



qui indiquerait un pouvoir intrinsèque de transmission plus élevé, à moins qu'il ne s'agisse de phénomènes de souche. Des études ont été menées sur l'action de l'humidité comme facteur de spéciation : Dans un premier temps, nous avons effectué des croisements entre les espèces A et B et des croisements en retour avec les souches ancestrales. Il suffit de trois à quatre croisements en retour pour obtenir la production de mâles entièrement fertiles. Nous avons par ailleurs placé des mélanges de mâles et de femelles des espèces A et B dans des conditions d'humidité relative différentes. Il est apparu après un temps plus ou moins long, au cours duquel nous avons vérifié l'hydratation, que les atmosphères humides sélectionnaient l'espèce A et que l'espèce B n'apparaissait qu'en atmosphère sèche.

- 365. Bionomics of the immature stages of *Anopheles gambiae* and the need for improved sampling methods.

M. W. SERVICE. *Liverpool School of Tropical Medicine, Sub - Division of Entomology, Liverpool, England.*

Within recent years there has been renewed interest in the possibility of controlling *Anopheles gambiae* by larvicides and biological methods. Because of this, and the recognition of several species within the *A. gambiae* complex, it is becoming increasingly evident that more information is urgently needed on the ecology of the immature stages. For example, the limiting factors that influence the selection of oviposition sites and successful development of the pre-adults need to be determined, and estimates of the mortalities of the various age classes of the immature population are required if life-tables are to be constructed. Predation, even in small habitats, is probably more important in regulating population size than is generally realized. The precipitin test is the best method for identifying natural predators. Improved sampling techniques for estimating both relative and absolute population sizes of the immature stages are long overdue. Because the pre-adults of *A. gambiae* have a highly aggregated distribution sample means and variances are not independent of each other. Consequently, field counts must be transformed (e.g. $\log n + 1$) before they can be used in simple parametric statistical tests. Finally, the minimum number of samples required for statistically reliable results should be determined before surveys are undertaken.

- 366. Physiology and Bionomics of malaria vectors in the Americas.

R. ELLIOTT. *Pan American Health Organisation, Guatemala, Guatemala, C. America.*

Research in the region has been still mainly on *A. albimanus*, whose resistance to DDT has spread south from Central America. Laboratory studies showed viability of eggs on wet mud, and that larvae preferentially absorbed particles in the range 80 - 105 microns. In both *A. aquasalis* and *A. albimanus*, adults fed on sugar showed decreased mortality from contact insecticides, a physical effect. In El Salvador *A. albimanus* larvae escaped predaceous fish by sheltering in partly submerged leaves. Adult densities were more efficiently estimated by the New Jersey light trap than by 5 other methods. Both trap captures and observation of movement of adults from daytime resting places showed 6-9 p.m. as the period of peak activity. In Haiti also, biting was mainly outdoors, before 9 p.m. In El Salvador *A. pseudopunctipennis*, found in darker parts of the same resting places as the other species, left at the same time, but returned 2 hours later. Larval density of the 2 was constant round the year, but dry and wet season habitats were different. Elsewhere in El Salvador, later nocturnal activity in houses, with entry and exit at 10 p.m. and 3 a.m., was seen; marked mosquitoes remained 5 hours indoors. Lack of correlations between vector densities and local malaria