The Greenville News Wednesday, July 20, 1983

It was a week of camaraderie, of ideas and information exchanged. These 70-plus scientists who converged on Clemson University last week came from diverse cultures, they spoke many languages . . . but they had one common bond — the bond of science. They came from around the world, drawn to the Upstate by the flies. They came . . .

In search of the caddisfly

Scientists from around the world came to Clemson University last week to study the trichoptera. They capped off the conference with a specimen-gathering trek to Cherokee, N.C. Top left, Ed Masteller from Erie, Pa., gives close examination to a specimen. Top right, Skip Hodges of Atlanta, who works for a consulting firm that does environmental assessments, bottles a sample. Above left, Brian Armitage of Alabama, an employee of the Tennessee Valley Authority, captures flies in his net. Above right, Bernhard Statzner from Germany and Armitage examine rock for larvae.

It was 8 a.m. and humid when the chartered buses belched to a halt in front of the high-rise dorms on the Clemson University campus. Within minutes, the passengers arrived — a motley assortment of men and women, dressed in everything from pin-striped suits to running shorts and tennis shoes.

Some of them carried long-poled fishing nets, others rubber wading boots. Most wore name tags and cameras. They greeted each other and chatted as they boarded the bus, the international flavor of both foreign and Southern accents mingling in the early morning mugginess.

This was no ordinary field trip. Some 70-odd scientists from around the world — including South Africa, Australia, Bulgaria and 20 of the United States — flocked to Clemson last week for the same reason. They were all into flies. Not the annoying buzzers that attack potato salad and exposed ankles, but an entire order of aquatic insects called caddisflies — or trichoptera, if you want to get scientific about it. Which these bug freaks do.

For six days, Clemson became the site for the Fourth International Symposium on Trichoptera, the first time the meeting had been held in the Western Hemisphere. It just so happens that convener Dr. John C. Morse, an entomologist at Clemson, specializes in trichoptera. And he invited the group, which meets every three years, to Pickens County, South Carolina, for this year's exchange of new data and enthusiasm over the bugs.

For four days, papers were presented on such titallating topics as *Phylogentic Branching of Trichoptera and Lepidoptera* and *Characteristic Tegumental Formations on the Head and Pronotum of Larvae of Cheumatopsyche lepida Pictet;* not to mention the spicy *Anal Rods of Male and Female Pupae of Certain Trichoptera Families.*

"I guess the public might find some humor in all this," said Morse, "but I find it fascinating."

One of the things that makes the insect order so fascinating to the scientists, some of whom have devoted decades of research to it, is its diversity. There are several thousand different species, about 300 of which are commonly found in the Carolinas. The caddisflies are a significant link in the freshwater food chain, as they consume important nutrients that are passed on to their predators — trout and other freshwater fish.

Trichoptera are the insects that fly fishermen try to imitate in size, color, and behavior when making and casting artificial bait.

"It's the pupae that's most commonly imitated," said Morse. "As it tries to shed its pupal skin and get to the surface of the water to fly away, (it is) very vulnerable. This is the heavy predation period for trout — and the wiggling behavior movement that fly fishermen try to imitate."

The caddisflies are also a very sensitive environmental quality indicator because the fly populations fluctuate dramatically according to pollutant levels in streams. And so they are of interest as much to freshwater ecologists as to taxonomists.

Both groups were represented at the symposium.

Scientists have a picnic with a European twist — wine instead of iced tea

Field trip participants were headed for the Coweeta Hydrologic Lab near Otto, N.C., and then to several streams near Cherokee, N.C., and the Great Smoky Mountains.

For many of the scientists, it was the first visit to the United States. They were intrigued by the kudzu that draped the two-lane roads of hilly north Georgia, by the number of mobile homes, by the South's love affair with iced tea and they were warmed by the area's friendly folk.

When the bus crossed the Georgia state line into North Carolina, Kzassimiz Kumanski of Bulgaria called out proudly, "My third state. Only 47 to go."

Kumanski came from the only Communist-ruled country represented at the symposium. With a little financial aid from his country and a large chunk from the National Science Foundation, he was able to make the trip.

A trichopterist since 1966, employed by the Bulgarian Academy of Science, Kumanski says, "I am the only one in Bulgaria. The main purpose of study is their part in the food chain. They don't present interest for large populations. That's why in many countries, not many specialists."

