

introductions of *Ae. aegypti* (Mitchell 1995). It could be found in Portugal, Spain, France, Italy, former Yugoslavia, Greece and Albania, but has now been eradicated or has become rare in many countries where it was previously common.

Medical importance: As the major vector of yellow fever virus, *Ae. aegypti* has long been notorious as the “yellow fever mosquito”, but it is also an important vector of dengue and several other viral infections.

Synonymy: The species in question has appeared under various other names in the past. The number of names, which are now accepted as synonyms is large and listed in Knight and Stone (1977). Synonyms that are often found in the early literature are *Stegomyia fasciata* of Theobald 1901 (described as *Culex fasciatus* by Fabricius 1805), *Aedes calopus* Meigen 1818, and *Aedes argenteus* of Edwards 1921 (described as *Culex argenteus* by Poiret 1787). From about 1935 on, the earliest name, *aegypti* given by Linnaeus in 1762, was accepted and is in general use until today.

Note on systematics: A paler variation of the type form, var. *queenslandensis* (Theobald) exists and a subspecies *formosus* (Walker) is characterized through its markedly darker appearance. The latter form is confined to Africa south of the Sahara and has been recorded from the forest or bush away from human settlements, breeding in natural places.

***Aedes (Stegomyia) albopictus* (Skuse 1895)** **[*Stegomyia albopicta*]**

Female: The proboscis is dark scaled, about the same length as the fore femur, and the palps are 1/5 the length of the proboscis with white scales on the apical half. The clypeus is bare and entirely dark. The vertex has broad white scales, and the occiput in the middle is white scaled with dark scales at the sides; erect scales are usually absent. The scutum is mainly covered with narrow dark scales, with a prominent acrostichal stripe of narrow white scales which narrows posteriorly, and extends from the anterior margin of the scutum to the beginning of the prescutellar area where it forks to the end at the margin of the scutellum (Fig. 6.26a). On each side a slender posterior dorsocentral white stripe does not reach the middle of the scutum, but extends about midway to the level of the scutal angle. The

supraalar white stripe is incomplete, there is a patch of broad white scales on the lateral margin just before the level of the wing root and a few narrow white scales over the wing root. The scutellum has broad white scales over all the lobes with an apical area of dark scales on the mid lobe. The postpronotum has a large patch of broad white scales and some narrow dark ones in the upper part, and the paratergite has broad white scales. The postspiracular area is without scales, and the subspiracular area has white scales. The mesepisternal patch is divided into large upper and lower patches of white scales. The mesepimeron has connected upper and lower scale patches which form a V-shaped white scale patch, with the open V directed backwards. The coxae have patches of white scales, the fore and mid femora are dark anteriorly and paler posteriorly with apical pale spots. The hind femur has a broad white longitudinal anterior stripe widening at its base and slightly separated from the apical white scale patch. The tibiae are all dark. The fore and mid tarsi have narrow basal white bands on tarsomeres I and II, the hind tarsus has broad basal white bands on tarsomeres I–IV, and tarsomere V is all white. The claws are simple without a subbasal tooth. The scales on the wing veins are all dark except for a small spot of white scales at the base of the costa (C). Tergum I has white scales laterally, terga II–VII have basolateral white spots. In addition, terga III–VI have narrow basal white bands, which widen laterally and do not connect with the spots.

Male: The palps are longer than the proboscis with white basal rings on palpomeres II–V. The last two segments are slender and upturned with only a few short setae. The posterior margin of tergum IX has a conspicuous horn-like median projection and a small setose lobe on each side. The gonocoxite is approximately twice as long as wide with a patch of setae on the basomesal area of the dorsal surface (Fig. 10.12). The gonostylus is simple, elongated, distinctly swollen apically and has a few thin setae. The spine of the gonostylus is inserted subapically and is blunt ended. The claspettes are large, lobe-like, and occupy most of the mesal surface of the gonocoxite, with numerous long setae and several stronger setae, a few of which are curved apically.

Larva: The head is approximately as long as it is wide. The antennae are about half as long as the head, and without spicules. The antennal seta (1-A) is single and small and situated close to the middle of the antennal

