

ENTOMOLOGY

Chairman: JACK R. MUNSEE, Indiana State University
JOHN W. HART, Earlham College, was elected Chairman for 1970

ABSTRACTS

The Use of Heartbeat as a Potential Screening Technique for Insect Pathogens. MILDRED G. WARE and HAROLD L. ZIMMACK, Ball State University.—The purposes of this study were: 1) to develop a rapid and accurate screening technique which will determine, by observing changes in heartbeat, whether or not a specific species of bacteria is pathogenic to a specific insect and 2) to determine criteria which would make it possible to apply this technique to other insects.

On the basis of these data, it is possible that the heartbeat of the European corn borer, *Ostrinia nubilalis* (Hubner), can be used to detect bacterial pathogens.

Results obtained indicate that the non-pathogenic species of bacteria, *Escherichia coli* (Migulo), increased the mean post-ingestion heart rate 4.36 heartbeats/minute; whereas mean post-ingestion heart rates in the larvae ingesting the pathogenic species of bacteria, *Bacillus thuringiensis* Berliner, *Serratia marcescens* Bizi and *Bacillus subtilis* Cohn, decreased 19.44 to 24.21 heartbeats/minute.

The investigators believe that age had a definite influence on the heart rates and the susceptibility of the larvae to pathogenicity. In the test group using *B. thuringiensis*, reported to be the most vigorous of the experimental pathogens, all late fifth instar larvae were used. The mean pre- and post-ingestion heart rates for this group were 69.68 heartbeats/minute and 50.24 heartbeats/minute, respectively. These figures are significantly lower than the mean pre- and post-ingestion heart rates of early fifth instar larvae used to test the effects of the moderate pathogenic species, *S. marcescens*, and the controversial pathogen, *B. subtilis*. The mean figures in the *S. marcescens* test group were 96.39 heartbeat/minute and 72.18 heartbeats/minute and in the *B. subtilis* test group the mean pre- and post-ingestion heart rates were 96.77 and 74.78 heartbeats/minute.

Further Studies on the Interbreeding of an Insular Form of *Tropisternus collaris* (Castelnau) with Mainland Forms. FRANK N. YOUNG, Indiana University.—Experimental crosses of a form of *Tropisternus collaris* from Puerto Rico indicate that the color pattern shows partial or complete dominance over that of forms from Florida, Indiana, and Mexico. Such crosses are, however, highly sterile or infertile. Crosses with a melanic form from Colombia (Ayapel) show dominance of color pattern but nearly complete fertility of progeny. Backcrosses have produced interesting examples of particulation of the elements of the color pattern.

OTHER PAPER READ

On the Nature of Communication of Bees. HAROLD ESCH, University of Notre Dame (by invitation).