But most of the world's noteworthy specialists in trichoptera were there. For the young entomologists just entering careers, the symposium was a chance to see in the flesh the experts whose names and research they have read time and time again in scientific journals.

Hobnob with the experts

"I'm not so interested in this group of caddisflies," said Skip Hodges, who works for an Atlanta consulting firm that does environmental stream assessments. "But to hobnob with these people from all over the world, that's why I came."

One of the leading experts who made it to Clemson from Europe's small country of Lichtenstein was Fernand Schmid. A white-haired character who looks something like Rip Van Winkle with a shorter chin mane, Schmid is credited with identifying and describing more than 1,000 species of the order.

"It is still fascinating after 30 years," he said. "The work is endless. As soon as you finish one problem, there is another problem."

The areas of study for the syposium attenders vary greatly. Some are mainly interested in trichoptera fossils, others in discovering new species, others in behavior and still others in the order's life cycle.

Devoting study

Michael Rowlands of Scotland, for example, is devoting his doctoral study at Glasgow University to case building in larval caddisflies. The flies have a life span of about a year, most of which is spent in a larval state protected by a casing the fly spins. These houses vary from species to species, but Rowlands' goal is to determine the physiological mechanism by which certain genuses of trichoptera construct their casings. One kind in particular that fascinated Rowlands is able to cut perfect circles, many times larger than itself, out of leaves for building materials.

"The circle is larger than they can reach, but it is a perfect arc," said Rowlands, who got his master's degree in entomology at Clemson, and whose parents live in Greenville. "How is it that they have this method of perfect reach?"

New technology

Other research into trichoptera mechanisms is now enhanced by the recent technological development of SEM — scanning electron microscopy — a topic that was discussed by paper presentation and came up again during the picnic lunch on the field trip.

"SEM shows these characters that are so small," said Oliver S. Flint, a researcher for the National Museum of Natural History in Washington, "that you can't see with a normal microscope, so you (heretofore) tend to ignore them. All these beautiful characters we've been missing."

After lunch, the scientists split up into several groups by interest; one group went into the Great Smoky Mountains National Park, one went to visit an old reconstructed Indian village in Cherokee, and one group, loaded with their nets and waders, took off for a mountain stream.

Plowed through water

There, as an afternoon shower began to fall, they plowed through the shallow water. With tweezers and vials full of preserving alcohol strung around their necks like stethoscopes, the trichopterists turned over rocks and pored through nets for an interesting sample or two to carry back home.

But the week-long symposium was not strictly bug business. Bulgaria's Kumanski was taken to an Anderson clothing outlet where his first pair of real American blue jeans were bought for him. One night the entire group had a picnic on Lake Hartwell and tried their hands at softball and volleyball.

One scientist from Italy who knew no English and had never before played softball, stood and watched the ball after he hit it. After his teammates frenetically waved him toward a rounding of the bases, he picked up the ball between first and second and helpfully handed it to the second baseman.

Carolina life explored

Other aspects of Carolina life were explored. For the foreigners experiencing the United States for the first time, some things came as a surprise. L.W.G. Higler of the Netherlands was shocked by how "primitive the trains are in the States. I must rise at 4 a.m. to catch a plane (in Atlanta) at 10 p.m."

Other observations:

— "We absolutely could not find a proper beer," said German Bernhard Statzner. "We had to drink this iced tea. It is very sweetened."

— "We were amazed at how warm the water is (Lake Hartwell). We could stay in it all day."

— "It's tremendously green here."

— "There are so many homes that are transportable here. We had read about it of course, but I didn't expect this many."

— "Coffee is weak in the States."

— "There is so much variety in the food, so many sauces and salads."

Most everyone commented on how helpful and friendly the people were to strangers and foreigners.

One couple was particularly friendly — to each other. Steve Brainard of California traveled to Clemson to spend a week with his girlfriend, Clara Bicchierai, a scientific researcher at an Italian university. Brainard, not a scientist, attended the symposium simply to visit his long-distance friend, whom he met while visiting Italy several years ago.

First conferences

Perugia, Italy, was the site of the third international symposium in 1980. The second congress was held at the University of Reading in England in 1977, while the first meeting was held in 1974 at Lunz Am See, Austria.

Initiated by Austrian scientist Hans Malicky, that first symposium drew 45 trichopterists to the little resort town in the Alps.

