

one-half miles northwest of Dunlap, Tennessee, on Tennessee highway 108.

Holotype, male.—One and one-half miles northwest of Dunlap, Sequatchie County, Tennessee, on state highway 108, June 23, 1953. Preserved in alcohol. S. W. Edwards.

Allotype, female.—Same data as holotype.

Paratypes.—Same data as holotype. Seven males, four females.

Disposition of the type material.—Holotype and allotype deposited in the U. S. National Museum; paratypes to Illinois Natural History Survey, Vanderbilt University Entomological Collection, and the author's collection.

#### LITERATURE CITED

Ross, H. H. 1951. Phylogeny and biogeography of the caddisflies of the genera *Agapetus* and *Electragapetus*. *J. Wash. Acad. Sci.* Vol. 41, No. 11.

Explanation of figures.—Figures 1-5, genitalia of *Setodes epicampes*. Figures 6-9, larva and genitalia of *Agapetus diacanthus*.

Fig. 1. *Setodes epicampes*, male genitalia, lateral view.

Fig. 2. *S. epicampes*, male genitalia, dorsal.

Fig. 3. *S. epicampes*, male genitalia, ventral.

Fig. 4. *S. epicampes*, female genitalia, lateral.

Fig. 5. *S. epicampes*, female genitalia, dorsal.

Fig. 6. *Agapetus diacanthus*, larva, dorsal.

Fig. 7. *A. diacanthus*, male genitalia, lateral.

Fig. 8. *A. diacanthus*, male genitalia, ventral.

Fig. 9. *A. diacanthus*, female genitalia, lateral.

## THE TRICHOPTERA OF REELFOOT LAKE WITH DESCRIPTIONS OF THREE NEW SPECIES

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For the past two summers, the writer has made periodic collections of Trichoptera on and around Reelfoot Lake as an adjunct to a taxonomic study of the Trichoptera of Middle and West Tennessee. Reelfoot Lake is a large lake which was formed by a series of earthquakes in 1810-11 and is located in the extreme northwest corner of Tennessee. Emphasis was placed on this lake as an area unique in Tennessee which varies from terrestrial through marsh to aquatic situations, and which may be considered comparable in many respects to certain areas in Illinois, such as the Dead River Marsh (Ross, 1944), where the caddisfly fauna is known. For this reason, it seemed desirable that Reelfoot Lake be studied, both to learn the composition of the caddisfly population of this unusual lake and to supplement the work being done in Middle and West Tennessee.

While there have been several excellent studies on insects of the Reelfoot Lake area, they have been limited to Notonectidae (Rice, 1942), Culicidae (Brown and Pearson, 1938; Quinby, 1941), and the Odonata (Koen, 1937; Wright, 1938, 1946). No previous work has been done on the Trichoptera of this region.

There are a few species of caddisflies in Tennessee which form a typical lake fauna, but they comprise only a small proportion of the total fauna found in the state, both in numbers of species and in numbers of individuals. Collections at Reelfoot Lake have yielded twenty-three species, only a few of which are considered typical lake species; the remainder are species which previously have been considered to typify the larger rivers as, for example, *Hydropsyche simulans*, *Hydropsyche orris*, *Cynel-lus marginalis*, *Potamyia flava*, *Athripsodes transversus*, and *Leptocella exquisita*. While the presence of some of these forms may, perhaps, be explained by the presence of the Mississippi River only three miles west of the lake, at least one of them, *C. marginalis*, occurs ubiquitously in such numbers throughout the summer that its origination from the Mississippi is precluded.

During the course of this study, considerable effort was made to collect larval stages, but with poor results. In contrast with the almost two dozen species of adults collected, only four species of larvae were found, and these, with the exception of *Leptocerus americanus*, only sparingly. The larvae of one of the most common species at the lake, *C. marginalis*, was not found and remains to be discovered. In the search for larvae, the only rewarding habitat proved to be the submerged vegetation. Masses of this vegetation (*Ceratophyllum demersum*, *Cabomba caroliniana*, *Elodea* sp., *Valisneria* sp.) were carefully examined for larvae and four species were collected. These larvae were *Oecetis cinerascens*, *O. inconspicua*, *Orthotrichia americanus*, and *Leptocerus americanus*. Dredgings from the mud bottom were fruitless. Examinations of the submerged stems of saw-grass (*Zizaniopsis miliacea*), Yankapins (*Nelumbo lutea*), pickerel weed (*Pontedria cordata*), and bonnets (*Nymphaea advena*) yielded nothing. Scrapings from the submerged boles of bald cypress (*Taxodium distichum*) and the pilings of numerous duck blinds were likewise fruitless.

