ENTOMOLOGY

Chairman: ROBERT W. MEYER, Department of Entomology
Purdue University, Lafayette, Indiana 47907

VIRGIL R. KNAPP, Indiana Department of Natural Resources
Room 613, State Office Building, Indianapolis, Indiana 46204
was elected Chairman for 1976

ABSTRACTS

A Modified Malaise: Description and Potential of an Adaptable Flying-Insect Controlling Devise. RANDALL A. HIGGINS and T. L. HARRIS,[1] Department of Entomology, Purdue University, West Lafayette, Indiana 47907.——Operation of a non-attractive Malaise trap is dependent upon flying insects attempting to fly over a barrier, being funneled upward, and terminating with capture within a collecting device. This modified Malaise trap is composed of four nylon screen walls, an upward sloping awning, and a directional collecting device. The adaptable and self-contained trap has been tested in aquatic, aerial, and terrestrial habitats. The portability of this trap and its ability to sample flying insects from four directions independently and simultaneously are preferred attributes for various sampling situations.

Destruction of Cantaloupe Seedlings by Cucumber Beetles. J. A. BURNSIDE and B. D. BARRY, Midwest Deciduous Fruit Insects Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Vincennes, Indiana 47591.——Cantaloupe seedlings 3, 6, 9, and 12 days old were infested with 0, 1, 2, 3, and 4 striped cucumber beetles, *Acalymma vittata* (F.), or spotted cucumber beetles, *Diabrotica undecimpunctata howardi* Barber. In general, the younger the seedling and the higher the population of insects, the more quickly the seedling was destroyed. The striped beetles were more destructive than the spotted beetles to 3- and 6-day-old seedlings. The opposite was true of 12-day-old seedlings, though the striped beetles ate more foliage, because the spotted beetles fed more on the stems. The average time required to destroy a 12-day-old seedling ranged from 6.1 to 10.8 days for the spotted cucumber beetle and was 15.6 days for the striped cucumber beetle.

Investigations of Propolis. RICHARD J. JUDY, JR., and TODD L. HARRIS, Department of Entomology, Purdue University, West Lafayette, Indiana 47907.——Propolis, or "bee glue", is a substance collected by the common honeybee (*Apis mellifera*) from natural sources and used to seal cracks and holes in the hive. The antibacterial action of this substance has currently received much attention. This study investigates this antibacterial action and the thermostability of propolis.

Extracts of fresh propolis in water and alcohol were boiled for five minutes to test the thermostability. The fractions and appropriate controls were incorporated into nutrient agar plates. The plates were then streaked with *Staphylococcus aureus, Bacillus cereus, Bacillus cereus var. mycoides, Pseudomonas fluorescens* and *Micrococcus lyso-*

deikticus. The plates were incubated at 37°C. Observations were made and results recorded at 12-hour intervals for three days.

Alcohol extracts proved to be bactericidal or strongly bacteriostatic against all of the organisms while alcohol alone had no such effects. The water extracts had a slight bacteriostatic effect against *Bacillus cereus var. mycoides* and *Micrococcus lysodeikticus*, with little or no effect on the other organisms. In all cases, the active agent was thermostable.

The Ecological Relationships of *Ephoron album* (Say) and Ephoron leukon Williamson (Ephemeroptera: Polymitarcidae) in the Tippecanoe River. LOUIS H. DERSCH and W. P. MCCAFFERTY, Entomology Department, Purdue University, West Lafayette, Indiana 47907.——The only two North American species of the burrowing mayfly genus, *Ephoron*, *E. album* and *E. leukon*, have been taken together in the Tippecanoe River. Since this was the first time such coexistence had been known for these sibling species, the opportunity was taken to study the phenomena of habitat adaptation, breeding isolation, and any character displacement which might be involved.

Main objectives of the research were (1) to discover how the larvae may subdivide the habitat, (2) to ascertain the method by which reproductive isolation is maintained, and (3) to compare the biologies of the two species in both sympatric and allopatric zones.

A compartmentalized laboratory aquarium was used to determine substrate particle size preference of the larvae of each species. Results showed that *E. album* would utilize a finer substrate than that preferred by *E. leukon*. This was essentially substantiated by field sampling.