"I thought it would be easier to have all the trichopterists come to me than to visit them all," said Malicky. "There was a need for this. We must always be in contact; there is such a fast turnover in knowledge."

Rumors have it that the fifth international symposium will be held in France in 1986, and most of the scientists who traveled to Clemson said they wouldn't miss it for anything.

Early preparations

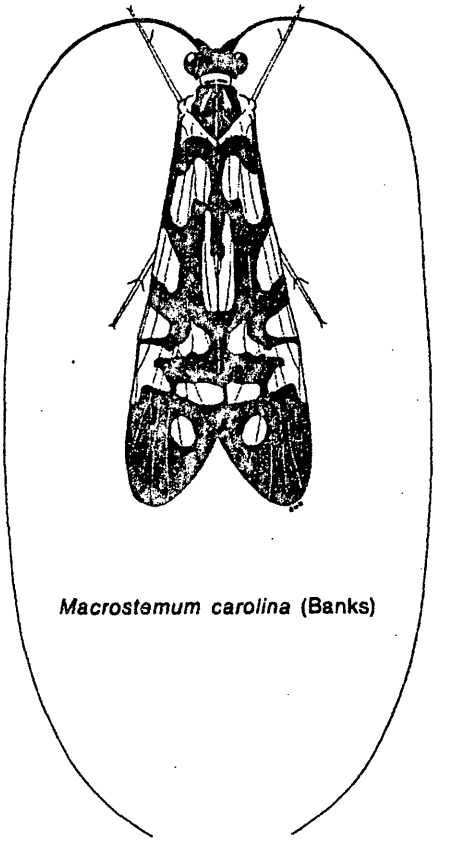
Preparations for the event must start early. Just ask Morse:

"I've been going hard on it for a year and a half," securing transportation funds for the scientists, organizing committees, sending invitations, planning expeditions.

"I haven't gotten a lot of sleep, but it's been fun," he said, as the symposium entered its final phase. Sleep is often forfeited for parties and discussions late into the night with leading scientists that many may not see again for three years.

That's a lot of bug talk.

FOURTH INTERNATIONAL SYMPOSIUM ON TRICHOPTERA



Macrostemum carolina (Banks)

Department of Entomology,
Fisheries & Wildlife
College of Agricultural Sciences
Clemson University
11-16 July 1983
J. C. Morse, Convener

Clemson, South Carolina, USA

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PROGRAM OVERVIEW*

Sunday, 10 July
Arrival and Registration (Barnett Hall)

Monday, 11 July

08.00 - 09.00	Final Registration (Barnett Hall)
09.00 - 10.10	Welcome: W. D. Maxwell, Provost, Clemson University Announcements: J. C. Morse, Convener Keynote Address: G. B. Wiggins
10.10 - 10.25	Break
10.25 - 11.45	4 Paper presentations
11.45 - 13.30	Lunch (Clemson House)
13.30 - 14.30	3 Paper presentations
14.30 - 14.45	Break
14.45 - 15.45	3 Paper presentations
15.45 - 17.15	Poster/Demonstration Session
17.15 - 19.00	Dinner (places of participants' choosing)
19.00 - 21.00	Wine & Cheese Reception (Alumni Center)

Tuesday, 12 July

08.00 - 09.30	Workshop on "Chaetotaxy of Larval Trichoptera"
09.30 - 10.30	3 Paper presentations
10.30 - 10.45	Break
10.45 - 12.05	4 Paper presentations
12.05 - 13.30	Lunch (Clemson House)
13.30 - 15.00	Colloquium on "Behavior of Adult Trichoptera"
15.00 - 15.30	Group photograph
15.30 - 16.30	3 Paper presentations
16.30 - 16.45	Break
16.45 - 17.45	3 Paper presentations
17.45 - 20.00	Special Trichoptera Habitats (Lounge of Barnett Hall)
20.00 - 20.30	Transportation to Farmers' Hall
20.30 - 22.30	Dinner (Historic Farmers' Hall, Pendleton, South Carolina)

Wednesday, 13 July

08.00 - 09.00	3 Paper presentions
09.00 - 09.15	Break
09.15 - 10.15	3 Paper presentations
10.15 - 10.30	Break
10.30 - 11.50	4 Paper presentations
11.50 - 21.00	Field Trip to South Carolina Mountains (Picnic lunch at Oconee Nuclear Visitors' Center. Dinner at Piedmont Pantry, north of Walhalla, South Carolina)

