- (1) Artery supplying muscle, on left, before traversing outer dermal sheath into follicle; ringwulst and ring sinus above; main vein of region running deep, below. Forward injection. Rat, $\times 30$
- (2) Part of follicle showing fine efferent vessels. Retrograde injection using 'Prisco'. Rat, $\times 65$
- (3) Longitudinal section of base of follicle; afferent vessel to ascending papillary plexus on left; large efferent vessel on right. Forward injection. Frozen section. Cat, $\times 30$

dermal sheath in the deeper third of the follicle. Immediately outside the sheath the efferent vessel enlarges (c. 11μ) and joins a vein into which the efferent vessel of the dermal papilla also drains.

The afferent vessel of the papilla derived from the arterial branch to the hair matrix is minute (c. 5μ), and gives rise to a network of capillaries covering the surface of the papilla, ascending to its apex in long twisting loops similar to those seen in dermal papillae in other situations (Fig. 3). The capillaries drain into a central efferent vessel of larger calibre (c. 20μ) which leaves the base of the follicle.

The vascular pattern of the papilla is related, no doubt, to the high metabolic demand of an actively growing region. In marked contrast, the relative dimensions of the afferent and efferent vessels to the sinus system suggest that blood is held in the sinuses under considerable pressure, providing a medium in which the hair and its root sheaths are suspended in a cradle of elastic strands, the trabeculae. This view is supported by experimental evidence which will be published at a later date.

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¹ Ryder, M. L., *Nature*, **172**, 125 (1953).

² Ryder, M. L., and Auber, L., *Nature*, **174**, 743 (1954).

Adult Behaviour-Pattern of *Anopheles gambiae* in Mauritius

SENIOR-WHITE¹ has suggested a most convenient system of classification for the adult behaviour of anopheline mosquitoes, especially the vectors of malaria. The classification is of considerable importance when assessing the vectorial capacity of *Anopheles gambiae*, which ought now to be regarded as a mosquito the behaviour of which is considerably plastic; it certainly is not "a vector wherever found". Under the environmental conditions of an oceanic island, such as Mauritius, *A. gambiae* appears to lose its addiction for man. It may be that when it first made its appearance in the island in the 1860's its full genetical complex was missing. Again, there is a suggestion of a behaviour cline, *A. gambiae* becoming less and less closely associated with man as its distribution recedes from the equatorial regions.

Studies made since 1952 have shown that *A. gambiae* in Mauritius is strongly endophilic. Only the unfed and unfertilized females are to be found resting out of doors. Male *A. gambiae* are, however, strongly exophilic, and may be readily collected from rock crevices. Although it is so strongly endophilic, this is for cowsheds only. It is most unusual to find resting individuals in houses. Gebert² collected 46 from 12,561 houses, and Halcrow³ found 6 unfed *A. gambiae* in 704 houses. Precipitin tests have shown that the small number of the species that do feed on humans rest immediately afterwards in cowsheds. It is suggested that Senior-White's classification of 'endophilic' should be subdivided into endophilic (houses) and endophilic (animal shelters); thus allowing for the unusual behaviour of the Mauritian *A. gambiae*.

Precipitin tests, based on 1,252 stomach smears of blood-fed *A. gambiae*, show a zoophilic index of more than 70 per cent, and an anthropophilic index of 2.8 per cent. Since 1,240 of the 1,252 smears were collected in cowsheds and from areas where herd cattle were absent and where the cattle were stalled in the cowsheds throughout the day and night, it would seem that a considerable degree of endophagy would be indicated. Very few of the smears were negative for both cattle and man. As it is impossible to say whether the low number of blood fed *A. gambiae* proved positive for humans obtained their blood meal in houses or in the open (the latter being more probable), a small degree of exophagism could be accorded to the species.

The deviation of *A. gambiae* into cowsheds might be explained by the great number of cowsheds in Mauritius. One-third of all buildings in Mauritius are cowsheds; in several villages within areas of prolific breeding of *A. gambiae* the cowshed-to-house ratio is 1:1.

From observations made since 1952, it would seem that *A. gambiae* in Mauritius was, and is, a poor vector of malaria and bancroftian filariasis. It is thought that the presence of *Anopheles funestus*, now eradicated, enhanced the low vectorial capacity of *A. gambiae* by building up malaria to almost epidemic proportions. In such an event *A. gambiae* would be more likely to become infected than at the present time, when the very low endemic malaria is dissipated by the deviation of this species to cattle.

A summary of the adult behaviour pattern of *A. gambiae*, as it is found in Mauritius, is as follows: almost completely endophilic (animal shelters); strongly endophagic and weakly exophagic. This summary could be combined with other behaviour-pattern summaries from other geographical regions, and could form the basis for a study of a possible 'behaviour-cline' in *A. gambiae*.

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¹ Senior-White, R., *Nature*, **173**, 730 (1954).

² Gebert, S., Report of Medical Dept., Mauritius (1952).

³ Halcrow J. G. (unpublished report, 1953).