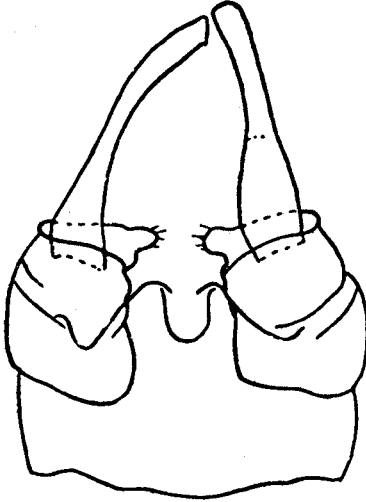


Fig. 8.—*Baetodes spiniferum*. Male genitalia.

Male imago (holotype)- Body 4 mm.; wing 4 mm.; tails broken at  $3\frac{1}{2}$  mm. from body. General color reddish (chestnut) brown, with purplish shading. Turbinate eyes very large, cylindrical, erect; apical surface round; eyes contiguous apically; reddish in color. Lower portion of eyes purplish black. Antennae light red-brown; basal half of second joint paler. Head and thorax bright red-brown, only slightly duller ventrally and on pleura. A rather wide black band at anterior margin of pronotum. Darker brown triangular shading on lateral portions of pronotum, and on mesonotum anterior to wing root. Scutella of meso- and metanota outlined with black; a short yellowish median streak directly anterior to mesonotal scutellum. Sclerites at bases of legs and wings outlined with

black. Coxae and trochanters red-brown with some dull purple shading; femora yellowish or greenish brown, with wide red-brown band slightly toward apex from middle; extensions of this band reach apex of segment along upper crest of fore and hind legs, and on lower margin also, of hind leg. Tibiae whitish, fore tibia yellowish, faintly smoky at apex. Tarsi smoky yellow-brown. Fore tibia more than twice as long as femur; tarsus short, subequal to femur; second tarsal joint about as long as third and fourth combined. Fore leg fully as long as body. Hind tibia about one and one-third times as long as femur; tarsus very short, about half the length of the femur; basal joint equal to the next two joints combined. Wings hyaline; venation pale yellowish brown; red-brown stain at extreme base, extending a short distance on to veins C, Sc, and R. Faint milky tinge in stigmatic area, where are 2 (or 3) complete oblique cross veins and traces of 2 or 3 others, incomplete; the latter may be connected by longitudinal bars. Cross veins in disc of wing very fine, inconspicuous. No marginal intercalaries in first interspace behind costal space; beyond this as far as cubitus, a pair of intercalaries in each interspace, well developed and moderately long. Apical abdominal segments red-brown with distinct yellowish tinge; basal and middle segments paler, greyish yellow with considerable purplish brown shading across most basal segments and in central area of middle ones. Short mid-dorsal spines occur on tergites 2-5, between middle of segment and its posterior margin; these slant slightly to rearward. Posterior margin of tergite 1 is uprolled in median area, to form a sort of carina, in the hind portion of which is a tiny projection that may represent a spine. Posterior margins of all tergites darker, these bands widest on basal segments. Dusky purplish border along pleural fold. Basal and middle sternites smoky brown, somewhat darker than ground-

work of corresponding tergites; apical sternites concolorous with tergites. Basal sternites slightly darker on posterior margins; middle ones with small pale antero-lateral streaks. Tails dusky, joints *very* narrowly but indistinct darker at joinings (tails do not, however, appear annulated). Genitalia as shown in Fig. 8.

Female subimago. Body  $4\frac{1}{2}$  mm.; wing  $4\frac{1}{2}$  mm.; tails 10 mm.

Head yellow. Thorax and abdomen red-brown, almost as bright in certain areas as in the male. Similar black band at anterior margin of pronotum. Suture between pro- and mesonota black; sclerites of pleura black-brown. Smoky brown and purplish shading anterior to fore wing and between leg bases. Mesonotal scutellum and area just anterior to it, yellowish; middle of mesonotal shield outlined by yellow lines; dark shading across anterior margin of mesonotum. Scutella of meso- and metanota outlined with black. Wide black longitudinal line on metathorax, above leg base. Thoracic sternum shaded with smoky purple; sutures black. Fore legs missing. Middle and hind legs yellowish; femora very heavily shaded with purplish brown. Tibia of hind leg about one and one-third as long as femur; tarsus very short, about one-fourth as long as femur. Wings with yellowish cuticle of subimago; cross veins indistinct. Small brown spot at base of Sc and R; intercalaries as in male. Basal tergites and all sternites shaded with purplish brown; middle tergites shaded only along middle line. Posterior margins of all segments narrowly darker, but joinings paler, yellowish, so that abdomen appears somewhat banded. Black line along pleural fold; somewhat paler irregularly oval marks over stigmatic areas, on middle and apical tergites. Tergite 10 paler, its middle area largely yellowish. Mid-dorsal spines present but less well-defined than in male. Tails yellow, not darker at joinings. Apical margin of 9th sternite truncate, not prolonged backwards.

Holotype- Male imago. Antimano, Venezuela; 900 meters; Jan. 13, 1940. R. Lichy, collector. In private collection of J. R. Traver.

Allotype- Female subimago, same data. In National Museum, Caracas.

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#### RESUMEN

Se describen por primera vez ocho especies de Epheméridos de Venezuela provenientes todas de Antimano, D. F., coleccionadas por R. Lichy. Son todos ejemplares relativamente pequeños.