

ASSOCIATION NEWS

ABSTRACTS OF SUBMITTED PAPERS, JOINT MEETING OF
AMCA AND CMCA, ANAHEIM, CALIF., JAN. 31-FEB. 3, 1961

NOTE: Most of the papers presented at the Joint Annual Meeting will be printed in the *Proceedings and Papers of the California Mosquito Control Association*, which will be published by the California Association in the fall of the present year. A copy of these *Proceedings* will be sent free of charge to each AMCA member and subscriber to *Mosquito News*, and reprints may be ordered by authors as with *Mosquito News*.

However, where clearance of a paper was obtained specifically for publication in *Mosquito News*, or where for some other accepted reason (e.g., where a paper is one of a series or group)

the paper is considered for publication in *Mosquito News* in the usual way, with an abstract in the California proceedings. These are the same procedures that were followed when the AMCA met with the California Association in 1949 and 1955.

Abstracts of the papers which were submitted with the titles, are given below. Abstracts of papers which appear in this issue of *Mosquito News* or are expected to appear in the next issue, are not included, nor are abstracts which do not add to the information already supplied by the title.

Aedes schizopinax DYAR IN THE WESTERN UNITED STATES. Lewis T. Nielsen, Department of Zoology and Entomology, University of Utah. *Aedes schizopinax* Dyar is one of the rarest mosquitoes in the Western United States, but is now known to occur in the states of California, Colorado, Idaho, Montana, Nevada, Utah, and Wyoming.

Taxonomically on the basis of the male genitalia the species appears to be allied to the *Aedes punctor* complex; it is very distinctive, being readily recognizable in the adult male and female and larval stages. Some of the most distinctive features are discussed in this paper.

Little is yet known on the biology of this species.

CHROMOSOME STUDIES WITH FIRST INSTAR MOSQUITO LARVAE. James D. Long, Biology Department, Sam Houston State Teachers College, Huntsville, Texas. An abbreviated technique has been developed for the preparation of nuclear materials used in mosquito chromosome studies. The procedure involves the utilization of first instar larvae as a source of tissues to be studied. The head capsule of the larva is removed and squashed in a standard chromosome stain. Chromatin material

stained in this fashion can be readily identified and is apparently adequately stained for detailed study of chromosomes.

CURRENT STATUS OF TROPICAL MOSQUITOES IN THE LOWER RIO GRANDE VALLEY OF TEXAS. Richard B. Eads, Senior Scientist (R) U. S. Public Health Service, U. S. Quarantine Station, Brownsville, Texas. The several species of tropical mosquitoes reported in the United States only from the Lower Rio Grande Valley are discussed. Included are comments on the apparent disappearance of *Anopheles albimanus* and observations on *Haemagogus equinus*.

FINDINGS ON THE SOIL HABITAT, BIOLOGY AND CONTROL OF *Leptoconops torrens* TOWNSEND. R. H. Whitsel, T. H. Lauret, C. A. Vickery, Jr., and H. E. Munsterman, San Mateo County Mosquito Abatement District, Burlingame, California. Recent studies of the biting black gnat (*L. torrens*) within San Mateo, Santa Clara, and Solano Counties, California, indicate that specific locations within soil series may account for a large proportion of the observed adult population. Since actual control work necessarily requires de-

limiting positive source areas within the many thousands of acres of cracked clay soils, one of the main objectives has been to describe the general soil characteristics on actual positive black gnat sites.

Studies of adult emergence on specific soils, emergence correlated with cracking potential, and soil moistures and temperature data relating to various pertinent clay soils are forthcoming. Susceptibility of the black gnat to insecticides and further results on insecticidal testing on positive gnat producing soil in Menlo Park and U. S. Naval Radio Station near Dixon, California, are to be presented. Observations on the biology of *L. torrens* are to be included.

