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A NEW GENUS OF NEOTROPICAL MAYFLIES

(EPHEMEROPTERA, LEPTOPHLEBIIDAE)[1]

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It has long been suspected by students of mayflies that certain Neotropical and Nearctic nymphs with *Thraulus*-like gills differed so much from nymphs of the genotype of the genus *Thraulus* (*Thraulus bellus* Eaton, 1881) as to be quite probably representative of one or more new genera. Likewise many adult mayflies, principally from the Neotropical fauna, which have been described in the genus *Thraulus*, do not conform in certain important features with adults of *T. bellus*. With the one exception noted below, none of these nymphs with *Thraulus*-like gills has been reared or otherwise associated with the proper adults, nor have the above adults described in '*Thraulus*' been known in the nymphal stage. Edmunds (1948) succeeded in rearing one species of such *Thraulus*-like nymphs, and showed these nymphs to be the immature stages in the life cycle of the adult specimens previously described as *Thraulus albertanus* McDunnough, 1931. Thus was established the correlation between nymphal and adult stages of one species of this Western Hemisphere '*Thraulus* complex.' Edmunds erected the genus *Traverella*, with genotype *T. albertana* (McD.), for this and allied species, in which the nymphs have the characters he depicted, and the adults possess on the forceps base, between forceps and penes, "a pair of caudally directed rod-like projections" (Edmunds, 1948). To this genus Edmunds transferred also in 1948 the species *presidiana* (Traver) 1934, described in *Thraulus*. In 1950, he transferred still other species of this complex to *Traverella: ehrhardti* (Ulmer) 1920; *maculipennis* (Ulmer) 1920; *versicolor* (Eaton) 1892; and *primanus* (Eaton) 1892. Sketches prepared for Edmunds by Kimmins, from type material in the British Museum, showed that Eaton's figures of the wings of *Thraulus bellus* were in some respects inaccurate. Comparison of these corrected figures with published figures of the wings of other Western Hemisphere species of '*Thraulus*,' plus discrepancies between nymphs known from these areas with the nymph of *T. bellus*, make it seem highly probable that the genus *Thraulus* does not occur in either the Nearctic or the Neotropical fauna.

[1]Classification according to Edmunds and Traver, 1954. Proc. Ent. Soc. Wash. 56.

It has recently been my privilege to study a fine collection of mayflies, both nymphal and adult stages, from several areas in South America. Among these are many taken in the republic of Uruguay, by Dr. C. S. Carbonell and his colleagues, collected during the field trips organized by the Departments of Zoology and Entomology of the Facultad de Humanidades y Ciencias of Uruguay. Working with these specimens, I have been able to isolate still another genus whose nymphs have *Thraulus*-like gills, but are not of the genus *Thraulus* nor of *Traverella*. Although none of the nymphs had been reared, by a fortunate chance some of the adults have speckled wings with a distinctive pattern, and full-grown nymphs with similar venation and identical pattern of spots on their wings are among the collected material. The adults do not in any way resemble the true *Thraulus*. For this new genus I propose the name *Ulmeritus*,[2] designating as the genotype the new species herein described as *Ulmeritus carbonelli*.[3]

Ulmeritus, new genus

Eyes of male imago large, contiguous apically in middle area. Posterior margin of head obscured by these large eyes, as is also the basal portion of the pronotum. Head, with eyes, wider than any other part of body. Claws of all legs unlike, the blunt member of each pair being larger than the sharp-pointed member. In the type species, fore leg about as long as head, thorax and first four abdominal segments combined. Femur slightly shorter than tibia, tarsus three-fourths as long as femur. Tarsal joints in descending order range as: 2,3,4,5,1. Second leg slightly shorter than third; femur and tibia subequal, tarsus about one-third as long as either of the preceding segments; tarsal joints in descending order (not including lateral spines): 4,1 subequal to 2,3. The basal segment, not included in these measurements, is fused with the apical portion of the tibia. Third leg slightly more than four-fifths the length of the fore leg; femur and tibia subequal, tarsus one-fourth of femur or tibia; tarsal joints as in second leg, but fusion of basal joint with tibia not easily determined.

Fore wing about three times as long as its greatest width (length measured from apex to inner angle of anal margin). Basal costal cross veins well developed, in both sexes; about 12 cross veins in stigmatic area, all of which are complete and most are upright. No "sag" in stem of MA;[4] stem and fork subequal in length. MP_2 ends on a level with first fork of Rs, in membrane about midway between MP_1 and CuA, although it may approach more closely to the former; joined by slanting cross veins to each of these stems. CuA slightly upcurved only. CuP quite strongly arcuate toward anal margin; at its basal end, it does *not* curve upward to meet CuA, as is the case in *Atalophlebia*. First cubital intercalary straight, either ending in membrane and attached by cross veins to CuA and second intercalary, or seeming to run into CuA. Between this and second

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[2]I take pleasure in naming this genus in honor of Dr. Georg Ulmer, in recognition of his great contribution to the study of the mayflies of the world.

[3]This species I name in honor of Dr. C. S. Carbonell, Laboratorio de Entomologia, Universidad de la Republica, Montevideo, Uruguay.