Thursday, 14 July

08.00 - 09.20	4 Paper presentations
09.20 - 09.35	Break
09.35 - 10.55	4 Paper presentations
10.55 - 11.10	Break
11.10 - 12.10	3 Paper presentations
12.10 - 13.30	Lunch (Clemson House)
13.30 - 14.50	4 Paper presentations
14.50 - 15.05	Break
15.05 - 16.05	3 Paper presentations
16.05 - 16.20	Break
16.20 - 17.20	3 Paper presentations
17.20 - 18.00	Transportation to Picnic Area
18.00 - 22.00	Barbeque picnic (YMCA Beach Picnic Area and Y-Barn)

Friday, 15 July

08.00 - 21.00	Field trip to Coweeta Hydrologic Laboratory, Cherokee and Great Smoky Mountains National Park, North Carolina. (Picnic lunch at Cherokee, North Carolina. Dinner at Dillard House, Dillard, Georgia)

Saturday, 16 July

08.00 - 08.40	2 Paper presentations
08.40 - 10.00	Business meeting
10.00	Adjourn

*All functions at McAdams Hall unless otherwise specified.

FIRST SESSION - J. C. MORSE, Chairman

Welcome: W. D. MAXWELL, Provost, Clemson University
Announcements: J. C. MORSE, Convener
Keynote Address: G. B. WIGGINS, Canada
"Trichoptera, Some Concepts and Questions"
Break

A. P. NIMMO, Canada
"The Trichoptera of North America - Exploration of the Fauna"

H. MALICKY, Austria
"Some Thoughts about the Identification of Specimens"

J. C. HODGES, Jr., United States
"Use of Color Macro/Microphotography in the Study of Larval Trichoptera"

M. FRIEDLÄNDER, Israel
"Phylogenetic Branching of Trichoptera and Lepidoptera. An Analysis on Comparative Spermatology"

SECOND SESSION - G. P. MORETTI, Chairman

F. VAILLANT, France
"The Hydroptilid Larvae Living on Dripping Rocks"

B. CELLOT, M. BOURNAUD AND H. TACHET, France
"Les déplacements des larves d'*Hydropsyche* dans l'espace fluvial" (Movements of *Hydropsyche* larvae in fluvial space)

K. E. TRAPP, United States
"Modifications in the Life History of *Glossosoma nigrior* Exposed to Three Different Thermal Regimes"

M. P. OEMKE, United States
"Diatom Feeding of *Glossosoma nigrior* (Banks) Larvae, Stream Grazers in Two Southern Michigan Streams"

B. STATZNER and R. MOGUL, Federal Republic of Germany
"A Negative Relationship between Substrate Surface Densities and Drift in the Stream Caddisfly *Micrasema longulum* (Brachycentridae, Trichop - tera)"

R. W. WISSEMAN and N. H. ANDERSON, United States
"Mortality Factors Affecting Trichoptera Eggs and Puape in an Oregon Coast Range Watershed"

POSTER/DEMONSTRATION SESSION

M. C. BICCHIERAI AND G. P. MORETTI, Italy
"Presumed Scent-Organ on the Anterior Wings of Male *Beraeodes minutus* L."

P. J. BOON, Jamaica
"A Scanning Electron Microscope Study of the Gastric Mills of Larval Hydropsychidae (Trichoptera)" (photographs in support of paper presentation)

M. I. CRICHTON and R. J. JAMES, United Kingdom
"Observations on Limnephilid Egg Masses"

C. DENIS, France
"Fine Morphology of Trichoptera"

O. S. FLINT, Jr., United States
"Studies on the Genus *Brachycentrus*"

G. P. MORETTI and G. SPINELLI BATTA, Italy
"Anal Rods of Male and Female Pupae of Certain Trichoptera Families"

J. C. MORSE, United States
"Evolution and Historical Biogeography of *Leptocerina* and *Axiocerina* (Leptoceridae, Leptocerinae, Athripsodini)"

V. H. RESH, United States
"Bibliographic Scattering of Trichoptera Literature"

S. D. SMITH and K. L. MANUEL, United States
"Reconsideration of the *Rhyacophila acropedes* Group Based on Adults (Trichoptera: Rhyacophilidae)"