Adults were collected with lights. Field data from summer, 1974, suggested temporal isolation, with *E. leukon* emerging earlier in the season.

Indiana Species of Diptera Genera Containing Aquatic or Semi-Aquatic Stages. B. L. HEATH and W. P. MCCAFFERTY, Entomology Department, Purdue University, West Lafayette, Indiana 47907.——As part of an endeavor to broaden our understanding of the aquatic insect fauna of Indiana, this study was undertaken to assemble in a single list the species of aquatic and semi-aquatic Diptera of the state. The study is based on literature records and the examination of specimens at Purdue University's Laboratory of Insect Diversity, the Illinois Natural History Survey, and the University of Michigan Museum of Zoology.

Over 700 species representative of 22 families are recorded. Since many immatures of these species are unknown and since habitat data are scarce, all state species of aquatic genera are listed but distinguished when only tentatively aquatic. It is assumed that as knowledge of the Diptera increases this preliminary list will be greatly expanded. The list should, however, provide a needed working base for aquatic biologists and entomologists.

The Mayflies (*Ephemeroptera*) of Indiana Project. A. V. PROVONSHA and W. P. MCCAFFERTY, Entomology Department, Purdue University, West Lafayette, Indiana 47907.——Over the past four years, the Lab-

oratory of Insect Diveristy staff has conducted an in-depth study of the mayflies of Indiana. This continuing project has added much to our understanding of the geographical and temporal distributions, habitat preferences, behavior, and taxonomy of this order. The study is also intended to provide needed base-line data for the analysis of environmental quality of fresh water systems throughout the state. To date, 110 species have been taken in Indiana, including three undescribed species and one undescribed genus. In addition, through extensive rearing efforts, many previously unknown larvae have been successfully correlated with known adults. Many new and improved sampling and rearing techniques have also been developed during the course of this project.

A History of Entomology in Indiana. B. ELWOOD MONTGOMERY, 906 North Chauncey Avenue, West Lafayette, Indiana 47906.——The accounts of conditions in Indiana by early travelers and settlers noted the abundance of mosquitoes, bedbugs and other annoying pests as well as those attacking field crops as timothy and corn. One or two biologists (Audubon, Rafinesque or Wilson) have made some explorations in Indiana during territorial days, and Thomas Say, the "Father of American Entomology", traveled down the Ohio River in 1819 and crossed the state from Ft. Wayne to Chicago in 1823 en route to his western trips, but there appears to be no entomological results from any of these early visits in the literature. Say came to New Harmony in January, 1826, and remained there until his death in 1834. His later papers include many Indiana records.

After the death of Say it was 50 years until there was another "full time" entomologist in the state. In 1884 F. M. Webster came to Lafayette as a Special Agent of the U. S. Department of Agriculture and Consulting Entomologist of the Purdue University Agricultural Experiment Station and James Troop came to Purdue as Head of the Department of Horticulture and Entomology. However, there were several "amateur" entomologists, whose activities were probably more or less confined to collecting. These included George Mitten who came from England to Goodland in 1875, R. J. Weith who came from Germany to Elkhart in 1865, Samuel G. Evans a native of Virginia who arrived in Evansville about the time of the close of the Civil War and Dr. T. G. M. Levette who was employed in the office of the State Geologist for several years beginning in 1869. All of these men, and possibly some others accumulated insect collections but most of them seem to have been lost or destroyed except a large collection of beetles made by Lavette. This was purchased by T. L. Casey in 1890 and presumably went to the National Museum at Casey's death, but as the specimens, or almost all of them carried no date or locality labels they cannot be identified.

Many papers have been published on the history of Entomology in Indiana. In 1966 a rather expensive account was presented to the Academy as a part of its observation of the sesquicentennial of Indiana statehood. As part of the Academy's bicentennial activities this is being updated and amplified. It is planned to include in it lists of all entomolo-

gists who ever worked in the state, of all who received entomological training in Indiana institutions, of all federal, state and other agencies which have engaged in entomological activities, and of the important entomological "event" as insect outbreaks, dates of first appearance of introduced species, etc. Attached will be a list of the taxa described by Thomas Say.