ENTOMOLOGY

Chairman: B. ELWOOD MONTGOMERY, Purdue University
GEORGE E. MARSHALL, Experimental Horticulture Orchard, Mitchell, was elected chairman for 1963

The Ecology of Winter Stoneflies in the Columbus, Indiana Area. ROBERT G. CHAPPELL and LELAND CHANDLER, Columbus High School and Purdue University.—Collections of winter stoneflies were made weekly at six stream stations in the vicinity of Columbus. The period of adult emergence ranged from January 27, 1962 to April 14, 1962. Five species of stoneflies were collected. Several types of analyses were used to demonstrate the ecological significance of these stonefly populations in stream classification.

Interbreeding between Floridan and Cuban *Copelatus* (Coleoptera: Dytiscidae). FRANK N. YOUNG, Indiana University.—In Florida and the southeastern United States the *Copelatus caelatipennis* Aubé complex is represented by a distinct population which shows little variation over a considerable range. The Cuban population, *angustatus* Chevrolat, is similarly uniform, but with several characters contrasting sharply with those of the Floridan form. Collections made over a period of many years by various collectors showed no indication that these two populations overlapped. They were consequently considered to be distinct species or insular subspecies on the basis of morphological similarity.

Recent collections, using ultraviolet or blacklight traps, made by the Florida Department of Agriculture, Division of Plant Industry, however, produced some very interesting specimens which must be the result of interbreeding of the Cuban and the Floridan form. Specimens from Miami and West Palm Beach, Florida, examined by the writer, show various combinations of the characters of the supposed parents. Some resemble *angustatus* very closely except that they are more finely punctate and larger and more robust than any specimens seen from the West Indies. Other specimens from the same collections are apparently identical with the normal Floridan form. Between these extremes are specimens showing mixtures of characteristics and some show characters not seen in either of the supposed parent stocks. The lack of uniformity in the variation suggests that the Cuban and Floridan populations have been separated for a considerable time and have only recently been reunited either by natural or artificial introduction of the Cuban form. The larger size of individuals also suggests that heterosis may be involved.

The mortality of *Ceratina metallica* Smith during hibernation. PAUL F. HARDWICK and LELAND CHANDLER, Bedford High School and Purdue University.—Stems containing hibernating individuals or aggregations of *Ceratina metallica* were collected from November, 1961 through April, 1962. The number of living and dead individuals were recorded and the relationship between mortality and seasonal tempera-

tures was studied. Several factors relating to population density and burrow characteristics were found to be of importance in determining survival.

Effect of Infestation of the Angoumois Grain Moth on the Germination and Vigor of Corn. RAY T. EVERLY[1], PENNY SANDBERG and BONNIE WEAVER[2].—Tests were made to study the effect of the infestation of the Angoumois grain moth on the germination of corn and the vigor of the resulting seedlings. The treatments included two kinds of corn, popcorn and dent corn, infested and non-infested seeds of each and treatments with a fungicide as well as untreated seed. Two methods of germination were used. These were laboratory tests using modified half-pint ice cream cartons with moist filter paper and greenhouse tests in flats of soil. The statistical design in both methods was an 8 x 8 latin-square. The results indicated that infestation by the larvae of the Angoumois grain moth had a greater effect in reducing the germination and vigor of popcorn than dent, although the reductions in the dent corn were significant, particularly when grown in soil. The use of a seed fungicide, Arasan, had definite value in the soil tests.

Occurrence of *Aedes excrucians* (Walker) in Indiana. R. E. SIVERLY, Ball State College.—*Aedes excrucians* (Walker) belongs to a group of approximately six species of mosquitoes which characteristically have broad, white bands at the bases of the tarsal segments but lack white bands on the proboscis. The identification of these species is not clear-cut in any stage. Its relative size and the shape of the tarsal claws separate *Aedes excrucians* from other members of the *Aedes stimulans* group. *Aedes stimulans* was first reported as occurring in Indiana by the author at the academy meetings in 1959.

Aedes excrucians adult females were taken from a densely wooded area near Muncie in June, 1962. To the author's knowledge, there are no previously published accounts of the occurrence of this mosquito in Indiana.

Although the species is univoltine, females are vicious biters and tend to remain in a given area for several weeks. This may be an important pest of man and livestock in wooded areas in Indiana during late spring and summer.

Preliminary Studies on the Ovicidal Effects of Wheat Flour-Buttermilk Combination on the Eggs of *Panonychus ulmi* (Kock) in Southern Indiana. A. V. GHATE and G. E. MARSHALL, Purdue University.—Soon after it was found that the wheat flour-buttermilk combination was effective in controlling the mobile forms of European red mite, *Panonychus ulmi* (Koch), and two-spotted spider mite, *Tetranychus telarius* (L.), attacking apples in Southern Indiana, preliminary studies were conducted to ascertain the effects of this formulation on the eggs

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of the European red mite. The studies indicate that in addition to the effect of flour and buttermilk on the mobile forms of mites, a sufficiently large number of eggs are also killed, thus constituting a valuable aid in mite control. Counts after one week showed that 51 to 62 percent of the eggs hatched on leaves treated at different spray intervals as compared to 83 to 91 percent hatched in case of check. The nature of the action of this combination on mite eggs is not yet fully understood.

Hessian Fly and Wheat Jointworm Infestations in Indiana in 1962. J. H. HATCHETT, Agr. Res. Service, U.S.D.A.—Wheat samples collected by personnel from the Indiana Seed Certification Service, and the laboratory staff of the U. S. Department of Agriculture showed that Hessian fly infestations in 1962 had increased, compared to the previous year. Seventy-five samples from 36 counties ranged from 0 to 45 per cent infestation and had an average infestation of 10 per cent for the susceptible varieties—Knox, LaPorte and Vermillion. Resistant varieties ranged from 0 to 9.4 per cent and averaged 3.0 per cent infestation. Although in general the infestations were only low to moderate, 88 per cent of the samples collected from the susceptible varieties were infested which indicated the uniformity of existing populations. Fifty per cent of the samples collected from fields of the resistant varieties—Monon, Redcoat and Dual—were infested, indicating either a build-up of Race B, impure seed sources due to outcrossing with susceptible varieties or improper handling of seed.

In conjunction with the Hessian fly survey, wheat samples were also examined for wheat jointworm infestations. Fifty-six samples from 31 counties showed an average infestation of 7.5 per cent which was an increase over the 1960 (5 per cent) and 1961 (1 per cent) seasons. Although the average infestation is not considered to be of high incidence, there were high to moderate infestations in the following counties: Henry (88 per cent), Rush (52 per cent), and Montgomery (39 and 24 per cent).