J. S. WEAVER III, United States
"The Diversification of Lepidostomatidae"

R. W. WISSEMAN, United States
"The Diversity and Distribution of Caddisflies (Trichoptera) in an Oregon Coast Range Watershed"

WORKSHOP ON CHAETOTAXY OF LARVAL TRICHOPTERA

G. B. WIGGINS, Canada
P. W. SCHEFTER, Canada
"Chaetotaxy of Larval Hydropsychidae"

THIRD SESSION - G. B. WIGGINS, Chairman

M. C. BICCHIERAI and G. P. MORETTI, Italy
"Characteristic Tegumental Formations on the Head and Pronotum of Larvae of *Cheumatopsyche lapida* Pictet"

C. DENIS, France
"Fine Morphology of Case-Maker Larvae (Trichoptera)"

P. J. BOON, Jamaica
"A Scanning Electron Microscope Study of the Gastric Mills of Larval Hydropsychidae (Trichoptera)"

F. CIANFICCONI, C. CORALLINI SORCETTI and G. P. MORETTI, Italy
"Ultrastructure of the Rectal Papillae of Sub-Cave-Dwelling Trichoptera"

A. WELLS, Australia
"Comparative Studies on Antennal Features of Adult Hydroptilidae (Trichoptera)"

G. DRECKTRAH, United States
"Descriptions of the Immature Stages of Some Australian Calocidae, Conoesucidae, and Helicophidae (Trichoptera)"

S. W. HAMILTON and R. W. HOLZENTHAL
"The Caddisfly Genus *Helicopsyche* in America North of Mexico (Trichoptera: Helicopsychidae)"

COLLOQUIUM ON BEHAVIOR OF ADULT TRICHOPTERA

Introduction:	J. O. SOLEM, Norway
Movie:	N. A. ERMAN and G. MORSE, United States, "A Film Study of the Mating Behavior of *Parthina linea* (Odontoceridae), a Caddisfly of Springs and Seeps"
Overview:	J. O. SOLEM "Adult Behaviour of North European Caddisflies"
Comments & Discussion:	J. O. SOLEM, Chairman

FOURTH SESSION - J. O. SOLEM, Chairman

K. M. F. SCOTT, Republic of South Africa
"The Present State of Knowledge of the Trichoptera of Southern Africa"

A. NEBOISS, Australia
"Calocidae of North Queensland (Calocidae: Trichoptera)"

G. B. WIGGINS and C. R. PARKER, Canada
"Beringian Trichoptera, a Preliminary Report"

K. KUMANSKI, Bulgaria, and H. MALICKY, Austria
"On the Fauna and the Zoogeographical Significance of Trichoptera from the Strandzha Mts. (Bulgaria)"

L. BOTOSANEANU, The Netherlands
"The Trichoptera of the Levant"

H. MALICKY, Austria, and F. CAKIN, Turkey
"A Faunistic Survey of the Caddisflies of Turkey"

SPECIAL TRICHOPTERA HABITATS: INFORMAL DISCUSSIONS (Lounge, Barnett Hall)

N. H. ANDERSON - Mt. St. Helens
A. NEBOISS - Lake Gordon, Tasmania
K. M. F. SCOTT - South Africa
K. L. MANUEL - Howard Creek, Oconee County, South Carolina

FIFTH SESSION - A. NEBOISS, Chairman

G. P. MORETTI and G. SPINELLI BATTA, Italy
"Biology, Zoogeography, Ecology and Systematics of the Aquatic Stages of *Limnephilus helveticus* Schmid"

K. L. MANUEL and D. A. BRAATZ, United States
"The Life Cycle and Larval Description of *Triaenodes taenia* (Trichoptera: Leptoceridae)"

B. J. WILKINSON, United Kingdom
"Interpretation of Past Environments from Sub-Fossil Caddis Larvae"

F. SCHMID, Canada
"Un essai d'évaluation de la faune mondiale des Trichoptères" (An Attempt to Estimate the World-Wide Fauna of Trichoptera)

L. BOTOSANEANU, The Netherlands, and W. WICHARD, Federal Republic of Germany
"Upper-Cretaceous Amber Caddisflies"

W. WICHARD, Federal Republic of Germany
"Fossil Caddisflies in Fossil Resins"

L. W. G. HIGLER, The Netherlands
"Caddis Larvae in Ditches"

B. J. ARMITAGE and K. J. TENNESSEN, United States
"The Trichoptera of Raven Fork, North Carolina - a Stream Subject to Low pH Events"

