

Mosquito Eggs XI

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Genera Orthopodomyia and MimomyiaOrthopodomyia

Descriptions of the eggs of four species are currently available. These are O. signifera (Coquillett)^{12, 174-8}, O. alba Baker¹⁷⁶, O. kummi Edwards¹⁷⁶ and O. pulchripalpis (Rondani)^{179, 180}. They belong to three different subgroups of the Signifera Group of Section Bancroftia¹⁷⁶ but all are very similar, at least to judge from the descriptions and from the figures of O. signifera in Howard, Dyar and Knab¹² and of O. pulchripalpis in Marshall¹⁸⁰ (Fig. 1a,b). Apart from other species, described below, I can, however, speak from personal observation only of O. pulchripalpis, eggs of which are in the British Museum.

The most conspicuous feature is the lateral flange, recalling the anopheline float but clearly serving a different purpose. The statement by Horsfall¹⁷⁴ that eggs of O. signifera are deposited on the surface of the water is apparently inferential rather than observational. Other authors agree that they are deposited immediately above the meniscus except in the case of O. alba in which they can be found up to 3-4 cm above this level¹⁷⁶. There is general agreement that the lateral flanges serve for attachment though their possible function as a plastron seems worth investigating and I hope to let Prof. Hinton have some eggs for electron-scan microscopy with this in mind.

There is some disagreement as to the precise mode of attachment and this requires clarification in view of the very interesting mode of dehiscence which is oblique, at about 45° to the longitudinal axis^{176, 180}, a most unusual feature (but cp. Dobrotworsky¹¹³ for Neoculex). Zavortink¹⁷⁶ states that eggs laid in the laboratory, on damp filter paper, were attached with the ventral side uppermost but according to Howard, Dyar and Knab they are "attached by their sides" and this seems to receive some support from the photograph by Pratt and Kidwell¹⁷⁸ though the latter is difficult to interpret. Hatching is said to take place in situ¹².

The role of the egg in overwintering also requires clarification. Zavortink failed to observe egg diapause in any of his species while Tate¹⁸¹ found larvae of O. pulchripalpis all the year round and records larval diapause in this species. As against this Bohart¹⁸² found evidence for overwintering in the egg in O. californica Bohart while Loor and DeFoliart¹⁷⁷ record overwintering of eggs of O. signifera.

Through the kindness of Dr. Shivaji Ramalingam I am able to add to the foregoing descriptions of the eggs of two species belonging to different subgroups of Section Orthopodomyia. These are O. albipes Leicester (Fig. 1c) and O. wilsoni Macdonald (Fig. 2a), both from Ulu Langat, Selangor, Malaya. In each case eggs were laid in the laboratory by females caught in chicken baited traps.

Eggs of O. albipes are mid brown in colour with lateral flanges recalling those of O. pulchripalpis but differing in having the principal lacunae less extensively divided, with one, two or at most three transverse trabeculae (cp. Figs 1b and 1c). At the broader (presumably anterior) end there is a small cup which I presume to be associated with the micropyle. There is no perceptible reticulation of the general surface. Infertile eggs tend to split longitudinally as in Aedes. A comparable micropylar cup is present in O. pulchripalpis although previous authors have not mentioned it.

The eggs of O. wilsoni were received in poor condition with the lateral flanges almost entirely destroyed. It is evident that difficulty was experienced in detaching them from the substrate to which they must have been very firmly attached. In spite of this it can be said with certainty that they differ from those of O. albipes in one very striking feature. This is the presence at the base of the lateral flange of a row of outer chorionic papillae reminiscent of the large papillae found in some Aedes, particularly Finlaya spp. These are usually, but not always, left behind when the lateral flanges are detached. Similar papillae are present in O. albipes but they are very small and in one well preserved egg almost undetectable. It is impossible to reconstruct the lateral flange from the few remaining fragments but there are traces of slender transverse trabeculae and it seems likely that the flanges are quite similar in the two species. Nor is there any marked difference in the micropylar cups. As in O. albipes the colour of the eggs is mid brown and there is no perceptible reticulation of the general surface.

Mimomyia

In some new keys to world genera, at present in the press, I have separated this genus from Ficalbia which differs in many respects, not least in the egg, at least in so far as this is at present known. Among the three subgenera of Mimomyia only the eggs of two species of Mimomyia s. str. have been described. A third is described for the first time below. The eggs of M. hybrida (Leicester) and M. chamberlaini Ludlow were discussed in a previous note in this series from the point of view of their remarkable resemblance to those of certain Anopheles spp.¹⁸³. Through the kindness of Dr. Shivaji Ramalingam and Dr. Mario Coluzzi respectively I have now been able to make a direct comparison between the eggs of Mimomyia aurea (Leicester) and those of Anopheles superpictus Grassi. The eggs of M. aurea (Fig. 2b) resemble closely the descriptions of those of M. hybrida and M. chamberlaini by Menon⁵⁷ and Menon and Tampi⁵⁸ respectively. I can add to their descriptions only the fact that the peripheral frill appears to consist of an upright palisade lined on the inside by drawn up reticulated deck outer chorion. The outer chorion of the lower part of the egg is ornamented with straplike bands of thickening running down from the lower edge of the palisade. Under high magnification these are seen to have a fine structure recalling the 'fretwork' structure of the Orthopodomyia lateral flange. The reticulated appearance of the lower part of the egg, unlike that of the deck, is apparently contributed by sculpturing of the inner chorion.