[4]Designation of veins as in Edmunds and Traver, 1954, J. Wash. Acad. Sci. 44.

intercalary, a fairly long secondary intercalary joined by cross veins to adjacent stems. Second cubital intercalary slightly curved, especially at its proximal end, where it turns and runs into CuP. Two distinct anal veins, a third faintly indicated. Hind wing with a slight rounded prominence on costal margin not far from base; Sc parallels C from region of this prominence to apical margin, in this outer region slanting down slightly toward R. Stem of Rs ends free in membrane at approximately one-half the wing length; attached by cross veins to R and MA. MP is forked one-third of its length from the base; this is a relatively narrow fork containing an intercalary attached by cross veins. CuA turns downward somewhat toward CuP, basally; it is often joined by a weak cross vein to CuP at this joint. CuP and first anal converge to unite basally. Several cross veins behind CuA. Venation as in Figs. 1 and 2.

Forceps base rather narrow; on each side, an excavated area receives the proximal portion of each forceps limb. Forceps three-jointed. Basal joint strongly bowed, and enlarged proximally into a rounded projection on inner margin. Second and third joints relatively short, and approximately subequal. Penes erect; in type species, almost conical at apex, widened slightly at base; appressed to one another along inner margin for greater part of their length, in some specimens, in others divergent toward apex. A prominent spatulate or tongue-shaped process, arising near the apex of each division of the penes, extends downward on ventral side. Genitalia of type species as shown in Figs. 4, 5 and 6. Tails three. No specimen is available in which all three tails are complete, hence the lengths of these appendages relative to each other and to the body length cannot be determined.

Eyes of female widely separated. Posterior margin of head almost straight across middle area, but arching backward laterally toward hind margin of eye, so that it appears to be excavated in all but the lateral areas. Lateral ocelli larger than middle one. Pronotum excavated medially on posterior margin. Venation as in male. Fore leg, which appears a little longer relatively in proportion to the body length than fore leg of male, is somewhat longer than the third leg. Fore femur slightly longer than tibia, which is about one and one half times the length of the tarsus. Tarsal joints rank in descending order: 5, 1 (partially fused with apex of tibia), 2 and 3 subequal, 4. Second leg somewhat shorter than third; femur and tibia approximately subequal; tibia three and one half times length of tarsus; tarsal joints: 4, 1 and 2 subequal, 3 only a trifle shorter than 2. Femur and tibia of third leg equal in length, each being four times as long as the tarsus. Tarsal joints as in second leg. Subanal plate extends backward as far as or slightly beyond apex of tenth tergite; apical border emarginate, its lateral projections acute.

Nymph shows relationship to *Hermanella* Needham and Murphy, 1924; to *Thraulus* Eaton, 1881; to *Traverella* Edmunds, 1948; and to *Choroterpides* Ulmer, 1939. Head and body somewhat depressed. Head wider than abdomen. Head capsule narrows anterior to the antennae, but does not widen as much at the clypeus as in *Traverella*. Antenna two to two and two-fifths times as long as head. Lateral margins of head occupied largely by the mandibles. Mandibles, maxillary palps, triangular projection into which fits the basal joint of the palp, and crown of spines on galea-lacinia are all visible in dorsal view of head. See Fig. 13. Labrum much narrower than in *Hermanella* or *Traverella*, somewhat narrower than in

Choroterpides; quite similar to *Thraulus* in shape and size, and in possessing a well-defined median indentation. It differs from that of *Thraulus,* however, in the more sharply outlined indentation and the presence within this depressed area of several papillae or "teeth" (Eaton's figure shows but one such "tooth" within the indented area, in *Thraulus*). See Fig. 14. Sharp spine present on inner distal margin of galea-lacinial region of maxilla, as in *Traverella, Hermanella* and *Choroterpides;* seems intermediate in length between the short spine of *Traverella* and the long one of *Choroterpides.* No such spine occurs in *Thraulus.* Maxillary palp three-jointed; basal and middle joints subequal in length, distal joint slightly longer. Hairs present on both sides of second joint and on outer margin of basal joint. Distal joint heavily setose, but hairs not arranged in regular rows as in *Hermanella* and *Traverella.* Palp longer than that of *Thraulus,* but considerably shorter than in *Choroterpides;* does not closely resemble palp of any of the four genera mentioned. See Fig. 18. Mandibles quite strongly curved on outer margin, but not angulate basally, thus resembling *Thraulus* and *Choroterpides* rather than *Traverella* and *Hermanella.* See Fig. 10. Labium quite similar to that of *Hermanella.* Labial palp three-jointed; distal joint *much* shorter than those preceding, being not over one-eighth of second joint in length. See Figs. 9 and 16. Hypopharynx much as in *Thraulus.* See Fig. 8. Thus in respect to its mouthparts *Ulmeritus* resembles *Thraulus* as regards structures of labrum and hypopharynx, *Thraulus* and *Choroterpides* as to mandibles, *Hermanella* as to labium, while the galea-lacinial spine is reminiscent of *Hermanella, Traverella* and *Choroterpides.*

Pronotum slightly wider than head,, widest at anterior margin. Middle of mesonotum slightly wider than pronotum. Legs flattened; small spines on dorsal surface of femora and along inner dorsal margin of tibia; triangular flange at apex of each tibia somewhat more prominent than in other genera noted above. Cluster of pectinate spines at base of this flange on legs one and three; other pectinate spines among the nonpectinate ones along inner margin of tibia. Claws of all legs denticulate; in each case, largest denticle next to apex of claw, denticle next beyond it almost as large. Usually eight to nine large and four to five smaller denticles on first claw; on second, seven to eight large and five to six smaller ones; on third claw, six to eight large and three to four smaller ones. The largest of these denticles is not, however, as large relatively as in *Hermanella,* in which genus the first denticle is so large as to give the appearance of two subequal processes at apex of claw. See Figs. 11, 12 and 17.