J. M. FEY, Federal Republic of Germany
"The Downstream Movement of Trichoptera Larvae (Trichoptera: *Stenophylax permistus* Mc.L.) in a Temporary Brook as a Strategy of Survival"

E. C. MASTELLER and O. S. FLINT, Jr., United States
"Trichoptera Emergence Patterns from a Small Stream in Northwestern Pennsylvania Impacted by Sewage Effluent"

SIXTH SESSION - H. MALICKY, Chairman

M. I. CRICHTON, United Kingdom
"Trichoptera from a Rothamsted Light Trap in Mortimer, Berkshire, 1965-1982"

L. S. W. TERRA, Portugal, and M. A. GONZÁLEZ, Spain
"Notes on the Distribution of Caddisflies in Portugal"

A. E. GORDON, United States
"The Trichoptera of Florida: A preliminary Survey"

S. C. HARRIS, P. K. LAGO AND P. E. O'NEIL, United States
"Emergence Patterns and Distribution of Trichoptera in the Cahaba River System, Alabama"

J. M. EDINGTON, A. EDINGTON and J. DORMAN, United Kingdom
"Habitat Partitioning amongst Hydropsychid Larvae in a Malaysian Stream"

M. P. OEMKE, United States
"Interactions between a Stream Grazer and the Diatom Flora"

N. H. ANDERSON, R. W. WISSEMAN and G. W. COURTNEY, United States
"Emergence Trap Collections of Lotic Trichoptera in the Cascade Range of Oregon, USA"

D. G. COBB, J. F. FLANNAGAN and M. FRIESEN, Canada
"Emergence of Trichoptera from Two Streams of the Duck Mountains in West-Central Manitoba"

M. L. J. ROWLANDS and M. H. HANSELL, United Kingdom
"Abdominal Contact as a Case Building Control in a Limnephilid Larva"

M. C. MOLLES, Jr., United States
"Patterns of Case Building by Caddisflies in the Southern Rocky Mountains"

J. RENNERICH, Federal Republic of Germany
"Aspects of the House-Building Behaviour of the Hyporheic Caddis-Larvae of *Sericostoma personatum* Kirby & Spence 1826"

SEVENTH SESSION - L. BOTOSANEANU, Chairman

D. GARCIA de JALON, Spain
"Iberian Female *Rhyacophila*"

C. CORALLINI SORCETTI and G. P. MORRETTI, Italy
"Habitat and Biology of Halophile *Triaenodes* in Small Watercourses of the Eastern Mediterranean"

K. L. MANUEL, United States, and A. P. NIMMO, Canada
"The Caddisfly Genus *Ylodes* in North America (Trichoptera: Leptoceridae)"

R. W. HOLZENTHAL, United States
"Overview of the Neotropical Caddisfly Genus *Brachysetodes*, with the Description of a New Species from Ecuador (Trichoptera: Leptoceridae)"

G. P. MORETTI and F. CIANFICCONI, Italy
"Zonations of Trichoptera Populations from the Sources to the Mouths of the River Tiber (Central Italy, Rome)"

V. H. RESH, United States
"Biology of *Helicopsyche borealis* (Hagen) in a California Coastal Stream"

P. GATTAPONI and C. CORALLINI SORCETTI, Italy
"Trichoptera Component in the Spring Diet of *Salmo trutta fario* L. in the upper Reaches of the River Nera (Macerata: Marche); Somatometric Values and Weight of the Specimens Examined"

J. BUENO SORIA, Mexico
"Descriptions of the Larva and Pupa of *Hydropsyche toschiae* Denning (Trichoptera: Hydropsychidae)"

P. W. SCHEFTER AND **J. D. UNZICKER,** United States
"A Review of the *morosa-bifida* Complex in North America (Trichoptera: Hydropsychidae)"

G. A. SCHUSTER, United States
"*Hydropsyche?* - *Symphitopsyche?* - *Ceratopsyche?*: A Taxonomic Enigma"

EIGHTH SESSION - M. I. CRICHTON, Chairman

G. A. SCHUSTER and S. W. HAMILTON, United States
"The Genus *Phylocentropus* (Trichoptera: Polycentropodidae) in North America, with the Description of a New Species"

J. S. WEAVER III, United States
"Evolution and Classification of Trichoptera"

Business session

Adjourn