IMPROVED TECHNIQUES FOR THE LABORATORY REARING OF *Aedes aegypti*. John E. Porter and George Kozuchi, U. S. Quarantine Station, U. S. Public Health Service, Miami Beach, Florida. Three techniques are described which have proved useful in rearing *Aedes aegypti* at the Miami Beach, Florida Quarantine Station. These are: (1) Preparation of an adult feeding solution consisting of 1 part of a 2 percent propyl & methyl paraben to 3 parts of a honey-water solution to prevent fermentation and molding and a preliminary report on the effects of paraben solutions for mold prevention on egg deposition paper; (2) a honey-water solution feeder which is impervious to egg deposition and rapid evaporation; and (3) an easily constructed and inexpensive sleeve-type cage for establishing colonies of mosquitoes from small larval collections.

MOSQUITO LARVAE RECOVERED FROM CEMETERY URNS AND CISTERNS IN VARIOUS SEAPORT CITIES IN LOUISIANA, MISSISSIPPI, AND ALABAMA. Burton R. Evans and Edward J. Fink, U.S.P.H.S., U. S. Quarantine Station, New Orleans, La. A summary of the mosquito larvae recovered from cemetery urns and cisterns from January thru September, from 1959-60. A total of eight species were recovered from the cemetery urns, and three from the cisterns.

FLUCTUATIONS IN ABUNDANCE OF COMMON SPECIES OF MOSQUITOES IN SALT LAKE COUNTY, UTAH. Jay S. Graham, South Salt Lake County Mosquito Abatement District, Midvale, Utah and Don M. Rees, University of Utah, Salt Lake City, Utah. Careful observations for the past 5 years of the numbers of the common species of mosquitoes in Salt Lake County, Utah, have shown that the abundance of some species has fluctuated considerably in different years. *Culex tarsalis* greatly increased in numbers in 1958 but returned to a more normal level in 1959 and 1960. *Culiseta inornata* has shown successive increases in number in 1958, 1959, and 1960. *Culex pipiens* also increased in numbers in 1959 and 1960. Populations of *Aedes dorsalis* have remained relatively constant during this same interval. The factors responsible for these population changes are not fully understood but patterns of precipitation and temperature interacting with irrigation practices are partially responsible.

NATURAL HISTORY OF WEE AND SLE VIRUSES AT DIFFERENT ELEVATIONS. John S. Blackmore, Louis C. LaMotte, and A. D. Hess, Encephalitis Section, Public Health Service, Greeley, Colorado. Observations were made in a canyon extending from 5600 to 8580 feet above sea level near Boulder, Colorado, to determine if *Culex tarsalis* mosquitoes move up a canyon free of indigenous *C. tarsalis* to higher elevations during the summer and fall and if WEE or SLE virus is introduced into the fauna of the higher elevations. *C. tarsalis* appeared at higher elevations in small numbers only in the fall. Female mosquitoes which moved up the canyon were non-feeding, nulliparous specimens. However, WEE transmission rates, even at the highest study site, were comparable with rates at the mouth of the canyon. SLE transmission occurred only in the lower study areas. The evidence suggests: (1) that there is a fall dispersal of nulliparous *C. tarsalis* to higher elevations; and (2) that there may be another vectoring

mechanism for WEE virus at upper elevations.

TECHNIQUES USED TO DETERMINE THE PHYSIOLOGICAL AGE OF MOSQUITOES. Bettina Rosay and A. Ralph Barr, California State Department of Public Health, Fresno, Calif. Preliminary findings will be presented on the results of a survey of adult mosquitoes in a ricefield located in Fresno County, California. Evaluation of the population was based on the physiological age of mosquitoes as determined by dissections. *Culex tarsalis*, *Anopheles freeborni*, and *Anopheles franciscanus* were the dominant species. Behavior patterns, such as mating, feeding, and movements away from the field, were related to the ages of individual mosquitoes. Observations were made on the population increase at the beginning of the season and the re-establishment of the population after an application of insecticide. Adult movement was indicated by collections from artificial resting stations placed within and around the ricefield.