Postero-lateral spines on abdominal segments five to nine; those on segments five and six relatively small, those on segments seven, eight and nine largest. On seven and eight, these spines flare out from the body somewhat more than any of the others. A minute indication only, of a similar spinous process, on segment four. Along the posterior margin of each tergite is a series of minute denticles. See Fig. 15. Gills show similarity to those of *Thraulus* and of *Traverella,* but differ in certain respects from each of these; and are quite unlike those of *Hermanella* and *Choroterpides.* Each of the seven pairs of gills is bilamellate, with deeply fringed margins; last pair smallest, first four pairs approximately subequal, fifth and sixth pairs decreasing in size toward the seventh. Posterior member of each pair of gills on segments one through six larger than the anterior member; on segment seven, posterior and anterior members approximately equal in size. See

Figs. 3 and 7. Gills differ from *Traverella* in that all pairs are bilamellate, with posterior member the larger; in *Traverella,* the lower member of the sixth and both members of the seventh pairs of gills are fibrilliform, and in all pairs, the posterior member is smaller than the anterior. In *Thraulus,* gills of the first pair differ in structure from all succeeding pairs, consisting of two deeply forked slender linear divisions; gills of the second pair are smaller than those immediately following; gills on segments two through seven similar in structure to those of *Ulmeritus,* and with anterior member of each pair smaller than the posterior. Tails three, subequal in thickness; median may be slightly longer than laterals (in no specimens were both laterals and median preserved in entirety); all tails finely spined at each joining. In mature nymph, tails as long as entire body, including head.

Ulmeritus carbonelli, new species

(Figs. 1-18, incl.)

Male imago (holotype).—Body 8½ mm.; wing 9 mm. General color light reddish brown, thorax more yellowish than abdomen; wings heavily spotted with blackish brown.

Head.—Ocelli pale, ringed with black at base. Interrupted black longitudinal markings along front of head. Antennal filament pale in distal third, basal two-thirds dusky; basal segments pale reddish brown. Upper portion of compound eyes orange, lower portion blackish. Black median streak visible on such portion of vertex as is not obscured by eyes. Ventrally, pale yellowish in posterior part, but area beneath eyes and antennae heavily shaded with black.

Thorax.—Pronotum heavily shaded with black along lateral margins, more narrowly along postero-lateral angles. Narrow black median and submedian streaks; dark shading on each side of median line at posterior margin. Narrow black line borders mid-portion of posterior margin. Anterior half of pronotum largely concealed beneath the large eyes. Blackish markings on prothoracic pleura, forming an interrupted streak upward from fore coxa. Mesonotum yellow; narrow black streak along central portion of midline; scutellum paler yellow, almost white; extensions of wing bases grayish. Mesonotal pleura light reddish brown adjacent to notum, yellowish next to sternum; much blackish shading above and around base of mesothoracic leg. Metanotum similar in color to upper part of mesopleura, with narrow black edging; blackish streaks and markings above and around base of metathoracic leg. Thoracic sternum yellowish to yellowish red. Black shading on median line of mesosternum near anterior and also near posterior margins; patch of dark submedian shading just anterior to base of mesothoracic leg .

Wings.—Venation of both wings as shown in Figs. 1 and 2. Both are heavily mottled and spotted with blackish brown, which in hind wing is more blackish than brown; pattern of markings shown on the above figures. Membrane of costal margin of fore wing strongly brown-tinged, this dark color evenly and regularly distributed in basal half of both costal and subcostal spaces; beyond bulla, restricted mostly to costal space. At base of costa in hind wing, a very small area in which membrane is faintly brown-tinged.

Legs.—Fore and middle femora yellowish at base, light reddish brown in mid-area, shaded with black on distal margins; narrow black lines along each lateral margin except near base. Third femur yellowish on hind margin, front margin

shaded with gray. On all femora, traces of a grayish streak along mid-region on outer surface; on fore femur, an additional triangular dusky median mark. Fore tibia reddish yellow at base, yellow at apex, body of segment dark smoky brown; a black spot on "knee." Tibiae of other legs yellowish, with similar black knee spot. Fore and middle tarsi and claws mainly deep smoky brown; all joinings on fore tarsus narrowly pale. Basal segment of hind tarsus, and parts of second and third segments, mainly yellowish, distal segments and claw pale smoky brown.

