tions, biting rates, feeding habits, and outside resting, of *Anopheles* are intended to give a clear picture of what occurs, and an explanation of success or failure in the interruption of transmission. Complementary studies by Dr. C. C. Draper on human malariometry, growth rates in children, haemoglobin levels and so forth are on the other hand designed to give at least a preliminary indication of the effect of malaria on man in such areas, if the attempt to arrest transmission is successful.

Insecticides. An essential part of the residual spraying project is of course the observation of insecticidal activity in huts sprayed. Other insecticidal work has been concerned with the assessment of larvicides, and it has been shown that dieldrin is some ten times as active as DDT against *A. gambiae*. More recently dieldrin in a granulated formulation has been applied by aircraft in field trials at Dar es Salaam, and found to be very effective in wide swampy areas otherwise very difficult to control. All these insecticidal projects are carried out in collaboration with a neighbouring research organization, the Colonial Pesticides Research Unit.

Advice and Teaching. Advice and assistance in assessment are being given to control projects carried out by territorial medical departments, usually with the assistance of the World Health Organization, as in the Highland areas of Kenya, in Somaliland, and Zanzibar. As opportunity presents, surveys of malaria and bilharzia, and of their vectors, are carried out from time to time in the territories, and the amount of such much needed work is limited only by the availability of staff. Similarly advice on methods and materials is given, and schemes prepared. In the case of drainage projects, this is the work of the Malaria Engineer.

Finally the teaching activities of the Institute, mainly for African Health Inspectors and others, but also for Europeans, use up a good deal of the resources of the senior staff. Some 240 Africans and Europeans have so far attended courses lasting three to five weeks. These cover both the theory and practice of mosquito control, and some of the basic knowledge necessary to an understanding of control. Without a great increase in the number of trained assistants, any projects for the extension of vector borne disease control in tropical Africa are meaningless.—D. Bagster Wilson, East African Inst. of Malaria and Vector Borne Diseases.

NOTES ON THE SEASONAL ABUNDANCE OF *Culex tarsalis* COQ. IN TEXAS. Immature stages of the mosquito *Culex tarsalis* Coq. may be collected in Texas throughout the year. In the course of collections made throughout the state in 1954–1955, larvae were abundant from April through June. Larvae became less numerous during the hot summer months. In September and November, another increase in larval population was observed; this was followed by decreasing numbers during the colder winter months. Randolph and O'Neill (1944) report that large numbers of this mosquito can be collected in Texas in early spring and fall.

Larvae and pupae apparently can withstand a wide range of temperatures and water types. Specimens have been collected from water varying in temperature from 105° F. (Hot Springs, Big Bend National Park, Texas; temperature reported by park officials), to water of a temperature of 38° F. which had been frozen over lightly the night before collections were made. Additionally, fourth instar *C. tarsalis* larvae and pupae have been collected from the brackish water of tidal flats at Corpus Christi, Texas.—John M. White, Oklahoma Baptist University, Shawnee, Oklahoma.

References Cited

RANDOLPH, N. M., and KELLIE O'NEILL. 1944. The mosquitoes of Texas. Bull. Texas State Health Dept.

ROLE OF ALBUMINOID AMMONIA AND OTHER FACTORS IN THE BREEDING OF *Anopheles sundaicus* (Rodenwaldt): A PRELIMINARY NOTE (Summary). An unprecedented outbreak of malaria in 1930 in the Budge Budge area about 16 miles south of Calcutta, India, was traced to *Anopheles sundaicus*. Subsequent study of the breeding habits of this mosquito in brackish water swamps and other areas in the vicinity of Calcutta indicated that it could tolerate a wide range of salinity.

The present report summarizes some of the more significant findings of a ten-year study (1935–1945) of the ecological factors which might be critical in the production of *A. sundaicus* in various habitats such as tanks, ponds, lakes, borrow pits, swamps, tidal creeks, and canals. Factors investigated were pH, alkalinity, albuminoid ammonia, free ammonia, absorbed oxygen, dissolved oxygen, nitrites, nitrates, carbonates, iron, calcium, and suspended matter.

A preliminary analysis of data collected before, during, and after breeding of *A. sundaicus* indicates a correlation with albuminoid ammonia content, breeding being observed when the albuminoid ammonia content was low compared to the before and after readings. Most breeding was observed when the albuminoid ammonia was below 0.3 ppm, but some breeding occurred when the content was as high as 0.68 ppm.

No correlation was observed with free ammonia or the various other factors studied. The findings confirmed previous observations as to the wide tolerance of *A. sundaicus* for salinity, positive breeding being observed in situations where the salt content ranged from 160 to 6,800 ppm.—Purnendu Sen, School of Tropical Medicine, Calcutta, India.