Imagos were collected by means of a 300 watt bulb or a Coleman gasoline lantern, depending on the station. Numerous collections also were made from lighted store windows in Tiptonville, a town situated midway between Reelfoot Lake and the Mississippi River, and from neon signs on business establishments along the southwest shore of the lake.

For the topography of the Reelfoot Lake area, the reader is referred to the January, 1942, issue of the Report of the Reelfoot Lake Biological Station in which is found, as a special supplement, a large insert map. An especially valuable article on this lake is that by Baker (1940) which contains excellent photographs as well as a detailed description of the lake. All specimens collected at Reelfoot Lake during the course of this study are to be found in the entomological collection of the Biology Department, Vanderbilt University.

Identification of the aquatic and emergent vegetation followed the scheme outlined by Bevel (1938).

#### ACKNOWLEDGMENTS

The writer is greatly indebted to Dr. C. L. Baker, Director of the Reelfoot Lake Biological Station, for the use of the laboratory and other facilities, and to the Tennessee Academy of Science for financial support. Gratitude is also due Dr. J. J. Friauf of the Department of Biology, Vanderbilt University, for suggestions and material aid in field work, and to Dr. H. H. Ross of the Illinois Natural History Survey for examination of and comments on the new species reported in this paper.

#### HABITATS AND COLLECTION STATIONS

In order that collection of the Trichoptera be as representative as possible, several stations were established and collections made from them from time to time. These stations were selected to provide situations as varied as possible. The following are brief descriptions of these stations.

Station 1—Bayou du Chien is a more or less shaded waterway which parallels the east border of the lake at the north end. Due to almost complete obstruction of the bayou at several points by fallen and floating logs, there is no current except during periods of high water, when the water becomes very muddy. In spring and summer, the channel is filled with aquatic vegetation, largely "water-moss" (*Cabomba caroliniana*), hornwort (*Ceratophyllum demersum*), and water weed (*Elodea* sp.). In late summer, the surface of the water is covered by duckweeds (*Spirodela polyrhiza*, *Lemna minor*, and *Wolffia columbiana*). The banks are lined with buttonbush (*Cephalanthus occidentalis*), bald cypress (*Taxodium distichum*), and sycamores (*Platanus occidentalis*).

Station 2—Glover Arm is an extension from the north end of the lake which runs north toward the Kentucky state line. From July through September, this area is practically impassable due to the enormous mats of submerged and emergent vegetation. The tips of the blades of the eel grass (*Valisneria*), which protrude above the surface of the water, give to many acres of this area the appearance of a well tended lawn, an appearance which, on one occasion, misled a forgetful dog passenger in the boat. Rowing is almost impossible, and it is necessary that one make a stop every 20 or 30 yards to remove weeds from the rudder and propeller of motor boats.

Station 3—A station near Grays Camp on the west shore of Upper Blue Basin was chosen because there is a relatively clean shoreline, limited aquatic vegetation, and numerous cypress trees or stumps. Collections at this station were generally skimpy.

Station 4—Upper Blue Basin is a large area of open water, comprising, except for various sloughs and arms, the north end of Reelfoot Lake. Its shoreline is marked by zones of saw-grass (*Zizaniopsis*) and Yankapins (*Nelumbo*). Collections from this station were made by boat both during the day and at night. Several species of leptocerid Trichoptera may be collected with ease during the day by examination of cypress boles or duck blinds where the adults secrete themselves.

Station 5—Acorn Point in Snyder Basin is a protruding point of land from the southeast shoreline of the lake. The point extends into open water with no submerged vegetation, few cypresses, and few protruding stumps. The shore itself is densely covered with trees and shrubs.

Station 6—Brewers Bar was not visited as often as the other stations due to the time and effort involved in getting there. In appearance, it resembles Glover Arm (Station 2) although there is more emergent vegetation. All collections from this station were made during daylight hours.

Station 7—Spillway is at the extreme southern tip of the lake, and it is characterized by a greater depth of water than elsewhere, no submerged vegetation, emergent vegetation only along the shore, and a considerable number of stumps. The shoreline is densely overgrown at points, and in other places has been cleared to make way for fishing camps. At this place is the sole outlet for the lake, a series of gates which "hold the water at a mean gulf level of 282 feet when raised, and at 283.25 feet when lowered" (Baker, 1940).

