

## PICTORIAL KEYS TO THE MOSQUITOES OF MEDICAL IMPORTANCE

### IX. AUSTRALIAN REGION<sup>1, 2</sup>

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The present series of pictorial keys is being produced under a transfer of funds from the Department of the Army to the Entomology Research Branch. They are designed primarily to help public-health workers rapidly separate and identify the mosquitoes of primary medical importance in various parts of the world. The keys are so constructed that they separate the important species not only from each other but also from all others known to occur, or suspected of occurring, in the region. We solicit any suggestions or comments pertaining to the keys and other information presented here in order that our knowledge of diseases and the mosquito fauna of the Australian region might be presented in a more useful way to the non-taxonomist.

*Anopheles farauti* and *Anopheles punctulatus* are the most common and dangerous vectors of malaria in this region. Of these two species, *A. farauti* has the wider distribution; it occurs from the Moluccas eastward through New Guinea, the Admiralty Islands, the Bismarck Archipelago, the Solomon Islands and the New Hebrides, and extends into northern Australia to about 17° to 19° south latitude. Malaria in the South Pacific is generally understood to be bounded by longitude

170° east and latitude 20° south, the junction of these two lines lying just north of Anietyum, the southernmost island of the New Hebrides group. This corresponds to the distribution in the New Hebrides of *A. farauti*. Neither malaria nor species of the genus *Anopheles* occur in New Caledonia or New Zealand. In dry weather *A. farauti* breeds in all kinds of collections of water close to man and during the rainy season it breeds readily in small man-made depressions. *A. punctulatus* occurs over much the same range as *A. farauti*, but it is absent from Australia and the New Hebrides. It also breeds in all sorts of small collections of sunlit ground and rain water, but is more characteristically a species of inland and elevated areas. Females of these two species bite by preference in complete darkness, although they are attracted to houses by lights at night and readily enter. The proximity of their breeding places to man, their ability to mature the malaria parasite, and their liking for human blood conspire to make these two *Anopheles* of primary medical importance over most of their range wherever they occur in large numbers. South of 19° south latitude on the Australian mainland malaria is restricted to short-lived and narrowly localized outbreaks. This sporadic malaria is transmitted by *Anopheles annulipes*, which breeds in situations quite similar to the two former species, enters houses to feed early in the evening, and afterward tends to rest inside during the night. This anopheline occurs in New Guinea and northern Australia as well, but is regarded as a secondary vector in these areas. *Anopheles bancroftii*, although occurring in northern Australia where it is not regarded as being an important vector, transmits ma-

<sup>1</sup> Previous keys and issues of Mosquito News in which they appeared are for Korea (I) and Formosa (II), Vol. 13, No. 1, 1953; Malaya (III), Vol. 13, No. 2; Anglo-Egyptian Sudan (IV), Vol. 13, No. 4; French Indochina (V), Vol. 14, No. 1, 1954; Philippine Islands (VI), Vol. 14, No. 2; Spain and Portugal (VII) and West Indies (VIII), Vol. 14, No. 3.

<sup>2</sup> Keys were drawn by Sally D. Kaicher.