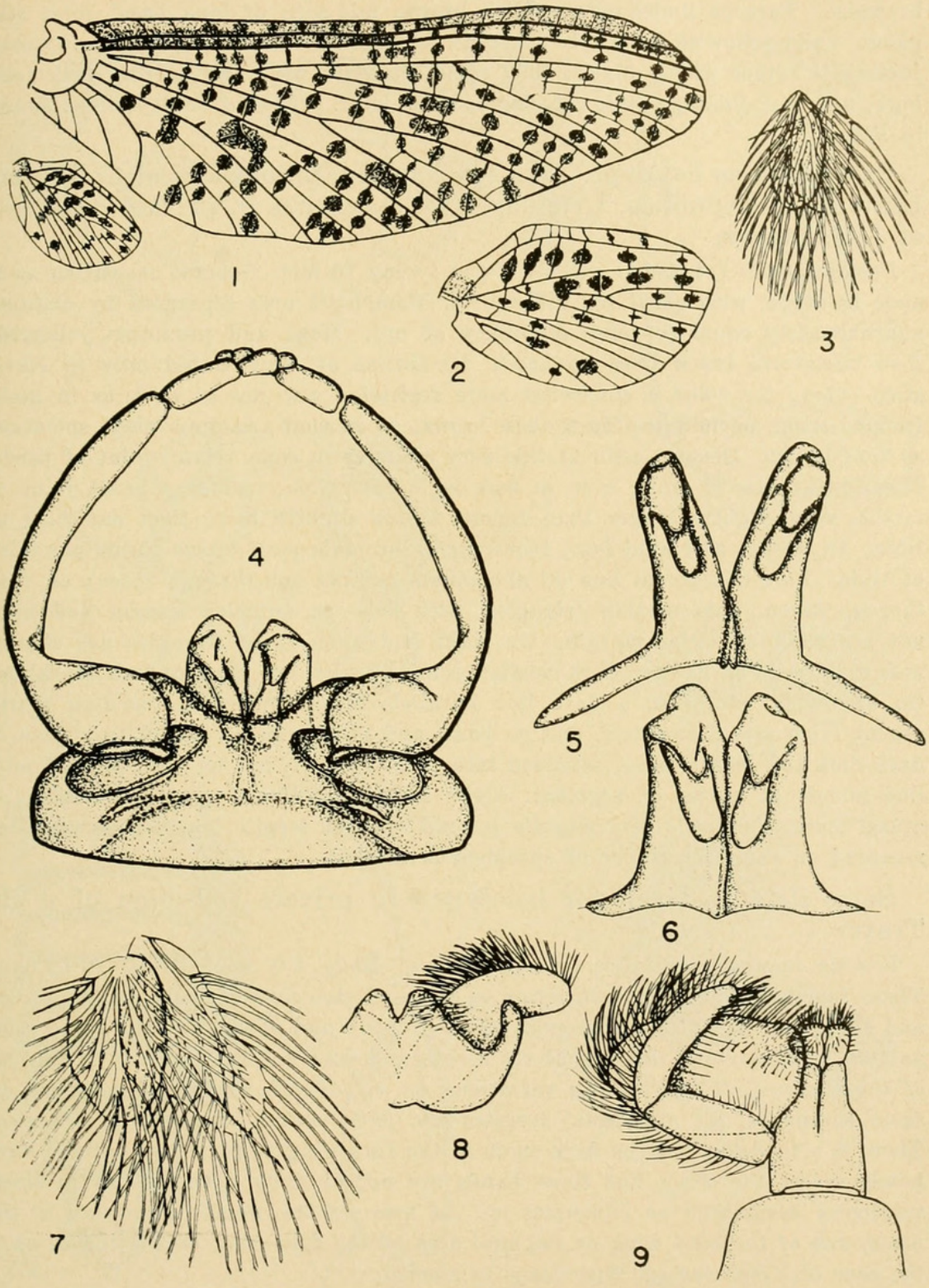
Abdomen.—Reddish brown, tergites one through seven shaded with brown which seems to have a faint purplish tinge. Abdomen appears pale-banded, as intersegmental areas of middle segments are pale. Posterior margins of tergites three through seven narrowly pale, with very narrow dark margin in mid-area only. Pale spots in antero-lateral angles of tergites two through seven; indistinct pale median line, faintly and narrowly margined with brown, on tergites three through seven; on middle tergites also, a pale somewhat triangular spot on each side of mid-line at anterior margin. Tergites eight through ten with yellowish shading. On eight and nine, the pale mid-areas at anterior margin are larger and appear as submedian patches on each side of mid-line, which on these tergites is narrowly black. Posterior margins of eight through ten narrowly blackish. A series of blackish longitudinal streaks along pleural fold. Abdominal sternites somewhat paler than tergites. Adjacent to pleural fold, an interrupted blackish brown streak on middle sternites, concentrated mainly just anterior to posterior margin of each segment. Following this, a yellowish brown region grades into darker mid-ventral markings, which consist of somewhat triangular dark brown patches with straight side adjacent to median line, oblique side extending outward and backward toward postero-lateral angle. Each such patch extends backward almost to posterior margin, but its outline is here more or less diffuse. Indications of similar but much less well developed dark markings occur on basal sternites. On apical sternites, dark markings seem confined to a narrow mid-ventral streak in anterior half of segment. Ganglionic areas pale on all sternites.—Wings, legs and genitalia on slides.

Tails.—Missing. See notes under male paratypes.

Genitalia.—As in Figs. 4 and 6. Forceps base, penes and basal half of long basal joint of forceps limbs light reddish brown; distal half of forceps limbs, and reflexed tongue-like processes on penes, dark smoky brown.

