THE question of the relative attractiveness to biting insects of different individuals is an interesting one. It was considered possible that some individuals would be relatively or completely unattractive to mosquitoes, and some experiments were initiated by the Army Malaria Research Unit during the War. I was responsible for carrying out the entomological side of this investigation. Working with *Aëdes ægypti* and *Anopheles maculipennis atroparvus*, we never found any person who was completely ununattractive; in fact, when hungry mosquitoes were given the opportunity of biting, they appeared to feed on every individual with equal readiness. It should be noted that in these experiments no alternative source of food was available.

It is more difficult to carry out satisfactory experiments in which mosquitoes are given a choice of individuals on which to feed. A considerable number of experiments was, however, carried out with volunteers in cages exposed to *Aëdes ægypti*. I was unable to discover any consistent preference for any particular person or any consistent avoidance of another.

Dr. Bristowe suggests that the apparent differences in the attraction of individuals may be due to their giving different reactions to the bites. I think that is the main explanation. The delayed reaction to bites is very much more troublesome than the immediate, and thus those in Stages I and II are much more conscious of a mosquito nuisance than those in Stages III and IV. Thus, if two individuals are exposed to mosquitoes on several consecutive days, the one who gives the delayed reaction may imagine that every bite which is itching on a particular occasion has been recently inflicted, though they are the result of attacks on the preceding three or four days.

I believe that eventually we shall find that there is some individual difference in the attractiveness of individuals to mosquitoes and other biting insects, but that it will not be an absolute one or sufficiently important to suggest a method of control. So far those cases which have been carefully investigated tend to minimize the importance of this factor.

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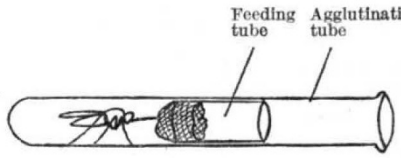
A Technique for Feeding Adult Mosquitoes

ADULT mosquitoes of both sexes can be persuaded to take a considerable variety of foodstuffs, including fruit juices, milk, sugar solutions and various blood preparations. Some interesting lines of inquiry are suggested by the inability of such species as *Culex fatigans* to produce eggs on any diet other than whole blood taken by normal biting, while other species, such as *Aëdes ægypti*, can produce viable eggs on defibrinated or citrated blood. In the course of a number of experiments at Yaba with various blood preparations, only one *Culex fatigans* produced any eggs. These were very few in number and were never laid. They were discovered only on post-mortem examination. The mosquito had received one meal of citrated guinea pig blood followed by several meals of glucose. It has been found repeatedly that the same species will produce many more eggs on a meal of avian blood than on one of mammalian blood.

Feeding techniques based on the use of a pipette, such as those of Hertig[1], Karibov[2], Macgregor[3], Kadletz and Kusmina[4] and Vainshtein[5], are tedious and require considerable manipulative skill. Nor does it appear that blood taken in this way undergoes the same process of digestion as when it is taken in the normal manner. Methods in which the food is exposed on an open surface of wool or gauze, such as those of Russell[6], and Roy and Ghosh[7], or taken through a membrane (Totze[8], Yeoli[9]), are excellent for feeding a number of mosquitoes simultaneously, but do not allow of the individual control required by some experiments. The technique described below has the advantage of simplicity and has been found particularly useful in transmission work with virulent virus, since each mosquito is kept under constant observation and the risk of escape is minimized. At Yaba it has been found possible to infect male *Aëdes ægypti* with neurotropic yellow fever virus administered as a suspension in defibrinated guinea pig blood, and to recover considerable quantities of virus after a fortnight's incubation.



The mosquitoes to be fed are allowed to emerge from the pupa in ordinary serum agglutination tubes closed by a plug of cotton wool or gauze through which the water is poured off after emergence. The food is administered on the end of a half-inch feeding tube cut from glass tubing of external diameter such that it slides easily into the agglutination tube. A suitable surface on which to place the food is provided by pushing a small circle of linen gauze down the inside of the feeding tube and allowing it to project in the form of a cap. The food is dropped on this cap from a pipette and the feeding tube is then pushed down the agglutination tube towards the mosquito. The success of the method appears to depend mainly on choosing a suitable interval between emergence and feeding. The optimum time may be expected to vary with temperature. Approximate times which have been found suitable in West Africa are as follows: *Culex fatigans*, 72 hours; *Aëdes ægypti*, 60 hours; *Aëdes luteocephalus*, 48 hours.

Culex fatigans has proved particularly suitable for experimental work, as it is prolific, feeds well, and is of such a size that its movements in the tube are slowed down, although it is not unduly cramped.

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