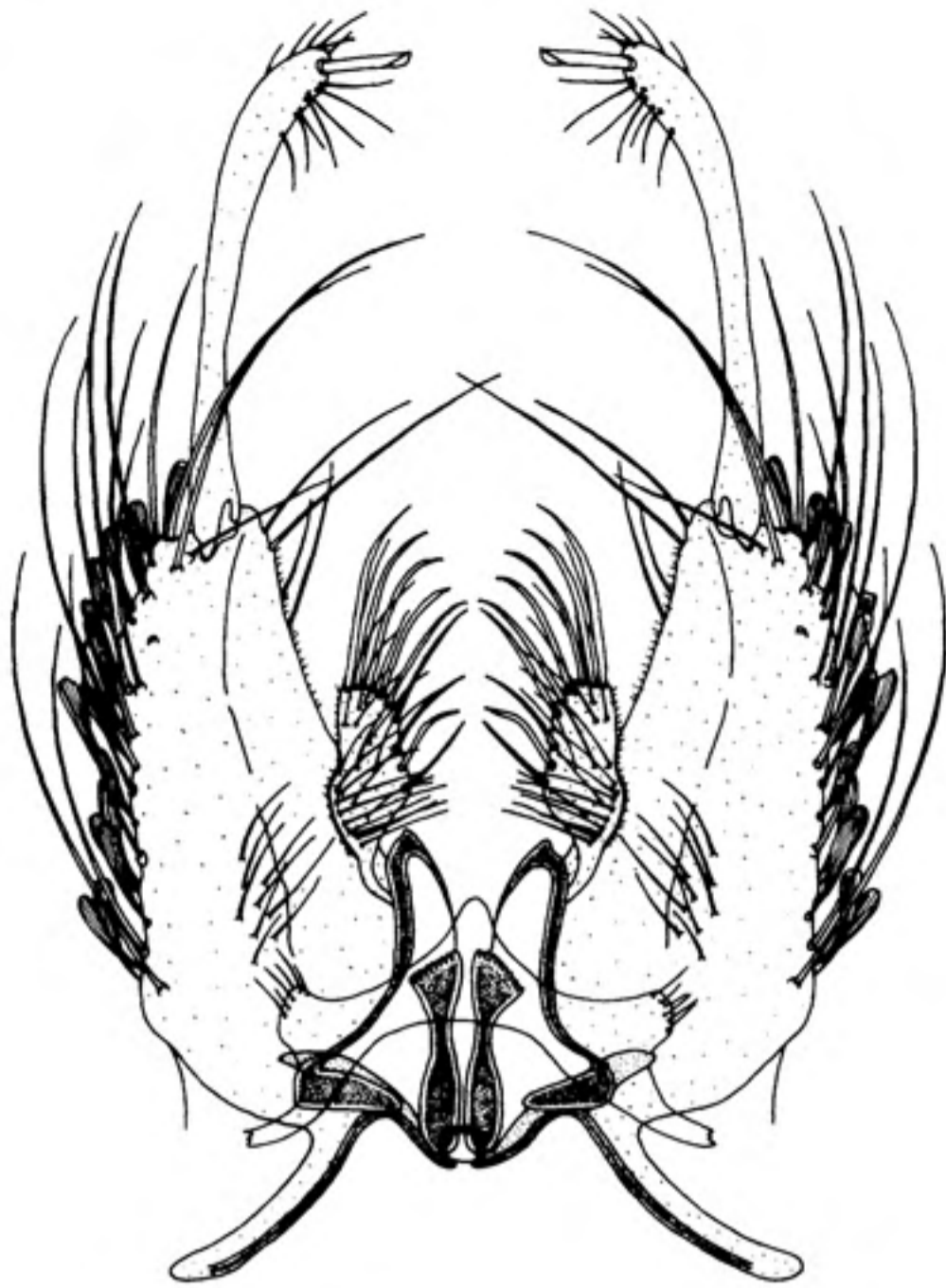


Fig. 10.12 Hypopygium of *Ae. albopictus*

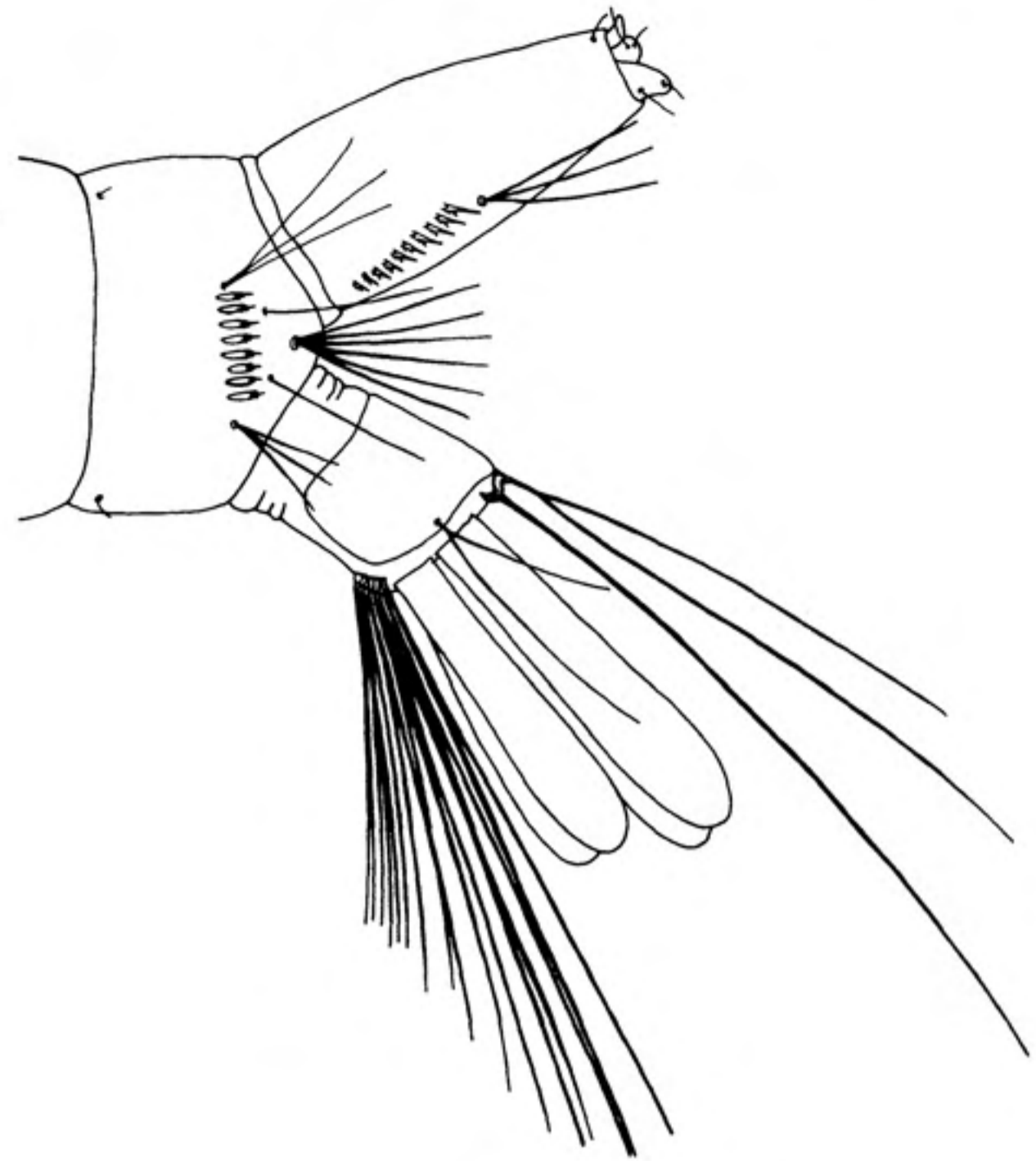


Fig. 10.13 Larva of *Ae. albopictus*

shaft (Fig. 8.62c). The postclypeal seta (4-C) is located close to the anterior margin of the head. It is well developed with 6–15 branches and a short stem. The median frontal seta (6-C) is displaced anteriorly, and has 1–2 branches, the inner frontal seta (5-C) is situated posterior to 6-C, and is longer and single, and the outer frontal seta (7-C) usually has 2–3 branches. The comb consists of 6–13 (usually 8–10) long slender scales in a single row, and each comb scale has a large pointed median spine and fine denticles or fringes at its base. The siphon is short and tapers distinctly from the middle, the siphonal index is 1.7–2.5 (Fig. 10.13). The number of pecten teeth is between 8 and 14, they are evenly spaced, and each tooth usually has 2 lateral denticles. The siphonal tuft (1-S) has 2–4 branches, and is inserted beyond the distalmost pecten tooth, slightly beyond the middle of the siphon (Fig. 8.62d). The saddle extends to the ventral margin of the anal segment, and the saddle seta (1-X) usually has 2 branches, at least one of them distinctly longer than the saddle. The upper anal seta (2-X) has usually 2 branches, which are rarely single, but the lower anal seta (3-X) is single. The ventral brush has 8 tufts of cratal setae (4-X), but the precratal setae are absent. The anal papillae are sausage-like, and about 8 times the length of the saddle.

Biology: The immature stages occur in a variety of small natural and artificial containers, *e.g.* in tree-holes, bamboo stumps, coconut shells, rock holes, plant axils or palm fronds, and in flower pots, tin cans, water jars, metal and wooden buckets or drums, broken glass bottles, or discarded motor vehicle tyres (Huang 1972). The eggs are resistant to desiccation, which facilitates their transport in used tyre casings, even over long distances. Continuous breeding throughout the year takes place in tropical and subtropical areas, but in more temperate climatic zones, such as Europe, populations of *Ae. albopictus* are found which show embryonic diapause and overwinter in the egg stage. Several generations per year may occur. Adult females predominantly feed on humans, but may also bite other mammals including rabbits, dogs, cows and squirrels or occasionally avian hosts, *e.g.* Passeriformes or Columbiformes. This feeding behaviour indicates that *Ae. albopictus* is well suited for transmission of a variety of arboviruses that use mammals and birds as their main hosts (Mitchell 1995). To feed on humans the females readily enter dwellings during dusk and night, but may also be found biting during daytime outside houses in shaded areas. *Ae. albopictus* is an abundant species in East Asia causing great nuisance wherever it occurs and, although it was not present before 1990, it

has become a major pest species in some areas of northern Italy.