Specimen taken in Artigas Province, Sepultras, Uruguay, Jan. 15, 1952; C. S. Carbonell, et al., Colls. Attracted by light, at night, banks of Cuareim River. (Sample Number 10). In Entomological Collection of the Universidad de la Republica, Montevideo, Uruguay. Body in alcohol.

Male imagos, paratypes.—Three specimens. Differ from holotype as follows: Pale areas on middle abdominal tergites more prominent, appearing as pale median triangles based on anterior margin, surrounded laterally and posteriorly by brown areas; pale mid-dorsal streak wider than in holotype, the narrow dark line bounding it being now quite distinct in posterior half of middle tergites; on seven, these dark streaks distinct also next to anterior margin. Venter of abdomen paler than in holotype, the dark submedian triangles reduced so much as to be barely suggested. Spots on wings dark reddish brown, not as black-tinged as in



Ulmeritus carbonelli, n. sp. Fig. 1, wings of male imago, holotype; Fig. 2, hind wing of same, enlarged; Fig. 3, seventh pair of gills of nymph; Fig. 4, genitalia of male imago, holotype; Fig. 5, penes of male imago, paratype, enlarged; Fig. 6, penes of male imago, holotype, enlarged; Fig. 7, first pair of gills of nymph; Fig. 8, hypopharynx of nymph; Fig. 9, labium of nymph.

holotype. Forceps base light reddish brown. Penes yellowish, reflexed processes brownish. Forceps limbs pale reddish brown, mid-area of long basal joint still paler. Tails yellowish, narrowly black at joinings in basal area. Near base, each joining is rather widely black; then come alternate wide and narrow dark joinings; near tip, joinings same color as body of joint. Penes of one specimen shown in Fig. 5.

Same data as holotype. One specimen in Entomological Collection, Univ. de la Republica, Uruguay; two specimens in private collection of J. R. Traver.

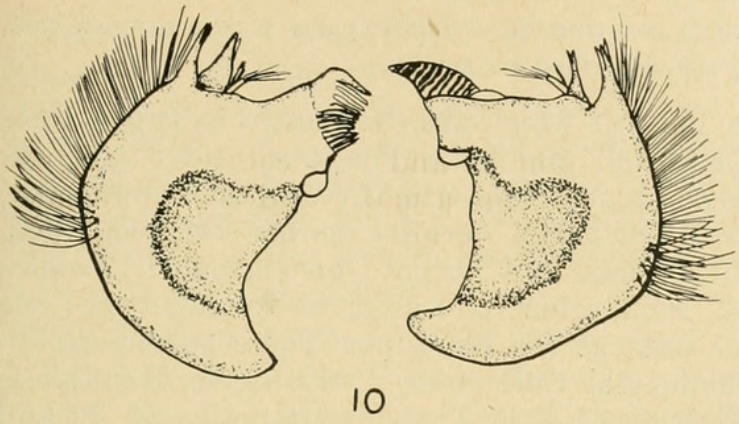
Female imago (allotype).—Body 7 mm.; wing 10 mm. General coloration as in male holotype, with usual sex differences. Compound eyes separated by distance approximately equal to three diameters of eye. Head and pronotum yellowish. Two transverse black lines on head. Membrane of wing tinted only in costal strip, where the color is somewhat more restricted and not as dark as in male. In hind wing, spots more black than brown, as in male; in fore wing, spots not as dark brown. General color of legs very much as in male. Basal joint of tarsus fused with apex of tibia, even in fore leg. Fore tibia, including basal joint of tarsus, very slightly longer than femur, tarsus slightly more than one-third of tibia. In middle and hind legs, femur and tibia subequal, tarsus about one-third of tibia. Pale mid-dorsal line on abdominal tergites one through three; on four through seven, pale median triangles, with base on anterior margin and apex not attaining posterior margin. On eight and nine, these triangles are shorter and divided by a narrow dark median line. Tergite ten has no dark markings. On abdominal sternites, a dark line parallels the pleural fold; median marks absent from apical sternites, and on basal and middle ones reduced to a pair of dark dots (on middle ones, extended into short streak), one on each side of midline almost at center of segment. Tails missing. Subanal plate, excavated on apical margin, extends very slightly beyond apex of tergite ten. Wings and legs mounted on slide, remainder of specimen in alcohol.

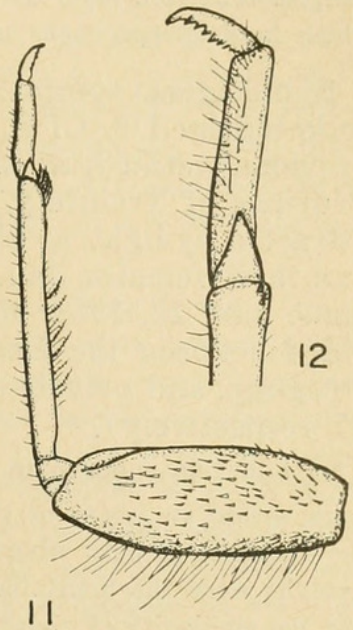
Same data as given for holotype. In private collection of J. R. Traver.

