

## ETHIOPIAN CULICIDAE—NOTES AND DESCRIPTIONS

BY E. C. C. VAN SOMEREN.

(Division of Insect Borne Diseases, Medical Research Laboratory, Nairobi, Kenya.)

*Aedes (Finlaya) ingrami* Edwards.

EDWARDS (1941) lists four characters by which to distinguish this species from *A. (F.) wellmani* Theobald. They are, the extent of the median pair of black lines on the mesonotum, the all black fore tibiae and second tarsal joint, and the dark basal half of the posterior surface of the middle femora.

The East African specimens examined agreed with the description of *ingrami* in the character of the mid femora but, as the fore tibiae and second tarsal joints were seen to have white markings, it was thought that the East African specimens might be a geographical variety. However, on a more critical examination of a series of specimens from various localities in East Africa and Western Uganda, it was found that even among specimens from one locality the amount of white on the fore legs and the thoracic ornamentation were variable.

Two specimens of *wellmani* from Northern Rhodesia sent to me by Mr. G. G. Robinson were examined. Judging from these it appears that the adult colour pattern is variable in this species also, and Mr. Robinson informs me that the white markings on the fore tibiae and the second tarsal joint are sometimes absent in the Rhodesian specimens of *wellmani*.

It therefore appears that the thoracic and foreleg ornamentation are unreliable characters and cannot be used for differentiating these two species. The only reliable differentiating character noted was the amount of white on the basal half of the posterior surface of the mid femur, which is all white in *wellmani* and all black above with a variable amount of white below in *ingrami*.

The variations noted for *ingrami* are given below :

*Adult female* as described by Edwards (1941) varies as follows :—

*Head* : Very occasionally completely white scaled on the dorsal surface, and sometimes with a very few narrow white scales in a median line.

*Thorax* : Median black stripes very occasionally reaching the front margin, and very often nearly reaching the front margin. Sometimes the narrow line of creamy white scales dividing the two median black stripes is missing or only represented by a very short median posterior stripe which may or may not fork round the base space in front of the scutellum. The narrow lines of creamy scales separating the short posterior black stripes sometimes reach the anterior lateral white markings, and occasionally, where the median white stripe is missing, these lines are very short and inconspicuous. Scales on median lobe of scutellum all broad, flat, and dark or creamy white, or all narrow and white, and sometimes narrow and broad scales mixed.

*Abdomen* : Tergite 5 occasionally with a small median sub-basal white spot.

*Legs* : The front tibia may be all dark, or with a short but distinct white stripe on the posterior surface at the base, or there may be a white posterior line reaching from the base to near the tip ; this line, if present, usually uneven and interrupted. Front tarsi occasionally have a few white scales at the base of the second segment. Mid femora sometimes white below on the basal half or more and occasionally with a white patch before the tip extending on to the dorsal surface.

*Wings* : Very often with a small patch of creamy white scales at the base of the costa.

*Male. Head* : Very often with all the scales on dorsal surface white.

*Thorax* : Scutum clothed with narrow white scales except for two short median black lines (on posterior third) which are divided by a broad white stripe, and two shorter dark posterior lateral stripes divided from the median stripes by a broad white stripe. Scales on scutellum narrow and white.

*Abdomen* : Tergites not always banded.

Specimens examined from UGANDA : Bwamba, Toro District, 14 females. KENYA : Kakamega, 1 female ; Maseno, 3 females and 1 male ; Kitale, 9 females ; Kaimosi, 3 females and 4 males ; Maragoli, 8 females and two males ; Nairobi, 16 females.

*Aedes (Finlaya) embuensis* Edwards.

*A. (F.) embuensis* Edwards (1941) was described from one very damaged female, and until more specimens are obtained from the type locality it is not possible to tell if Nairobi specimens, described below, differ from the type.

The adult ornamentation of the Nairobi specimens is very variable, and the most striking character is the banding of the mid and hind tarsi, which divides the series into two groups, one with 2 and one with 3 pale bands on the mid and hind tarsi. The larvae can also be divided into two groups, one with head-setae B and C with few branches (about 2-4), and one with head-setae B and C with 5-10 branches. This proved to be of no significance, as on examining the associated larval pelts of one group of adults, both types of larvae were encountered.