Distribution: In the past *Ae. albopictus* was mainly distributed in the Oriental Region and Oceania and thus it got its popular name, the “Asian Tiger Mosquito”. In the Palaearctic it occurred in Japan and China. In 1985 it was discovered for the first time in the New World (Houston, Texas) and this was the beginning of a rapid spread and discovery of recently introduced populations of *Ae. albopictus* in many parts of the world (Mitchell 1995). It is now present in over 25 states of the USA and in several countries of South America and Africa. Specimens have been found in Australia and New Zealand, but breeding populations have not so far become established there. In Europe, *Ae. albopictus* has probably been present in Albania since at least 1979 (Adhami and Reiter 1998; Adhami and Murati 1987). In the early 1990s it was passively introduced in Italy, owing to the international trade of used tyres which provide a suitable habitat for the eggs. The species was first detected in Genoa in September 1990 (Dalla Pozza and Majori 1992) followed by a rapid spread into other areas of northern and central Italy (Romi 1995). Since 1999 *Ae. albopictus* has been found in various southern and central European countries, including France (Schaffner et al. 2001), Montenegro (Petric et al. 2001), Belgium (Schaffner et al. 2004), Switzerland (Flacio et al. 2004), Greece (Samanidou-Voyadjoglou et al. 2005), Croatia (Klobucar et al. 2006), Spain (Aranda et al. 2006), the Netherlands (Scholte et al. 2007), and Germany (Pluskota et al. 2008). Another way in which the eggs and larvae of *Ae. albopictus* spread was through the trade of the ornamental plant *Dracaena* sp. (“lucky bamboo”). These plants are packaged in standing water during shipment and permit an “ideal insectary in transit” which lead to the introduction of *Ae. albopictus* from Asia to California (Madon et al. 2004).

Medical importance: *Ae. albopictus* is a vector of dengue viruses and a competent transmitter for numerous other arboviruses as well as *Dirofilaria immitis* (dog heartworm).

***Aedes (Stegomyia) cretinus* Edwards 1921** **[*Stegomyia cretina*]**

Female: The proboscis is completely dark scaled, the palps are about 1/4 the length of the proboscis with

whitish scales dorsally on the apical half and dark scales ventrally. The clypeus is bare, and the pedicel has white scales anteriorly. The vertex has a broad median stripe of broad white scales, and the occiput has a lateral stripe of broad white scales and extensive broad white scaling below, all dark scales are broad and flat. There are narrow white scales at the eye margin, and the erect forked scales are dark. The scutum has narrow dark scales, and an acrostichal stripe of narrow white scales extends from the anterior margin to the beginning of the prescutellar area, where it forks and ends just before the margin of the scutellum (Fig. 6.26b). Dorsocentral white stripes are present on the posterior part of the scutum extending from just posterior to the level of the scutal angle to near the lateral lobes of the scutellum; these stripes are narrow and composed of narrow white scales. The scutum is bordered with a lateral prescutal stripe of narrow white scales which reaches the scutal angle, where after a minute break it continues on with broad white scales and terminates with a few narrow white scales just before the margin of the lateral lobes of the scutellum. The scutellum has broad white scales on all the lobes and a small apical area of dark scales on the mid lobe. The ante- and postpronotum are largely covered with broad white scales. The pleurites have several patches of broad white scales, some of them very densely scaled. The wing veins are dark scaled except for a conspicuous basal spot of pale scales on the costa (C). The fore femur anteriorly has sparse white scales on the basal half and a small white knee spot, posteriorly it is white and the fore tibia is dark. The fore tarsomeres I and II have basal white rings, and tarsomeres III–V are dark. The mid femur is dark anteriorly except for a few white scales at the base and a conspicuous white knee spot, the mid tibia is dark, the mid tarsomeres I and II with basal white rings, tarsomeres III–V dark. The hind femur anteriorly is white almost to its apex and has a conspicuous white knee spot, the hind tibia is dark, and hind tarsomeres I–III have a basal white ring, and hind tarsomere IV has an extreme tip which is dark, but tarsomere V is white. Abdominal terga II–IV have narrow white basal bands slightly constricted in the middle and not connected to the broad lateral white patches. Sterna II–IV are largely covered with white scales, and sterna V–VII with basal white bands.

Male: The median part of tergum IX is evenly rounded, and the small lateral lobes are strongly