

study the biology and bionomics of 6 species of Mansonia i.e. M. uniformis, M. indiana, M. anulifera, M. annulata, M. bon-neae and M. dives in Chumporn province of South Thailand. The studies included those on the nature of their breeding places and habitats, life cycles, seasonal prevalence, resting habits, feeding habits, host selection, oviposition and gonotrophic cycle.

Details of the results from the studies will be presented by slides and pictures at the meeting, M. uniformis and M. indiana have been recognized as the local important species for the transmission of malayan filariasis in the area.

126. Bionomics of Anopheles stephensi in Calcutta

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Anopheles stephensi is an important vector responsible for transmitting malaria in big cities of India. The bionomics of A. stephensi of Calcutta has been studied. Though this mosquito breeds throughout the year, the favourable breeding season extends from June to October (peak in August), roughly corresponding to the transmission-season of malaria. Amongst the nocturnal man-biting mosquitoes, A. stephensi constitutes 0.23% and per man-hour contact in indoor is maximum in the month of July (0.13). The overall figure of per man-hour contact is 0.04 in indoor and 0.003 at outdoor. A. stephensi has become exophilic but still it remains its habit of endophagy. These mosquitoes come to bite man between 11 P.M. and 4 A.M. They bite below waist-line. The precipitin test shows that they are anthropophilic. The sporozoite rate in nature is 2.5%. The mean survival period of the adult is 33 days (range 2-91 days). A. stephensi is susceptible to malaria infection in the laboratory and the extrinsic incubation period in case of Plasmodium vivax is 10 days. A. stephensi adults have become resistant to DDT ( $LC_{50}$  is 1.36%) and Dieldrin ( $LC_{50}$  is 0.6%) and the larvae show a low degree of resistance to an organophosphorus compound, abate ( $LC_{50}$  is 0.008 ppm). The larvae of A. stephensi are however susceptible to other organophosphorus compounds namely, malathion, fenthion and dursban.

127. Evidence of sibling speciation in the balabacensis complex of Southeast Asia (Diptera: Culicidae)

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Forced mating crosses in both directions between Anopheles dirus (Bangkok Strain) and An. balabacensis (Taiwan Form), yielded reduced numbers of  $F_1$  hybrids of both sexes. Natural mating studies in both directions between An. dirus and An. balabacensis (Perlis Form), produced very small

numbers of viable F<sub>1</sub> hybrid offspring in only one direction (dirus female x Perlis male). The F<sub>1</sub> female hybrids of the dirus x Taiwan crosses were fertile when they were backcrossed with males of the respective parents, however, male progeny of these backcrosses often exhibited morphological abnormalities. The F<sub>1</sub> males of this cross, were completely sterile with abnormal reproductive systems. Only a very few F<sub>1</sub> hybrids of the dirus x Perlis cross were produced. Of these, one F<sub>1</sub> female was backcrossed to a Perlis male and failed to oviposit. F<sub>1</sub> hybrid males of the dirus x Perlis cross often died as pupae and those reaching the adult stage were sterile with abnormal reproductive systems.

Salivary gland chromosomes of F<sub>1</sub> hybrid larvae exhibited about 40-50% asynapsis in the dirus x balabacensis (Taiwan Form) crosses, and 70-80% asynapsis in the dirus x balabacensis (Perlis Form) crosses. Although considerable asynapsis occurred in all the F<sub>1</sub> hybrids, the banding patterns of most of the chromosome arms were very similar, nearly homosequential. However, zone 6 of the X chromosome of dirus is strikingly different from the corresponding zones of the 2 balabacensis forms. Differences were also found in the metaphase sex chromosomes of these 3 taxa. The heterosomes of the Perlis Form are distinctly acrocentric, while those of dirus and the Taiwan Form are telocentric. This difference is very obvious in brain ganglion and pupal testes preparations, and the Perlis heterosome is easily detected in preparations from hybrids.

These morphological and cytological observations show that each of these 3 taxa represents a full biological species. Furthermore, they support the recent description of the new species, dirus, which replaced the species previously considered balabacensis in Thailand and other countries of mainland Southeast Asia.

128. The bionomics and vectorial status of Anopheles punctulatus donitz (Diptera: Culicidae) in Papua New Guinea

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Recent work has increased our knowledge of the bionomics and vectorial status of Anopheles punctulatus. Recent work and earlier investigations are reviewed.

129. The ecological eradication of Anopheles balabacensis

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Just before the war, and for a few years after it, an experiment was carried out in Borneo on the ecological eradication of Anopheles balabacensis (then known as Anopheles leucosphyrus).

This experiment was successful in so far as it was allowed to go, being followed by a 95% eradication of the