

is interesting to note that *typicus* is a known malaria vector, while *levi-castilloi* has not so far been discovered to transmit malaria.

The *pseudopunctipennis* complex is so widely distributed along the western shores of America, and so variable, that we may probably expect future recognition of several species among its members.

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THE ANAL GILLS OF MOSQUITO LARVAE

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The length of the anal gills is a useful and usually reliable character for separating salt water mosquito larvae from those of similar but fresh water species. Recently it has been found that in identifying anopheline larvae this character is especially valuable. Larvae of *A. atropos* and *A. bradleyi* which breed in salt water have gills which are much shorter than the anal (ninth visible abdominal) segment, while those of *quadrimaculatus*, *georgianus*, *crucians*, and *punctipennis* usually have gills as long or longer than the anal segment. In the last named species the gills are frequently twice the length of that segment. When the length of the anal gills is considered, the task of distinguishing larvae of *A. bradleyi* from those of *punctipennis* and *quadrimaculatus* becomes less perplexing.

The anal gills, which are also known as blood gills, tracheal gills, anal lobes or anal papillae, are of little importance in respira-

tion. Wigglesworth (1939) states that their most important function appears to be the taking up of chloride ions to maintain the normal salt concentration of the haemolymph which is .3 per cent in *Culex*. To illustrate, he points out that larvae of *C. pipiens* which normally breed in fresh water and have long anal gills, will have the gills greatly reduced when reared in water of a relatively high salt content. Conversely, King et al. (1939) have reported that larvae of *Aedes sollicitans* and *A. taeniorhynchus* which normally occur in salt water and have the anal gills short and budlike, will develop long anal gills when reared in fresh water.

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