OBSERVATIONS ON THE FLIGHT ACTIVITY OF *Culex tarsalis* COQUILLETT IN THE IRRIGATED AREAS OF SOUTHERN ALBERTA. J. A. Shemanchuck, Canada Department of Agriculture, Vet-Med Entomology Section. Research Station, Lethbridge, Alberta. In 1956, 1957 and 1960 observations were made on the flight activity of *C. tarsalis* males and females. A visual attraction trap was used for sampling. An attempt was made to obtain quantitative as well as qualitative data on fly adults. Observations were also made on air temperatures, relative humidity and wind speeds.

OBSERVATIONS ON THE METEOROLOGICAL-MOSQUITO POPULATION RELATIONSHIP AT STONEVILLE, MISSISSIPPI, 1959. Jack Riley and Robert A. Hoffman, Weather Bureau, U. S. Dept. Commerce, and Entomology Research Division, Agric. Res. Serv., U.S.

D.A. The *Psorophora confinnis* (Lynch Arribalzaga) mosquito population associated with pastures was correlated with meteorological conditions of rainfall, evaporation and soil temperature in order to attempt to establish a possible criterion for forecasting mosquito outbreaks. The observations indicate the complexity of topographical and weather factors involved in determining if a given area is capable of producing a mosquito problem. The preliminary evidence suggests that soil temperatures could conceivably be a more sensitive and consistent measure of the true mosquito larval habitat.

OBSERVATIONS ON THE SNOW MOSQUITOES OF NEVADA. Harold C. Chapman, Entomology Research Division, U. S. Dept. of Agriculture, University Station, Reno, Nevada. Snow mosquito breeding was recorded from early March to July at elevations ranging from 4,300-10,000 feet. Seven species, *Aedes cataphylla* Dyar, *A. communis* (DeGeer), *A. fitchii* (Felt & Young), *A. hexodontus* Dyar, *A. increpitus* Dyar, *A. pullatus* (Coq.), and *A. schizopinax* Dyar are reported as snow mosquitoes in the state. The latter species is designated as a snow mosquito for the first time in the literature due to its breeding habitat and companion species both in Nevada and California. Notes of a biological, ecological, distributional, and taxonomic nature are included for these species as they occur in Nevada.

FURTHER COMMENTS ON THE SUSCEPTIBILITY OF *Aedes aegypti* TO DDT IN THE MIAMI, FLORIDA AREA. John E. Porter, Burton R. Evans and George Kozuchi, Quarantine Station, U. S. Public Health Service, Miami Beach, Florida and New Orleans, Louisiana. *Aedes aegypti* larvae of the F₁ generation reared from specimens taken in 5 different areas of Miami, Florida showed varying degrees of susceptibility or resistance to DDT in 1960 tests using the standard WHO DDT-test kit methods. They range from larvae in

two areas with an LD-50 of 0.029 p.p.m. and 0.028 p.p.m. respectively to larvae from another area showing indications of resistance with an LD-50 of 0.22 p.p.m. Intermediate to these extremes were larval populations having an LD-50 of 0.138 p.p.m. It now takes up to 3 times as much DDT to obtain an LD-50 as was reported by Evans, *et al.* (1960) for *aegypti* from Miami.

INHERITANCE OF INSECTICIDE RESISTANCE IN CORVALLIS STRAINS OF *Culex tarsalis* COQ. Frederick W. Plapp, Jr., Dale E. Borgard, and Gaines W. Eddy, Entomology Research Division, U. S. Dept. of Agriculture, Corvallis, Oregon. Studies were made on the inheritance of insecticide resistance in a malathion-resistant strain of *Culex tarsalis* obtained from the Fresno, California area in 1957 and in a DDT-resistant strain collected at Oak Ridge, Oregon in 1956. It was found that malathion resistance was dominant to susceptibility and that resistance to DDT was recessive to susceptibility. In all crosses segregation for resistance and susceptibility occurred in the F₂ generation in approximately a 3:1 ratio indicating that the transmission of resistance is monogenic in nature. No differences were noted between reciprocal crosses, indicating that the resistance is not sex-linked.