Station 8—Lids Pocket is an indentation in the southwest shore of the lake. There are numerous fishing camps and other business establishments along this shore. Cypress trees are numerous along the shore, and aquatic vegetation is at a minimum. One particular inn, a long, white frame building, fronts the lake at this point, and the eaves are outlined at night by varicolored sections of neon tubing that prove very attractive to insects. As has been shown by a previous study (Burks, Ross, and Frison, 1938), Trichoptera are especially attracted to blue neon (mercury vapor), and this was amply vindicated by observations at this building. On gross examination, the color next most attractive to nocturnal insects was green, while yellow and red seemed to be least attractive.

Station 9—This "station" consisted of the lighted store windows in Tiptonville. While the number of individuals collected here was great, only three species were taken. Since Tiptonville is within a mile and a half of the lake and little more than this distance from the Mississippi River, one might reasonably expect more variety in collections from this place, but such was not the case.

Observations also were made during excursions to other points in the lake including Simon Pocket, Buzzard Slough, Blackjack Hollow, Eastridge Arm, Willow Bar, and Campbell's Gap.

## DISTRIBUTION

Table 1 indicates the distribution of the species of Trichoptera collected from the stations described above. It may readily be seen that several species, such as *Cynnellus marginalis*, *Leptocerus americanus*, *Oecetis cinerascens*, and *Oecetis incon-*

TABLE I  
THE DISTRIBUTION OF THE SPECIES OF TRICHOPTERA  
IN THE REELFOOT LAKE AREA.

SPECIES	STATIONS								
	1	2	3	4	5	6	7	8	9
<i>Orthotrichia americana</i>	x	x	x						
<i>Cynnellus marginalis</i>	x	x	x	x	x	x	x	x	x
<i>Trienodes aba</i>	x	x		x	x				
<i>Trienodes ignita</i>	x		x						
<i>Leptocerus americanus</i>	x	x	x	x	x	x		x	
<i>Leptocella pavidata</i>	x			x					
<i>Leptocella exquisita</i>	x			x					
<i>Oecetis ochracea</i>	x								
<i>Oecetis avara</i>	x	x							
<i>Oecetis cinerascens</i>	x	x	x	x	x			x	
<i>Oecetis inconspicua</i>	x	x		x	x	x		x	x
<i>Oecetis eddlestoni</i>				x					
<i>Athripsodes tarsi-punctatus</i>	x								
<i>Athripsodes punctatus</i>	x			x					
<i>Athripsodes transversus</i>	x							x	
<i>Athripsodes nephus</i>	x							x	
<i>Ptilostomis postica</i> *	x								
<i>Polycentropus crassicornis</i>	x							x	
<i>Hydropsyche orris</i>	x				x		x	x	x
<i>Hydropsyche simulans</i>							x	x	
<i>Hydropsyche scalaris</i>	x							x	
<i>Cheumatopsyche analis</i>	x								
<i>Potamyia flava</i>	x								

\*Only three specimens taken, 2 males, 1 female.

*spicua* were distributed generally over Reelfoot Lake. These four species occurred in great numbers and accounted for a large segment of the caddisfly population. *Orthotrichia americana* was the sole member of the Hydroptilidae collected and was restricted to three stations at the north end of the lake. Seven species were collected at only one station where most were relatively common though not abundant. Collection of one species, *Ptilostomis postica*, was limited to three specimens taken around an insect repellent bulb (Edwards, 1955).

As is obvious from Table 1, all but three of the twenty-three species of Trichoptera collected at Reelfoot were taken at one time or another from Station 1. This may be explained by the more numerous collections made here under optimum condi-

tions, and by the proximity to this station of more varied habitats than elsewhere.

Table II indicates the seasonal distribution of the species of Trichoptera taken at Reelfoot Lake. The horizontal bars in the chart indicate the first and last weeks in which any particular species was collected, even though collection of that species may not have been continuous during the period indicated.

The first species to appear in numbers was *Leptocerus americanus*; the larvae occur in tremendous quantity during the first three weeks of April and the adults reach peak emergence during the first week in May. The only other species to be collected as early as the first week of April was *Oecetis eddlestoni* which was taken sparingly and intermittently. Seven species were collected throughout the summer, from May through August or

TABLE II  
SEASONAL DISTRIBUTION OF THE SPECIES OF TRICHOPTERA  
IN THE REELFOOT LAKE AREA.