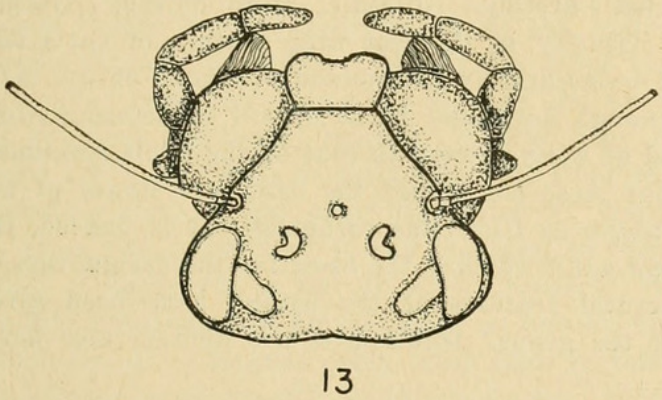
Female imagos, paratypes.—25 specimens. Body 7-9 mm.; wing 10-12 mm. These females exhibit some variation in size and stoutness of body, length of leg and wing, and in amount of pigmentation of body and wing. Yet the basic color pattern is maintained throughout the series, and does not vary greatly from that of the allotype. The following variations are considered worthy of mention. In some specimens, all abdominal tergites are dark-banded on posterior margins. There is a tendency for the dark spots in the fore wing to form two oblique dark bands across the wing, but these bands are not as fully developed as in those specimens designated as *Ulmeritus* sp. In none of the female paratypes is the membrane of the hind wing or the anal area of the fore wing brown-tinged, as is the case in *Ulmeritus* sp. Specimens in alcohol.

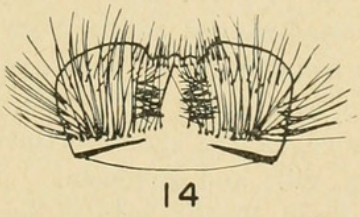
Same data as given for holotype. 13 specimens in Entomological Collection, Univ. de la Republica, Uruguay; 12 in private collection of J. R. Traver.

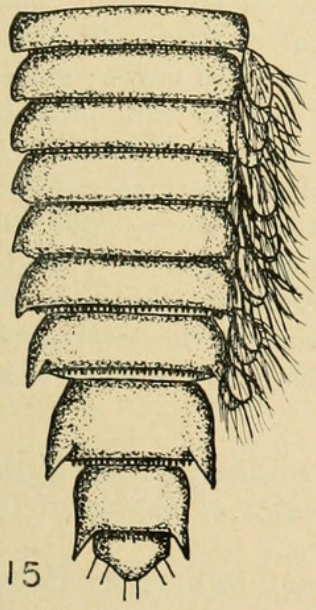
Subimagos of both sexes.—Similar to imagos aside from the usual differences in lengths of appendages, immaturity of genitalic structures, and in the paler thoracic

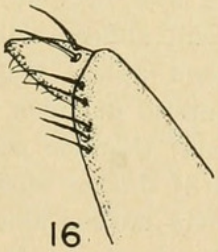


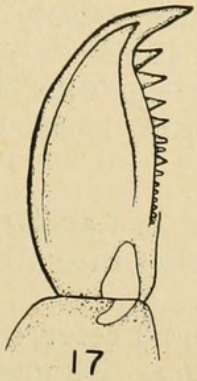


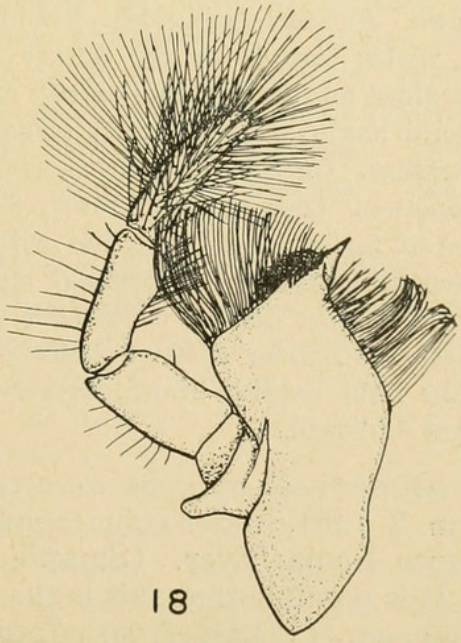












Ulmeritus carbonelli, n. sp. Fig. 10, mandibles of nymph; Fig. 11, first leg of nymph; Fig. 12, tarsus and distal portion of tibia of second leg of nymph; Fig. 13, head of nymph, dorsal aspect; Fig. 14, labrum of nymph; Fig. 15, abdomen of nymph, dorsal aspect; Fig. 16, distal portion of labial palp of nymph, enlarged; Fig. 17, claw of third leg of nymph, enlarged; Fig. 18, maxilla of nymph.

mesonotum, which exhibits the pale median and lateral areas often seen in subimagos. The thin layer of cuticle covering the wings imparts a pale grayish cast, which in dark specimens may be described as smoky.

Subimaginal specimens, none of which are designated as types, were collected by Dr. C. S. Carbonell and his colleagues, under auspices previously stated, as follows: three male and three female specimens, Province of Treinta y Tres, Quebrada de los Cuervos, Dec. 17, 1952, attracted by light, at night, on banks of Yerbal Chico stream; 12 males and three females, Jan. 13, 1952, other data as given for holotype; one male, Jan. 12, 1952, other data as for holotype. These specimens divided between the Entomological Collection, Univ. de la Republica, Uruguay, and private collection of J. R. Traver. (Samples 44, 13 and 15, respectively).