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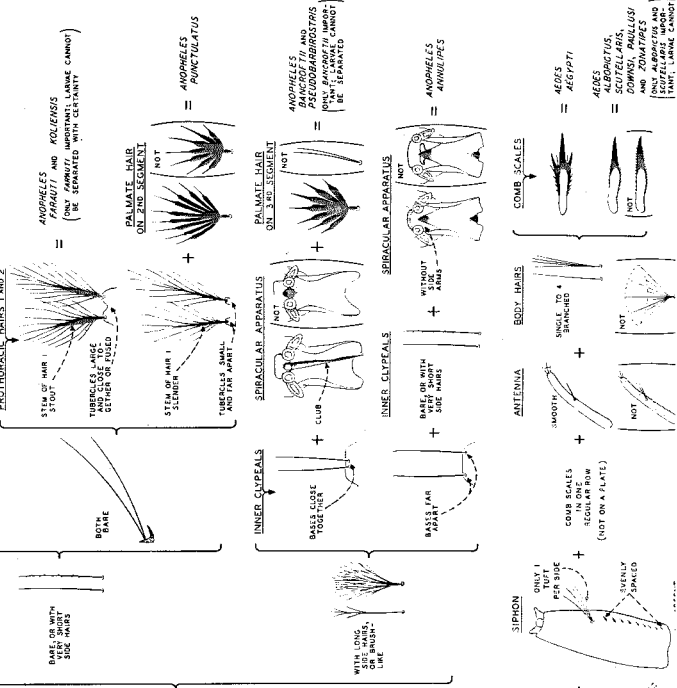
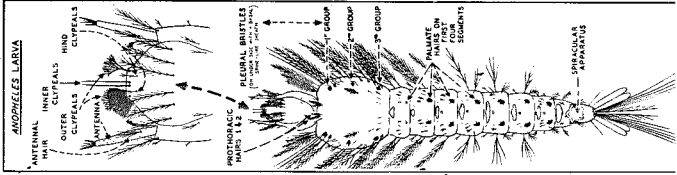
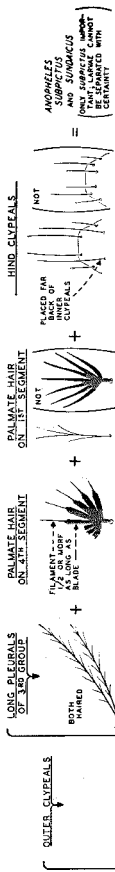
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MOSQUITOES OF MEDICAL IMPORTANCE — AUSTRALIAN REGION

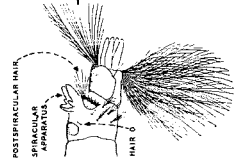
[AREA INCLUDED: AUSTRALIA, NEW ZEALAND, POLYNESIA, MICRONESIA, MELANESIA, NEW GUINEA, MOLOCCAS AND TIMOR]

▶ FULL-GROWN LARVAE

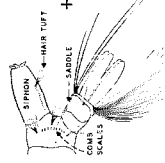
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NO SIPHON ON ANOPHELES



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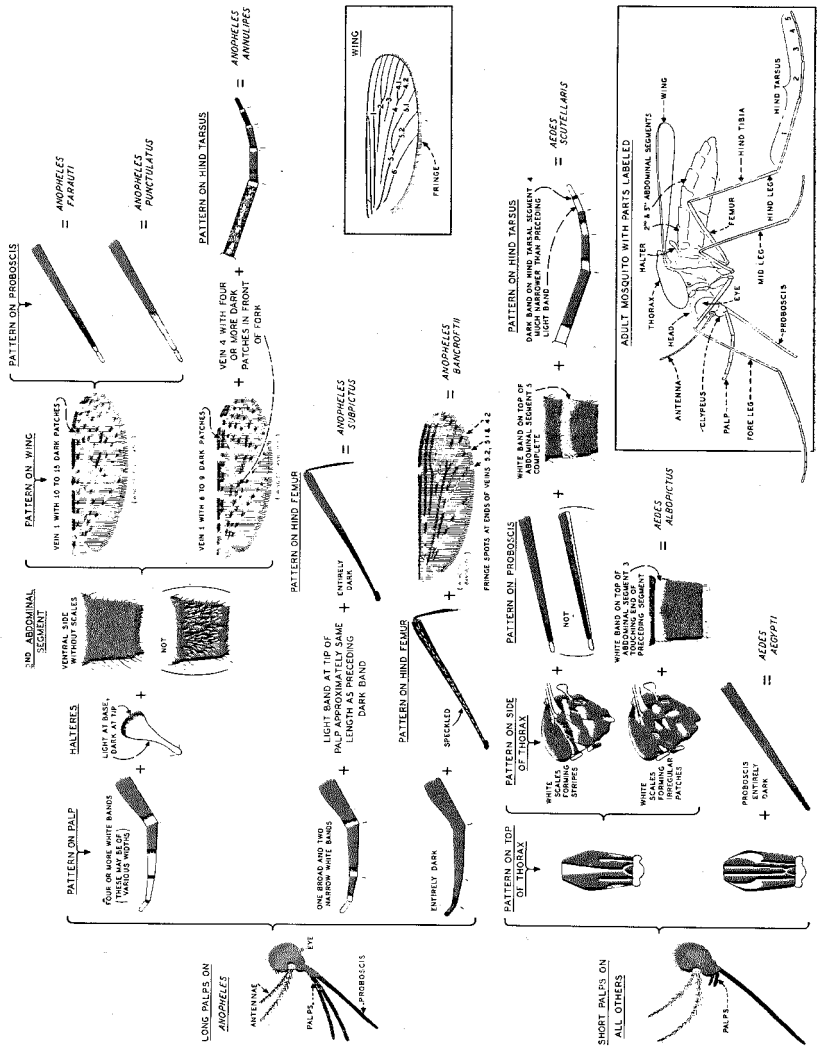
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[OTHER CHARACTERS PERTAINING TO SPECIES: PUNCTATION, PUNCTURES, MELANIN, NEW VITRIN, MULLERS, AND TIMING]