Species	Mar.			Apr.				May				June				July				Aug.				Sept.				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<i>Orthotrichia americana</i>																												
<i>Cynnellus marginalis</i>																												
<i>Triænodes aba</i>																												
<i>Triænodes ignita</i>																												
<i>Leptocerus americanus</i>																												
<i>Leptocella pavidæ</i>																												
<i>Oecetis ochracea</i>																												
<i>Leptocella exquisita</i>																												
<i>Oecetis avara</i>																												
<i>Oecetis cinerascens</i>																												
<i>Oecetis inconspicua</i>																												
<i>Oecetis eddlestoni</i>																												
<i>Athripsodes tarsi-punctatus</i>																												
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<i>Athripsodes transversus</i>																												
<i>Athripsodes nephus</i>																												
<i>Ptilostomis postica</i>																												
<i>Polycentropus crassicornis</i>																												
<i>Hydropsyche orris</i>																												
<i>Hydropsyche simulans</i>																												
<i>Hydropsyche scalaris</i>																												
<i>Cheumatopsyche analis</i>																												
<i>Potamyia flava</i>																												

September. As may be expected, these were the very common forms, and all but *Potamyia flava* were collected at three or more stations. Peak emergence for all of these species was in May and early June, although *Cynnellus marginalis*, *Oecetis cinerascens*, and *O. inconspicua* occurred in considerable numbers through September.

As shown in Table II, nine species were collected during periods lasting four weeks or less, and collection of four of these was restricted to two weeks or less. None of these nine species were abundant, and one, *Ptilostomis postica*, was taken only during the third week of May, 1954, when two males and

one female were captured. It is to be expected that these nine species would not be widespread in their distribution around the lake, and this is borne out by Table I. It may be seen that eight species were taken at no more than two stations, the ninth *Orthotrichia americana*, being taken at three stations.

A tentative explanation for the spotty and relatively short-term collection of these nine species may be the method of collection, which, made at one to two week intervals, might have missed the peak emergence of some of these species. The writer makes no attempt to explain the presence of the three specimens of *P. postica* collected in the summer of 1954, but merely expresses regret and surprise that, in an environment which would be expected to favor this species, this large, handsome caddisfly is rare.

NOTES ON THE TRICHOPTERA OF REELFOOT LAKE  
FAMILY PSYCHOMYIIDAE ULMER

*Polycentropus crassicornis* Walker

The adults of this species occurred in numbers only at station eight. The larvae are unknown. It has been previously reported from Florida, Illinois, Massachusetts, Michigan, New York, South Dakota, and Ontario.

*Cynnellus marginalis* (Banks)

The immature stages of this species are unknown. The adults are very common at Reelfoot Lake and may be collected in abundance from cypress trees, duck blinds, or stumps. This species was collected at all stations around the lake.

FAMILY HYDROPSYCHIDAE McLACHLAN

Although this family is one of the most abundant groups found in Middle and West Tennessee, only five species of the family were collected at Reelfoot, and none were abundant. One explanation for this may be the general absence at Reelfoot of the flowing water environment in which the members of this family are characteristically found.

*Hydropsyche orris* Ross

This species is common along larger rivers, and, in the Reelfoot Lake area, was fairly common at Station 9. It was also collected at Stations 1, 5, 7, and 8, but not in quantity.

*Hydropsyche simulans* Ross

Similar to *H. orris* regarding numbers and distribution, this species was collected at only two stations and was sparse at both.

*Hydropsyche scalaris* Hagen

This species is distributed throughout the central states although not previously recorded from Tennessee. It was collected sparingly at two stations.

*Cheumatopsyche analis* (Hagen)

Although collected at numerous stations in Middle and West Tennessee, this species appeared at only one station at Reelfoot. The range of *C. analis* is widespread. For some interesting remarks on color phase in this species, the reader is referred to Ross (1944, p. 112.).

*Potamyia flava* (Hagen)

This species is a typical large river form. It is collected commonly along the Mississippi and Ohio Rivers. At Reelfoot, while collected at only two stations, it was not rare. It has been collected in several counties in Tennessee along such rivers as the Cumberland, Tennessee, Harpeth, and Stones River.

## FAMILY HYDROPTILIDAE McLACHLAN

A family composed of the so-called "micro-caddisflies", the Hydroptilidae were poorly represented at Reelfoot by only one species. The range of this family is widespread and occurs in diverse habitats.