As the Nairobi specimens have all the characters attributed to *embuensis* by Edwards (1941), I determine the Nairobi specimens as *embuensis*, and the male is described below, and additional notes on the female are given.

*Adult Female* as described by Edwards (1941). Additional characters noted as follows :—

*Head* : Lateral scales on dorsal surface creamy white ; yellow scales dorsally. Tori sometimes with a few short pale scales and fine hairs on the inner border.

*Thorax* : Scutum sometimes wholly covered with narrow golden yellow scales, in which case the scales on the posterior one-third are more scanty, and the dark integument shining through gives the impression of indistinct dark lateral lines ; more often the scutum is covered with narrow golden yellow scales on the anterior two-thirds and the posterior third is yellow with two short dark median lines divided by a broad yellow line, and indications of two short dark lateral lines, which are about the length of the bare space in front of scutellum and divided from the median lines by a broad yellow line. Sometimes the dark posterior markings extend to the middle of the thorax, in which case the dividing yellow lines are narrower. Scales round bare space in front of scutellum always yellow, and sometimes there is a large or small patch of creamy white scales on pre-alar area ; *apn* with broad white scales and sometimes some narrow yellow scales ; *ppn* with broad or narrow white scales below, and narrow yellow scales above ; paratergites with broad white scales. Scutellum covered with narrow golden scales.

*Abdomen* : The dark scales have a purple or coppery sheen. Tergites 2-7 sometimes with complete white sub-basal bands or only 4-7 or 5-7 banded ; with or without pale median basal spots on the remaining tergites. Sternites dark with broad white basal bands, or 2-4 mainly creamy white with or without apical lateral black patches.

*Legs* : Dark with white or creamy white markings. Fore legs : Anterior surface of femur mainly dark with a narrow creamy white band at the base and a small white spot

below before the tip, and sometimes a narrow white line below on basal half; posterior surface white on the basal three-fifths, remainder dark with a small white patch below before the tip, the sub-apical white spots sometimes form a complete band. Tibia dark with a distinct pale stripe on the posterior surface from base to near tip. First two tarsal segments with distinct basal creamy white bands of equal width, that on the first segment may be extended below in a narrow line to a half; segments 3-5 all dark. Mid-legs: Anterior surface of femur dark with a narrow pale ring at the base and a broader one near the tip, extreme tip narrowly dark; posterior surface white on the basal three-fifths with the white markings sometimes continued below to join the large white sub-apical ring. Tibia dark, with or without a small pale basal patch on the posterior surface. First and second tarsal segments with broad pale basal bands, that on the second segment reaching to a half; third segment sometimes all dark, more often with a pale band on the basal half or less, and sometimes with only a few pale scales at the base; segments 4-5 all dark. Hind-legs: Femur pale all round on the basal three-fifths, then a broad dark ring followed by a white ring which is only about half the width of the dark ring, the extreme tip with dark scales, the sub-apical white ring may extend back in a point below. Tibia all dark. Tarsi as in the mid legs.

*Male* as in the female. Palpi very little shorter than the proboscis, swollen distally, and the last two segments hairy. Scutum entirely covered with narrow yellow scales somewhat paler than on the female. Abdomen with basal pale bands on tergites 2-7. Anterior surfaces of fore and mid femora darker; pale stripe on posterior surface of fore and mid tibiae sometimes indistinct; pale bands on fore tarsi occasionally narrower and indistinct; no pale band on third mid tarsal segment; hind tarsi usually with pale basal bands on the first two segments only, very occasionally a narrow pale basal band on the third segment.

*Terminalia*: As in *ingrami*.