WINGS FROM THE COLLECTION OF THE SECRETARY OF THE ARMY MAY 1954

**FEMALES**

[MALES HAVE BUSHY ANTENNAE AND DO NOT BITE]



alaria in New Guinea, where it occurs in large numbers and is often more heavily infected than *A. farauti*. The species is an inhabitant of low, marshy countryside and its larvae are largely restricted to shade in jungle swamps and similar situations. Females are nocturnal biters of both man and domestic animals and are commonly found resting on walls inside houses and cattle sheds. *Anopheles subpictus* is essentially an Oriental mosquito whose distribution extends eastward into the Moluccas and New Guinea. Larvae have been found only along the coastal regions in open or partly shaded semitidal pools or in grassy fresh water pools nearby. In the Orient females are domestic, but in New Guinea this species has not been observed to bite in large numbers. This species is included in the key because it is an important vector of malaria in other parts of its range.

Other *Anopheles* species and varieties known or assumed to be present in the Australian Region are *amicus* var. *amicus*, var. *hilli*, *annularis*, *annulipes*, *annulipes* var. *mastersi*, *atripes*, *bancroftii* var. *barbiventrus*, *bancroftii* var. *pseudobarbiventrus*, *barbiventrus*, *barbumbrosus*, *clowi*, *nigerrimus*, *incognitus*, *insulæflorum*, *karwari*, *kochi*, *longirostris*, *lungæ*, *maculatus*, *meraukensensis*, *minimus*, *nataliae*, *novaguinensis*, *philippinensis*, *powelli*, *solomonis*, *stigmaticus* var. *cor-*

*ethroides*, *stigmaticus* var. *stigmaticus*, *sundaicus*, *tessellatus* and *vagus*.

Of the approximately 360 non-anopheline mosquitoes occurring in the Australian region and Pacific Islands, on three are felt to be of primary medical importance. *Aedes aegypti* occurs throughout this region northward to Formosa and the Ryukyus, eastward to include Polynesia and Micronesia, and southward through Melanesia and the northern portion of the Australian mainland. In many areas of this region, however, *A. aegypti* is restricted to cities visited by ocean traffic and breeds in all sorts of artificial containers in urban areas close to man. It is an efficient vector of yellow fever and dengue. The former disease is absent from the Australian and Pacific area, but dengue is widespread, and is transmitted not only by *A. aegypti* but by *Aedes albopictus*, *Aedes scutellaris*, and probably *Aedes polynesiensis* as well, all of which are somewhat less domestic in their breeding habits than *A. aegypti*. *A. albopictus* does not extend much farther, if at a west of longitude 150° east; *A. scutellaris* transmits dengue in New Guinea at parts of the New Hebrides; and *A. polynesiensis*, which keys out with *A. scutellaris* in the accompanying plates, in Tahiti, American Samoa, and the Marquesas Islands. An epidemic of Japanese equine encephalitis occurred on Guam in 1917 and 1948, but its vector is not known.

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