Nymph.—Ten specimens, all from Lavalleja, Uruguay. Many of these nymphs were within an instar or two of maturity, so that the wing pattern of spots and the venation of both wings could be accurately determined. In none of the male nymphs were the genitalia far enough developed to be of aid in determination, but the similarity of venation and of wing pattern to that of the adult specimens seems to prove without doubt that these are indeed the immature stages of the spotted-winged adults described above as *Ulmeritus carbonelli.* It is, indeed, the correspondence between nymph and adult which is the basis for the designation of the new genus *Ulmeritus.* Structural features of the nymph have been given above, in the characterization of the genus. Mouthparts are figured, also head, leg, gills and abdomen.

Head bright reddish brown, vertex and occiput more or less mottled with brown. Antennae yellowish. Thorax and abdomen likewise reddish brown, paler on venter except for the darker brown apical abdominal sternites. Pronotum margined and marked indistinctly on lateral portions with purplish brown; anterolateral angle of mesonotum, pleura and thoracic sterna likewise with brownish markings. On some specimens, traces of darker median and submedian lines on pronotum. Legs reddish brown; slightly darker along lateral margins and near tips of femora and tibiae, but without prominent dark cross bands or other conspicuous markings. Abdominal segments narrowly blackish brown on posterior margins, more distinct on tergites than on sternites; on tergite ten this margin is darker and wider than on those preceding. Gills purplish gray to deep purple. Tails light reddish brown, darker basally; in basal region only, joinings somewhat darkened.

All of these nymphs were taken in Lavalleja Province, at Arequita, Jan. 2, 1951, under submerged stones in shallow water of rapids of the Santa Lucia River. (Sample 6).

It is possible that this is the nymph referred to and figured by Esben Petersen (1912), from Argentina. Figures he gives of the gills, maxillae and labium of that nymph are quite similar to those shown in this paper for the nymph of *Ulmeritus.* The head of Esben Petersen's nymph differs considerably, however, and it is difficult to see how the figure he presents of the mandible can be homologized with that of *Ulmeritus.*

Ulmeritus species

Temporarily I place here a few specimens of *Ulmeritus* taken at Arequita, Lavalleja Province, Uruguay, by Dr. Carbonell and associates. It is proposed to keep these distinct from *U. carbonelli* until more is known of the amount of variation in size and color pattern of wing that may be expected to occur in the latter species. Two male subimagos and four females, two of these imaginal, are included here. One of these males was in the process of shedding the subimaginal cuticle at the time of death.

Male subimago (cuticle partially shed).—Body 9 mm.; wing 9 mm. Darker in coloration than similar stage of *carbonelli*, as the latter is at present limited. Thorax, including mesonotum, almost wholly dark reddish brown; meso- and metanotal areas darker than pleura. In fore wing, the widely margined cross veins tend to be concentrated into two main regions forming irregular oblique bands across the wing, beginning at the costa. The narrower of these bands passes through the bulla, reaching the outer margin at the distal end of CuA; the wider band lies nearer the base of the wing, ending in and occupying most of the anal (or inner) margin. Within these two bands, margins on the cross veins are wider, while others in the fore wing tend to be narrower, than in corresponding areas on the wing of *carbonelli*. Moreover, the margins on cross veins in these two bands tend to run together, so that the spotted effect so evident on wing of *carbonelli* is lost or much obscured. Base of fore wing in anal region faintly but distinctly brown-tinged on membrane. Entire membrane of hind wing similarly brown-tinged; many cross veins in this wing are also more widely margined than in *carbonelli*. Middle and apical abdominal tergites with more definite blackish bands, which seem to occupy both anterior and posterior margins. Abdominal sternites tinged with pale reddish brown; pronounced dark shading along pleural fold; dark median markings reduced to a narrow transverse blackish streak at mid-line on anterior margin, and *very* faint dusky submedian streaks on middle segments. Tails brown, banded as in *carbonelli*. Tongue-like reflexed process from penis lobes seems somewhat shorter and less prominent than in *carbonelli*.

Female imago.—Body 9-10 mm.; wing 10-11 mm. Body somewhat longer and more robust than in females of *carbonelli*. Head and pronotum fawn-colored; two black transverse bands on head, in addition to frontal markings. Same tendency as in male, for margined areas in fore wing to form two oblique bands, but this band effect not as pronounced as in the males. Base of fore wing and all of hind wing except a narrow margin including and basad to costal projection, faintly but definitely brown-tinged. Lateral margins of pronotum dark; median and submedian streaks black. Abdominal tergites bright reddish brown; black marks on pleural fold. Sternites paler than tergites; ganglionic areas pale. On one specimen, short black transverse submedian dashes in mid-area, as in male. In the other imago, these dashes reduced to dots on basal segments. In both imago and subimago females, costal margins of fore wing and all margined areas of that wing appear more reddish than in most specimens of *carbonelli*.