Bearing in mind various resemblances in male terminalia and in the early stages⁷⁰ it seems that Mimomyia and Orthopodomyia are comparatively closely related. It is unfortunate that the eggs of the container breeding subgenus of Mimomyia (subgenus Ravenalites) are still unknown.

The egg of An. superpictus (Fig. 2c), though superficially similar, differs in several important respects from that of M. aurea. The peripheral frill is in the form of a continuous, irregularly pleated membrane and the outer chorion both of the deck and of the sides and lower (dorsal) surface is uniformly covered with minute granular papillae.

If the frill of An. superpictus is homologous with that of Mimomyia then it seems likely that it is a more primitive structure from which the latter has been derived by a process of elaboration conferring greater rigidity. The An. superpictus frill, when larger than usual, tends to project laterally⁶¹, like the flange of Orthopodomyia, and in An. apoci Marsh (Fig. 2d) this is the normal condition as it is in the treehole breeding Anopheles s. str.^{28,29}. On the other hand, in An. murphyi Gillies and DeMeillon³⁰, the only other Cellia with a floatless egg available to me, the frill is much shorter and there is a definite palisade (Fig. 2e).

References

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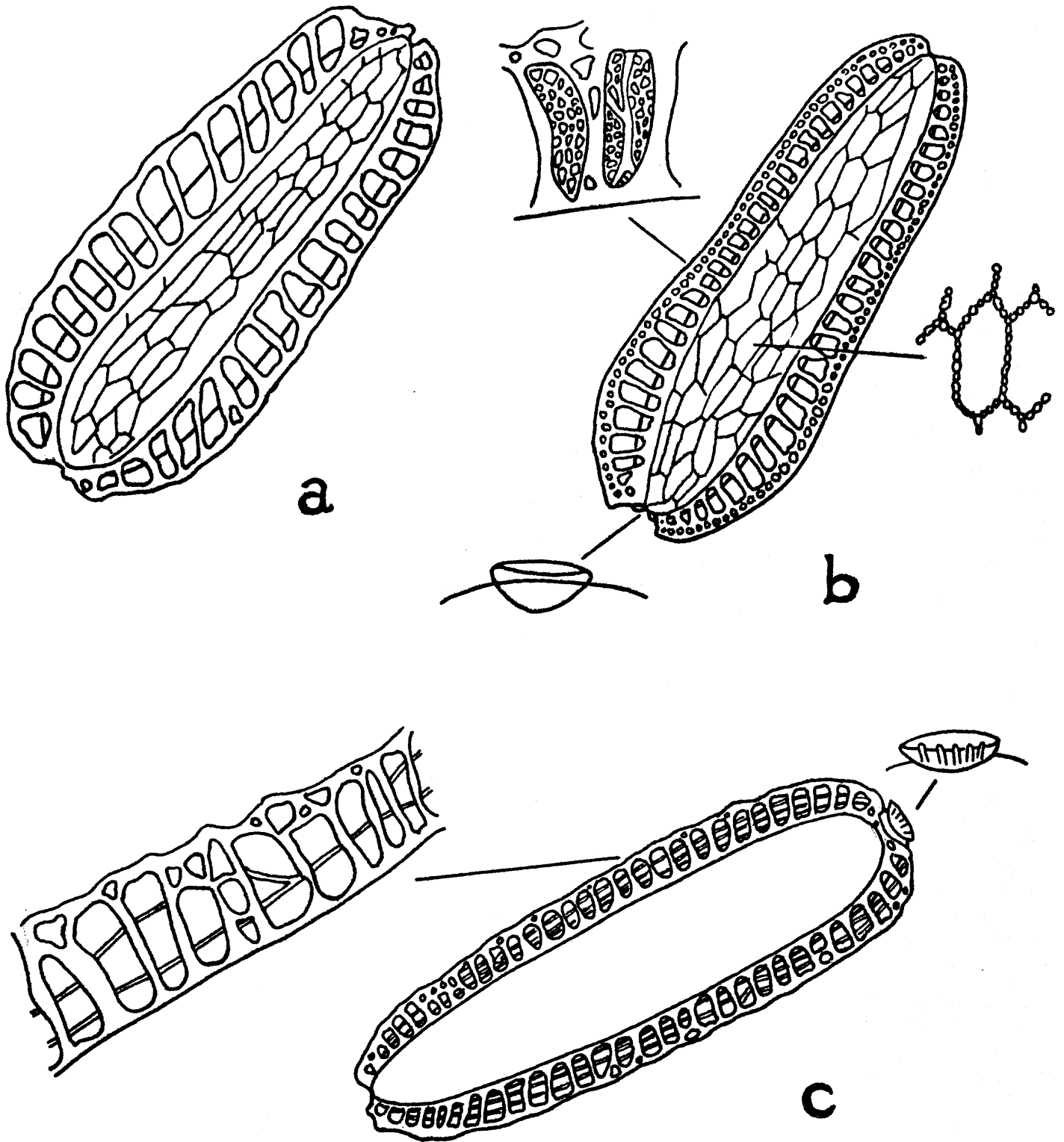