*Orthotrichia americana* Banks

Collected at four stations at the north end of the lake. The larvae were taken from submerged vegetation, particularly *Ceratophyllum demersum*. This species has been previously unreported from Tennessee.

## FAMILY PHRYGANEIDAE McLACHLAN

The members of this family generally favor marshes and lakes even though some species are taken from rivers and streams, according to Ross (1944). The habitats found at Reelfoot Lake would seem to be very favorable for this family, but only one species was collected.

*Ptilostomis postica* (Walker)

The range of this species is poorly understood, having been reported from Georgia, Illinois, Michigan, New Jersey, New York, and now, Tennessee. As previously mentioned, only three specimens were collected. Earlier collections in Illinois have associated it with large rivers, where the records extend from May until late September (Ross, 1944). Another species, *P. ocellifera*, has been collected in Van Buren County, Tennessee, and Macon County, N. C.

## FAMILY LEPTOCERIDAE McLACHLAN

This family accounts for the major portion of caddisfly fauna at Reelfoot Lake as well as throughout Middle and West Tennessee.

*Leptocerus americanus* (Banks)

This species has been collected thus far in Tennessee only at Reelfoot. The larvae are so common in the aquatic vegetation (almost invariably *C. demersum*) that during the first weeks in May, a handful of the vegetation will contain 150 or more larvae. The adults are the first to appear in the spring, and a second generation of larvae are produced about the middle of July. The habitat of *L. americanus* at Reelfoot is very similar to its habitat in Illinois where, as reported by Ross (1944, p. 11; 23), the species occurs in "glacial lakes and in the slow streams connecting them" and it is "almost invariably found in water horsetail".

*Leptocella pavidata* (Hagen)

A relatively uncommon species at Reelfoot, it was not taken in large numbers at either of the two stations where it appeared.

*Leptocella exquisita* (Walker)

Also relatively rare at Reelfoot, this species is of wide distribution throughout the eastern states, and has been collected at many stations in Tennessee.

*Athripsodes tarsi-punctatus* (Vorhies)

This species occurred in considerable quantity at the single station where it was collected. Distribution is widespread throughout the eastern states, with no previous record from Tennessee. It has been collected from ten counties in Tennessee thus far.

*Athripsodes nephus* Ross

Described by Ross (1944), the holotype was collected along the Des Plaines River, Illinois. It is reported to be very rare in Illinois where it is known only from the male. Only males of *A. nephus* were collected at Reelfoot, where they were not uncommon. The larvae are unknown.

*Athripsodes punctatus* (Banks)

Collected from only two stations at Reelfoot, this species has also been collected from Cheatham Co., Tennessee. It is not common in Tennessee, and it has been reported previously only from Arkansas, Illinois, Kansas, and Maine.



*Athripsodes transversus* (Hagen)

This species occurred in great numbers at both of the stations where it was collected. It is widely distributed throughout the central and eastern states.

*Oecetis ochracea* (Curtis)

This species was rare at Reelfoot, with few individuals captured from stations at the north end of the lake.

*Oecetis avara* (Banks)

The range of this species is quite extensive, having been reported from most of the United States, southern Canada, and Mexico (Ross, 1944). At Reelfoot, it was not common but certainly not rare. It has been collected from three other counties in Tennessee.

*Oecetis cinerascens* (Hagen)

This species is one of the most common forms at Reelfoot. During daytime, the adults are inconspicuous due to their habit of resting lengthwise along the underside of the low branches of the numerous cypress trees; their somewhat mottled coloration and their posture (antennae and forelegs straight in front of them) blends so well with the grey-brown bark of the trees that a discerning examination is necessary to locate them. Distribution of the species is widespread. The larvae are common in aquatic vegetation.

*Oecetis inconspicua* (Walker)

Another common species at Reelfoot, this species is widely distributed throughout Tennessee as well as most of the United States. The larvae are common at Reelfoot.

*Oecetis eddlestoni* Ross

Collection of this species was limited to a few individuals at station 4. It was originally described from Pennsylvania and has since been reported from Illinois, Ohio, and Oklahoma.

*Triaenodes aba* Milne

This species was abundant at Reelfoot Lake where it was collected at four stations. It is reported by Ross (1944) to be abundant "in two marsh areas in northeastern Illinois, one the Des Plaines River at Rosecrans, the other the Dead River at Zion." Distribution is patchy with records from Illinois, Massachusetts, Michigan, New Hampshire, Ontario, and Wisconsin. Its presence at Reelfoot is a southward extension of its known range.