Date of collection of these specimens: Jan. 2, 1951. Attracted to light at night, on banks of Santa Lucia River. Specimens divided be-

tween Entomological Collection, Univ. de la Republica, Uruguay, and private collection of J. R. Traver. (Sample 5)

Ulmeritus são-paulensis (Traver), new combination

Atalophlebioides são-paulense Traver, 1946. Rev. de Ent. 17:424.

It appears evident to me that the above species is congeneric with *Ulmeritus carbonelli,* and should therefore be transferred to this genus. Hind wing and male genitalia of *são-paulensis* are figured in the above mentioned paper. A comparison of the allotype of *são-paulensis* with that of *carbonelli* shows great resemblance as regards venation and principal margined cross veins. The following differences may be noted: In fore wing, costal margin less heavily infuscated; cross veins in disc of wing somewhat less widely margined; infuscations at fork of MP and at base of cubital intercalaries absent in part, and those marginings that remain are less extensive. CuP not as strongly arched as in *carbonelli.* In hind wing, only those cross veins in the subcostal space are margined. Hind wing somewhat longer and more pointed than in *carbonelli.* Genitalia of male bear considerable resemblance to those of *carbonelli,* differing in that the reflexed tongue-like process of the penes is smaller and more lateral in position, and the swelling at base of long basal joint of forceps limb is rather more pronounced. The nymphal stage of *são-paulensis* is not known.

Addendum

In May 1955, Georges Demoulin described the genus *Homothraulus,* with designation of *Thraulus misionensis* Esben Petersen as genotype (Bull. Inst. r. Sci. nat. Belg. 31(20): 11-13). The nymph he assigns to *Homothraulus* resembles that of *Ulmeritus* as regards structure of gills and mandibles, but differs (1) in possessing a single sharp spine in center of apical depression of labrum, and in shape and size of this depression; (2) in the lack of a prominent spine at inner apical angle of maxilla, in relative lengths of joints of maxillary palp, and in arrangement and density of hairs on these joints; (3) in greater relative width of head capsule at apical margin; and (4) in the asymmetry of MA of the fore wing.

References

Eaton, A. E., 1881. An announcement of new genera of Ephemeridae. Ent. Mo. Mag. 17: 195.

————, 1892. (Ephemeridae in) Biologia Centrali-Americana 38:6-7.

Edmunds, George F., Jr., 1948. A new genus of mayflies from western North America. Proc. Biol. Soc. Wash. 61:141-148.

————, 1950. Notes on Neotropical Ephemeroptera. I. New and little known Leptophlebiidae. Rev. de Entomologia 21(3):551-554.

Edmunds, George F., Jr., and Jay R. Traver, 1954. An outline of a reclassification of the Ephemeroptera. Proc. Ent. Soc. Wash. 56(5):236-240.

————, 1954. The flight mechanics and evolution of the wings of Ephemeroptera, with notes on the archetype insect wing. J. Wash. Acad. Sci. 44(12): 390-400.

Esben Peterson, P., 1912. New and little-known species of Ephemerida from Argentina. Deutsch. Ent. Zeit. 1912:340-341.

McDunnough, J., 1931. New species of North American Ephemeroptera. Can. Ent. 63:82.

Needham, James G., and Helen E. Murphy, 1924. Neotropical mayflies. Bull. Lloyd Lib. 24, Ent. Series No. 4:1-79.

Traver, Jay R., 1934. New North American species of mayflies. J. Elisha Mitchell Sci. Soc. 50:199.

————, 1946. Notes on Neotropical mayflies. Part I. Family Baetidae, Subfamily Leptophlebiinae. Rev. de Entomologia 17(3):424-426.

Ulmer, Georg, 1920. Neue Ephemeropteren. Arch. f. Naturg. 85, 1919:30.

————, 1939. Eintagsfliegen (Ephemeropteren) von den Sunda-Inseln. Arch. f. Hydrobiologie, Suppl. 16:617-623.

NEW RECORDS OF HIPPOBOSCIDS ON WOODCOCK [1]

(DIPTERA)

In connection with an ecological study of the woodcock, *Philohela minor,* certain ectoparasites were secured which represent new records.

Five Hippoboscidae were taken from a number of woodcock. Four were captured from birds taken in the Prescott Peninsula area of the Quabin Reservoir in Massachusetts. The fifth was obtained from a woodcock taken in South Amherst, Massachusetts.

An examination revealed that there were at least two species of these flies. In order to obtain specific determinations we sent specimens to Dr. J. C. Bequaert, Museum of Comparative Zoology, Harvard University, for study.

Dr. Bequaert indicated that all the flies from the Prescott Peninsula woodcock were *Ornithomyia fringillina* Curtis, whereas the specimen from South Amherst was *Lynchia americana* Leach.

An examination of the literature reveals that *Ornithomyia fringillina* had been reported from woodcock twice. One record was from Point Pelee, the second from Chateauguay River, both locations being in Ontario. While this fly had been reported from Massachusetts previously, these are the first records from woodcock in the state.

As regards *Lynchia americana,* this species has been found commonly on grouse and other birds but according to Dr. Bequaert had not been previously reported from woodcock.—W. G. SHELDON, F. R. SHAW and L. B. BARTLETT, *University of Massachusetts, Amherst.*

[1] A contribution from the University of Massachusetts Cooperative Wildlife Research Unit.