*Pupa*: Very like *ingrami* as described by Edwards (1941). Additional characters noted as follows:—

Dorsum of thorax and first four abdominal segments dark and with dark lateral stripes on segments 5-7. P single and strong but not always longer than O or R. O with 2-5 branches or single, R single or with 2-3 branches. H about quarter the length of K, which is about the same length or slightly shorter than S and T. S single, T single or occasionally with three branches and not much shorter than S. C II about half the length of the segment and with 4-6 branches; C III the same length as C II, single, or with 2-4 branches; C IV-VII very fine and single or C IV with 2 branches. B II-III single, short, and about the same length as C; B IV-V two and a half times the length of B II; B VI-VII two-thirds the length of B V and all fine single setae. A VII half the length of A VIII, a stout simple, single, or bifid seta; A VIII stout and plumose and with 3-6 branches, one-third to half the length of the paddles. The paddles are short and either round or oval (ratio of greatest breadth to length 1:1.2-1.5), with a strong mid rib and a fairly distinct external buttress on basal half and with fairly conspicuous spicules on apical half. Seta single and one-sixth to a quarter the length of the paddles.

Specimens examined from Nairobi, Langata Forest, bred from tree-holes, 28 females, 1 male neallotype and 20 males with associated pupal pelts.

*Aedes (Stegomyia) soleatus* Edwards.

*Pupa*. Very like *contiguus* as described by Edwards (1941).

Dorsum of thorax and first four abdominal segments dark. Paddles pale with a dark mid rib and finely denticulate on the distal border, short and of variable shape either pointed distally or elliptical (ratio of greatest breadth to length 1:1.2-1.4); seta single and about one-sixth to one-fifth the length of the paddles. B II single and about the length of the segment; B III-VII single and much shorter than the segment. C II with 2-3 branches

and about half the length of B III; C III-VII single and about half the length of B. A II-VI minute and fine; A VII a stout bifid or single seta about half the length of A VIII and simple or finely plumose; A VIII about one-third the length of the paddles and with 4-5 plumose branches.

Described from 5 pupal pelts with associated adults which agree with the description given by Edwards (1941) for *soleatus*, the only difference noted was in the male terminalia where one of the stout hairs on the slight projection of the inner margin of the basal lobe was flattened at the base and terminated in a long twisted filamentous point.

Bred from Bamboo pots, Gede Kenya.

*Aedes (Dunnius) albomarginatus* Newstead.

A number of specimens collected from Bwamba, Toro District, Uganda, and from the Kaimosi forest, North Kavirondo, Kenya, agree with the description of *albomarginatus* given by Edwards (1941). Additional characters noted for the female are given below, and the male is described.

*Adult Female.* As described by Edwards (1941). Additional characters noted as follows:—

In addition to the one pair of dorso-central bristles a little in front of the middle of the scutum there are two pairs near the front margin. The scutum is covered with narrow dark brown scales with two distinct, very short, creamy white posterior lateral lines which extend on to the lateral lobes of the scutellum; the scales round the bare space are also creamy white and usually but not always there are white scales on the median lobe of the scutellum. One specimen has the pale posterior lateral lines continued forward in a broken, indistinct line to the front margin, and there is a short median posterior creamy white line to about one-third, which forks round the bare space in front of the scutellum.

*Male* as in the female.

*Terminalia* very similar to those figured by Edwards (1941) for *kummi* Edwards. The style is apically divided, like that of *kummi*, into three main arms, the lower one bearing a stout spine and a narrow prolongation of the style which appears like a blunt pointed spine; the middle lobe is simple, and the upper lobe forked, the upper fork of which is again divided into two separate lobes, the upper of which bears a few short, blunt spines on the distal border. The number and shape of the lobes seen on the distal portion of the style depends on the angle at which it is viewed, sometimes appearing like the figure in Edwards (1941) and sometimes like that in Edwards (1930).

Specimens examined from Bwamba, Toro District, UGANDA, 11 females, 3 males (*A. J. Haddow*), and the Kaimosi Forest, North Kavirondo, Kenya, 3 females, 3 males (*P. C. C. Garnham, J. O. Harper* and *R. B. Highton*).

REFERENCES.

- EDWARDS, F. W., 1930, Mosquito Notes—IX. *Bull. ent. Res.* 21 : 287-306.  
EDWARDS, F. W., 1941, *Mosquitoes of the Ethiopian Region, Part III.*