LABORATORY STUDIES WITH ORGANIC COMPOUNDS FOR THE CONTROL OF ADULTS OF *Aedes taeniorhynchus* WIED. A. N. Davis and J. B. Gahan, Entomology Research Division, Agr. Res. Service, U.S. D.A., Orlando, Florida. Wind-tunnel tests were conducted with adults of *Aedes taeniorhynchus* Wied., to compare the toxicity of a malathion standard and a group of organic compounds known to be toxic to other species of insects. Among the chemicals superior to the standard were four phosphorothioates, one phosphate, and one carbamate.

OVIPOSITION RESPONSES OF *Culex quinquefasciatus* SAY TO WATERS TREATED WITH VARIOUS CHEMICALS. C. M. Gjullin,

Entomology Research Division, U. S. Dept. of Agriculture, Corvallis, Oregon. The oviposition response of *Culex quinquefasciatus* Say to a series of chemicals was determined in cage tests. Several of the chemicals tested were repellent at 5 to 10 p.p.m. and some were more attractive than distilled water.

RELATIONSHIP OF VENTILATION AND DOSE TO THE EFFECTIVENESS OF DDVP AS A RESIDUAL FUMIGANT. W. Mathis, J. W. Miles, H. F. Schoof, Technical Development Laboratories, Technology Branch, Communicable Disease Center, Public Health Service, Savannah, Georgia. In residual fumigant studies at Savannah, Georgia, dieldrin-resistant *A. quadrimaculatus* were exposed overnight in buildings (1000 cu. ft. each) to DDVP vapor produced from 1 to 9 dispensers under three levels of ventilation. Satisfactory kills of specimens at 14 sites in the building were obtained up to 16 weeks. Mortalities were particularly sensitive to ventilation changes. With minimum ventilation, one dispenser gave equivalent effectiveness (11-12 weeks) to 9 dispensers under maximum ventilation. Concentration of DDVP vapor of approximately .01 microgram per liter of air gave satisfactory mortalities.

RESIDUAL TOXICITY OF SOME NEW INSECTICIDES TO ADULTS OF *Anopheles quadrimaculatus* SAY. J. B. Gahan, G. C. LaBrecque, and H. G. Wilson, Entomology Research Division, Agr. Res. Serv., U. S. D.A., Orlando, Florida. This paper reviews the results of recent investigations conducted in Florida to develop new insecticides that can be used in residual spray programs against *Anopheles* mosquitoes. Both laboratory and field phases of studies on adult *Anopheles quadrimaculatus* Say are covered. The outstanding compounds were esters of carbamic acid.

BIOLOGY AND CONTROL OF *Aedes sierrensis* IN CALIFORNIA. Robert F. Portman, The Butte County Mosquito Abatement District, Biggs, California and Leon L. Hall, Fresno Westside Mosquito Abate-

ment District, Firebaugh, California. *Aedes sierrensis* (Lud.) the western tree hole mosquito is frequently a severe, spring pest in some areas of California. Insecticide treatment of larval habitats and adult shelters has given complete control in many instances. Some olive groves have not become reinfested after eight years. A method for the determination of the presence of an infestation before breeding commences is given.

LAGOONS FOR SEWAGE, OTHER WASTES—AND MOSQUITOES? William E. Bickley and Jerry Mallack, Department of Entomology, Maryland State Board of Agriculture and University of Maryland, College Park. Shallow lagoons or so-called oxidation ponds appear to offer an economical method for sewage disposal in small communities. These ponds are being promoted by various health and public works agencies. Many lagoons have been constructed and operated without creating mosquito problems, yet this type of pond is undoubtedly a potential source of mosquito breeding. Some small lagoons built for holding certain industrial wastes such as waste from canneries provide optimum conditions for *Culex* spp. Control is very difficult. There is a need for additional information about the chemical and biological processes within these disposal lagoons in relation to mosquito production.

SOME CURRENT TVA MOSQUITO CONTROL ACTIVITIES. Gordon E. Smith, Tennessee Valley Authority, Wilson Dam, Alabama. In carrying out its responsibilities to the states and people of the region, TVA has expanded its mosquito control measures to include the control of certain pest species as well as the malaria vector. Through research, planning, and field application of new techniques, repetitive costs have been reduced considerably by establishment of naturalistic control through shoreline improvement, water level management, and by improvement in supplementary control measures.