*Triaenodes ignita* (Walker)

The larvae of this species are unknown. It is relatively common at Reelfoot Lake, and it is quite common at other stations in Tennessee. Its range includes most of the eastern United States.

## NEW SPECIES OF TRICHOPTERA

Concomitant with the study of the Trichoptera of Reelfoot Lake, collections of caddisflies in Middle Tennessee have yielded three new species which are described below.

*Athripsodes improcerus* n. sp.

This species seems to be related to *A. transversus* on the basis of the tenth tergite, although the claspers are dissimilar. This species has the inner process longer than the apical segment of the claspers, whereas this condition is reversed in *transversus*.

Larvae.—Length 5 mm. Legs, pronotum, and mesonotum light cream-colored. The tips of the mandibles reddish brown, the antennae located at the bases of the mandibles and quite obvious with their brown coloration. Parafrontal areas as wide as frons, the sutures appearing only as faint white lines. Parafrontal areas outlined by an irregular row of black setae; the frons proper outlined by two pairs of black setae near the middle. The posterolateral corners of the parafrontal areas form 90 degree angles.

Case.—Length 6 mm. Slightly curved and tapering, constructed of sand grains of irregular size, giving the case a rough appearance.

Pupae.—Length 5 mm. Anal appendages and mandibles typical for the genus. Antennae very long, the ends making four complete loops around the end of the abdomen within the pupal case. Maxillary palps long, reaching the third abdominal segment. Thoracic sclerites straw-colored. Male genitalia as in Fig. 1a, Plate 1. Cerci reaching to the end of the claspers and tapering. Tenth tergite with a bulbous base, very similar in configuration to *transversus*. Claspers with basal segment short, the thumb-like apical process subtended by a mesal process, slender and almost twice the length of the apical process.

Tennessee records of this species are confined to a single station on Big Marrowbone Creek, Cheatham County, three miles southeast of Ashland City on state highway 12, and about one mile north of this road. Collection of the larvae and pupae of this species came at a fortunate time, for the subsequent week, the gravel bed of this wide, shallow creek was completely dredged out by the Cheatham County Highway Department, preventing further collection. The above description was made from a mature pupa.

Holotype, male.—Big Marrowbone Creek, three miles southeast of Ashland City, Cheatham County, Tennessee, on state highway 12. May 14, 1955. Collected by Sam Cox and Eleanor McCain.

Disposition of the type material.—The holotype will be deposited in the U. S. National Museum.

*Theliopsyche melas* n. sp.

This species is most closely related to *T. corona*, differing largely in details of the aedeagus and claspers. The aedeagus of *T. corona* has a pair of lateral, spinous processes which are relatively long, while *T. melas* has a pair of short, lateral projections set with two to three short spines. The apex of the aedeagus in *T. melas* is bifid to the base of these short lateral projections. The claspers of *T. melas* appear to be intermediate between those of *T. corona* and *T. epilone*. They differ from *T. corona* in the shape of the lateral process, which, in *T. melas*, has a notch in its dorsal edge near the base.

Larvae.—Unknown.

Adults.—Male, length 10 mm. Color uniformly black. Forewings with irregular patches of longer hairs occurring in the distal half. Maxillary palpi of the male three segmented, the apical segment almost obscured by a thick brush of long black hairs. Basal segment of the antennae also with brushes, although not so long or black as those of the palpi. Male genitalia as in Figs. 4a, 4b, and 4c, Plate 1. Tenth tergite elongate, with lateral blade-like portions slanting dorso-mesally to form a roof-like structure, the caudal end of which is deeply bifurcated. At the base of the tenth tergite arise two thin, spinous processes which parallel the lateral edges of the tenth tergite for two-thirds of its length, then bend mesally beneath the apex of the tenth tergite where they terminate. The claspers are very similar to those of *corona*. They are tripartite in lateral aspect, each clasper with a dorsal digitate projection, a lateral arched process bearing a small mesal tooth on its extreme end, and a short spinous ventral process. In ventral view, this latter process is obliquely truncate, its caudo-mesal corner bearing a short spine. The aedeagus is very similar to *corona* in gross appearance, but differs in the previously noted features. The male has a long spatulate process on the eighth sternite which is typical for the genus.