Fig. 1. Eggs of genus Orthopodomyia. a. O. signifera, after Howard, Dyar & Knab, b. O. pulchripalpis, after Marshall (details original), c. O. albipes, original.

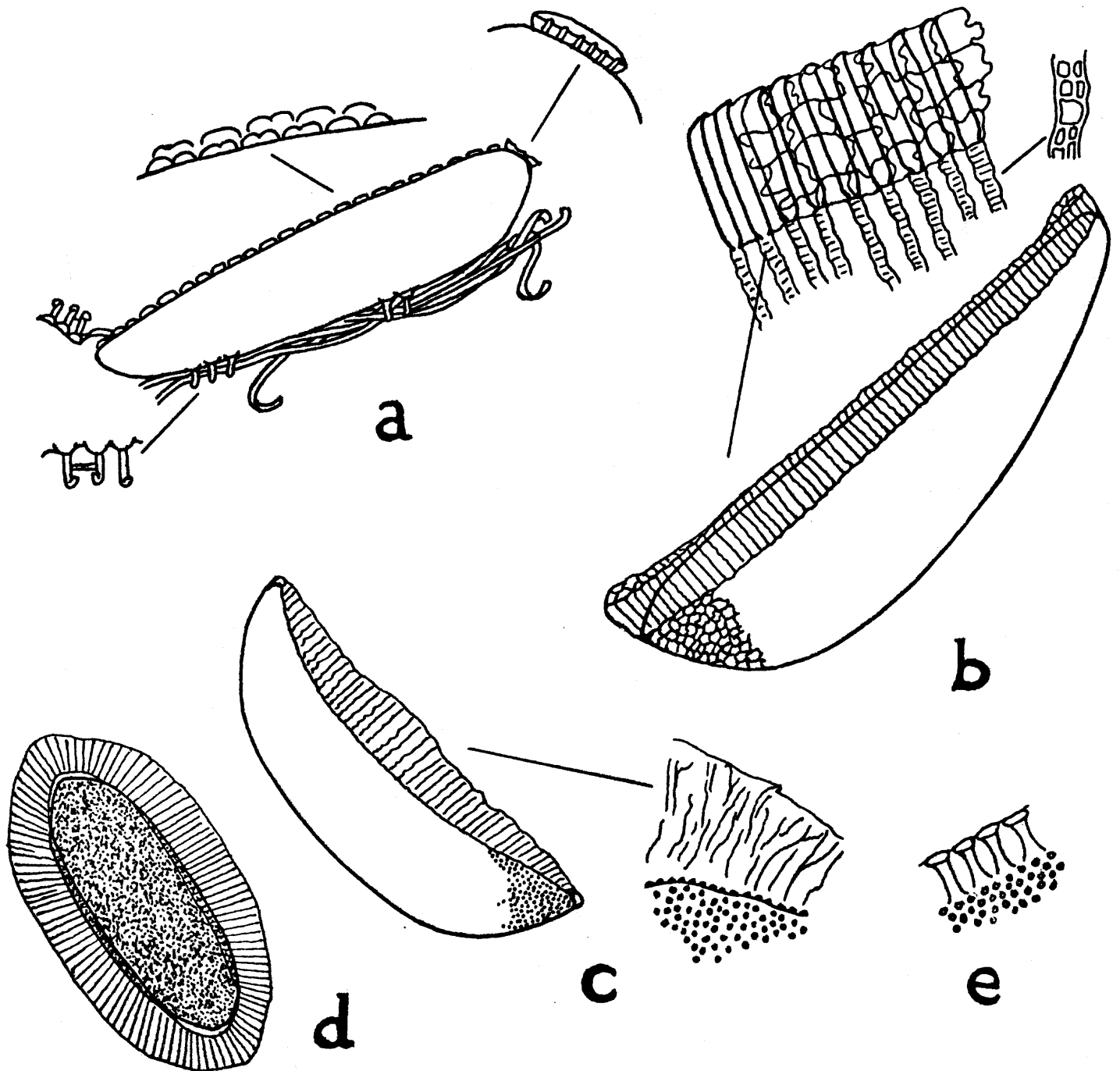


Fig. 2. Eggs of Orthopodomyia, Mimomyia and Anopheles spp.
 a. O. wilsoni, b. M. aurea, c. An. superpictus, d. An. apoci, e. An. murphyi. d. after Pringle et al.⁶⁶. Others original.