Mosquito egg counts are made from soil samples taken at known reservoir contours

at strategic locations to determine the production potential of floodwater species. Pest broods are prevented by water level manipulations or by pre-flood treatments of the soil. Helicopters are used in applying pre-flood treatments, for larviciding, and for herbiciding.

Hand clearing operations of reservoirs have been largely replaced by heavy tractor-powered cutter blades, rakes, and disks. Rotary mowers are used in shoreline maintenance and extensive use of dynamite is employed in ditch maintenance.

MOSQUITOES IN INTERNATIONAL AERIAL TRAFFIC ARRIVING IN THE UNITED STATES. John H. Hughes, U. S. Public Health Service, Division of Foreign Quarantine, Washington, D. C. Mosquitoes are commonly transported in international aerial traffic arriving in the United States. The Public Health Service Division of Foreign Quarantine has an entomology program directed toward prevention of introduction and establishment of mosquitoes and other insects of medical significance.

RECENT CHANGES IN *Aedes nigromaculis* LUDLOW POPULATIONS IN THE SALT LAKE CITY MOSQUITO ABATEMENT DISTRICT. Glen C. Collett, Salt Lake City Mosquito Abatement District, Don M. Rees, University of Utah, Salt Lake City, Utah. Survey records indicate *Aedes nigromaculis* were collected in the vicinity of Salt Lake City in the late twenties and early thirties although very few collections were reported. Rees (1930) states *Aedes nigromaculis* is not very numerous in the district but was found this season west of Salt Lake City. Again in 1935 this species was reported as occurring in the district.

In the seventeen-year period from 1935 to 1952 *Aedes nigromaculis* were collected in the light traps only in 1945 and 1948. In each of these years single collections were recorded.

Since 1953 this species has increased in numbers in the vicinity of Salt Lake City. It is now frequently found in considerable numbers as larvae and adults, especially in the irrigated areas.

SEASONAL OBSERVATIONS OF THE NULLIPARITY OF *Culex tarsalis*. Jack S. Blackmore and Richard P. Dow, Encephalitis Section, Public Health Service, Greeley, Colorado. Studies of the parous or nulliparous condition of *Culex tarsalis* were conducted through the season in areas of high and low mosquito population densities. It was found that during the season the percentage of parous mosquitoes increased until by late August, all the mosquitoes collected in CO₂ traps were parous. In contrast, the percent parous in resting shelters decreased until this segment of the *Culex tarsalis* population was 100 percent nulliparous. *Culex tarsalis* moving up a canyon area, presumably for hibernation, showed all specimens tested to be nulliparous. This suggests that *C. tarsalis* is not involved as a winter reservoir of encephalitis viruses at this latitude.

STUDIES OF THE NATURE OF RESISTANCE TO MALATHION IN *Culex tarsalis* COO. Frederick W. Plapp, Jr., Walter S. Bigley, and Gaines W. Eddy, Entomology Research Division, U. S. Dept. of Agriculture, Corvallis, Oregon. *In vitro* studies have consistently failed to demonstrate any hydrolysis of either malathion or malaoxon by larvae of either resistant or susceptible strain of *C. tarsalis*. However, *in vivo* studies which utilized enzymatic techniques of analysis have provided evidence that larvae of the resistant strain detoxify malaoxon more rapidly than do larvae of the susceptible strain. Low levels of ali-esterase which appear to be a factor in house fly resistance to organophosphates are apparently not involved in malathion resistance in this species.

ADVERTISING RATES

FOR

Mosquito News

	1 issue	4 issues
Full-Page	\$50.00	\$180.00
Half-Page	\$30.00	\$108.00
Professional Card	\$6.00	\$20.00

Preferential Positions — \$5.00 an issue extra

1. Facing Front Cover
2. Facing First Article
3. Facing Back Cover

(Type setting and cuts furnished by Association are extra)

For Information Write

FRANCIS P. CREADON

Desplaines Valley Mosq. Abatement Dist.

8130 Ogden Avenue

Lyons, Ill.