Female.—Length 10 mm. Very similar to the male in size, shape, and coloration. Maxillary palpi five segmented, the brushes not so thick as those on the male. Female genitalia as in Fig. 5a, Plate 1, with no prominent features. Bursa copulatrix as in Fig. 5b.

Tennessee records of this species are restricted to one station in Franklin County, called Wellington Mills locally. This site is four miles northwest

of Winchester on state highway 50, and about one and one-half miles north of this highway on a rural road. The station is located where a spring with a flow of approximately 2-3 gallons per minute emerges from the face of a steep bluff about forty feet above the road and cascades down several limestone shelves which are partially covered with mosses and liverworts. The secluded nature of this spot, the high humidity in the surrounding vegetation, and the continuous flow of relatively constant temperature water throughout the summer make this an ideal situation for Trichoptera. Ten species have been collected here. One of these is new, and three others have been collected elsewhere in Tennessee only at Newfound Gap (Ross, 1938).

*T. melas* was found to be numerous at this spot. It was first collected April 19, 1955, and was taken at intervals throughout the summer.

Holotype male.—Wellington Mills, four miles northwest of Winchester, Franklin County, Tennessee, on state highway 50, and one and one-half miles north of this highway on a rural road. April 19, 1955. Preserved in alcohol. S. W. Edwards.

Allotype female.—Same data as holotype.

Paratypes.—Same data as holotype. Four males, three females.

Disposition of the type material.—Holotype and allotype deposited in the U. S. National Museum; paratypes to Illinois Natural History Survey, Vanderbilt University Entomological Collection, and the author's collection.

*Agapetus avitus* n. sp.

This species is a close relative of *A. pinatus* but is more primitive. There is considerable difference in the shape and size of the claspers and in the tenth tergite. In this species, the claspers are rhomboidal in shape, each with a black spine on the apico-mesal as well as the mid-ventral margin. This is unlike the arrangement found in *A. pinatus*. The tenth tergite of *A. avitus* is relatively simple, tapering, with its apex bifurcated into a pair of sharp processes. Unlike *A. pinatus*, two pairs of black spines are found on lateral margins of the tenth tergite.

Larvae.—Length 5 mm. Head and pronotum straw-colored, with irregularly placed brown dots, giving a mottled appearance. Pronotum with a thick fringe of long black setae on the anterior margin, none on the posterior margin.

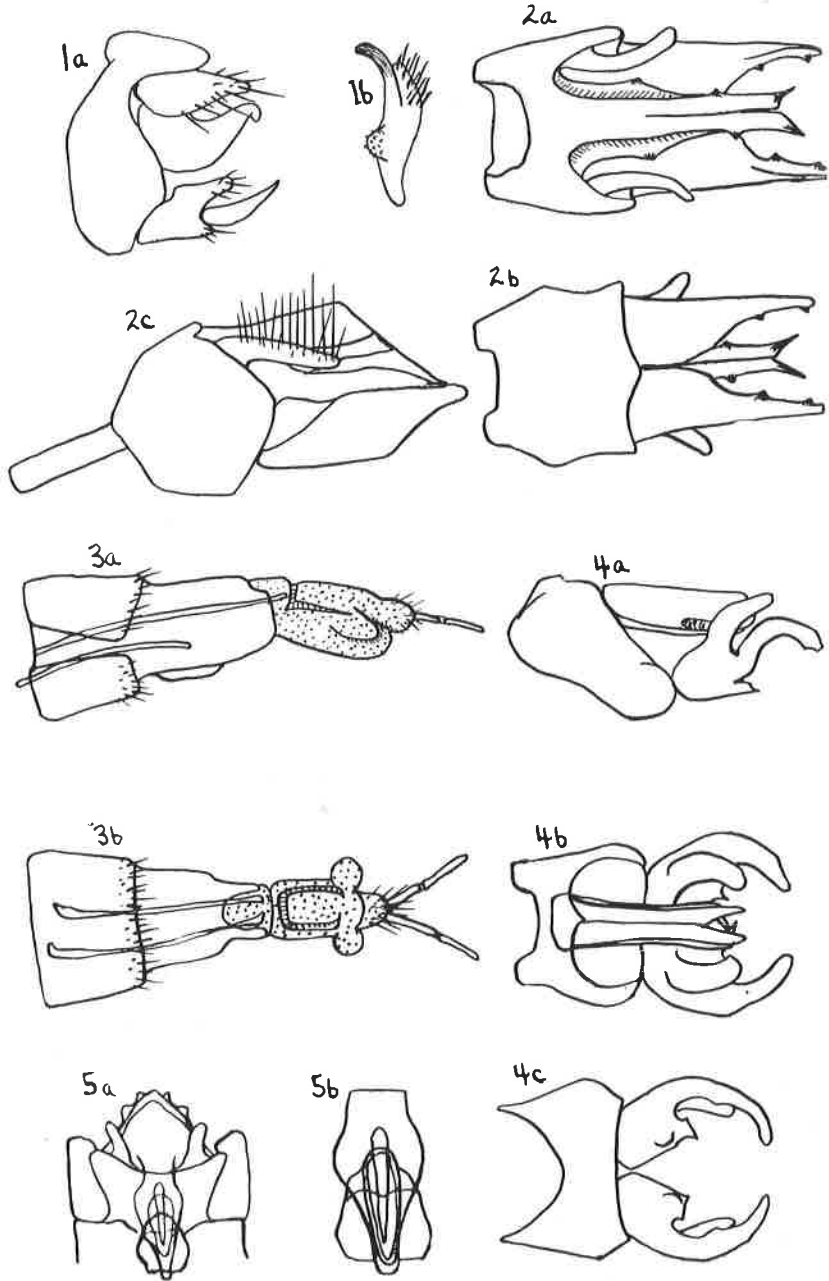
Case.—Length 6 mm. Oval in outline, and typical for the genus.

Adults.—Male, length 5 mm. Wings, legs, and thoracic sclerites an even light brown. Maxillary palpi five segmented, the second segment almost spherical and appearing mesally as a tubercle. Male genitalia as in Figs. 2a, 2b, and 2c, Plate 1. Claspers rhomboidal in outline, the ventero-mesal edge of each clasper with a black spine two-thirds of the length from the base and another spine on the mesal face at the apex. Cerci thin, extending one-half of the length of the tenth tergite and with a gradual lateral bend. Tenth tergite elongate, tapering, terminated by a pair of black, spinous processes and possessing two pairs of black spines laterally. Aedeagus much as in other members of the genus, simple and tubular, extending anteriorly into the seventh abdominal segment. The lateral male organs of the sixth abdominal segment are typical for the males of this genus, as is the spur on the posterior edge of the seventh sternite.

Female in gross appearance identical to male. Genitalia as in Figs. 3a and 3b, Plate 1. Rather simple, tubular, the tenth segment terminated by a pair of heavy bristles. The lateral edges of the apex of the tenth segment produced into a pair of tubercles bearing several short hairs.

Tennessee records of this species are limited to collections from one station in each of two counties, Bedford and Perry. The Bedford County station is a spring-fed brook across U. S. highway 41A, six miles northwest of Tullahoma. The Perry County station is a small spring beside Tennessee highway 13, 9.8 miles north of Linden. Adults were collected throughout the summer.

# PLATE I



Holotype, male.—Stream across U. S. 41A, six miles northwest of Tullahoma, Bedford County, Tennessee. April 30, 1955. Preserved in alcohol. S. W. Edwards.

Allotype, female.—Same data as holotype.

Paratypes.—Same data as holotype. Eight males, five females.

Disposition of the type material.—Holotype and allotype deposited in the U. S. National Museum; paratypes to the Illinois Natural History Survey, Vanderbilt University Entomological Collection, and the author's collection.

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## EXPLANATION OF PLATE I

- Fig. 1a.—*Athripsodes improcerus*, male genitalia, lateral view.  
 Fig. 1b—*A. improcerus*, clasper, ventral view.  
 Fig. 2a—*Agapetus avitus*, male genitalia, dorsal view.  
 Fig. 2b—*A. avitus*, male genitalia, ventral view.  
 Fig. 2c—*A. avitus*, male genitalia, lateral view.  
 Fig. 3a—*A. avitus*, female genitalia, lateral view.  
 Fig. 3b—*A. avitus*, female genitalia, dorsal view.  
 Fig. 4a—*Theliopsyche melas*, male genitalia, lateral view.  
 Fig. 4b—*T. melas*, male genitalia, dorsal view.  
 Fig. 4c—*T. melas*, male genitalia, ventral view.  
 Fig. 5a—*T. melas*, female genitalia, ventral view.  
 Fig. 5b—*T. melas*, bursa copulatrix, ventral view.