

black at apex, pale at absolute base, with three large yellowish spots, approaching the dark parts in length, and two basal dots; rest of veins mainly pale, but with several longish black marks, notably two on VI; fringe spotted at all junctions. The black scales near the fork of V on the wing are blunt-ended.

A very slender-built dark looking mosquito.

19. ANOPHELES (MYZOMYIA) MARSHALLI (Theobald).

Pyretophorus marshalli Theobald (1903).

Pyretophorus pseudocostalis Theobald (1910).

Theobald, Mon. Culic., Vol. III, p. 77 (1903); Vol. V, p. 41 (1910).

Giles, Revis. Anop., p. 35., Pl. 1, f. 14 (1904).

Gough, Rep. Gov. Vet. Bact., 1908-09; Trans. Dept. Agri., p. 120 (1910).

Edwards, Bull. Ent. Res., Vol. III, Pt. 3, p. 249 (1912).

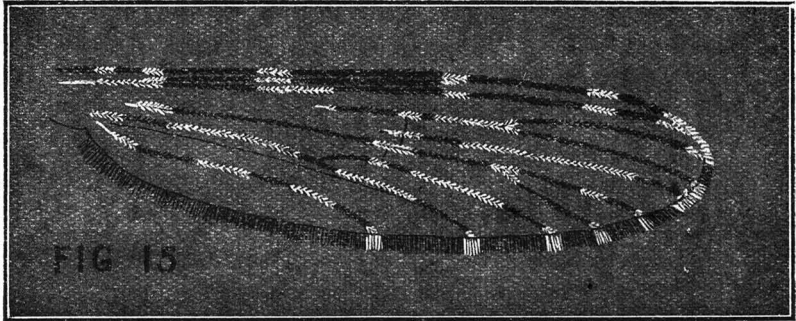


Fig. 15.—*Anopheles marshalli* Theobald.

Description of Adult:

Female.—Head clothed with numerous grey upright forked-scales in front and some black ones behind. *Palpi* dark, with three white bands, the third being apical; the basal one is narrow and the two apical ones broad.

Antennae dark brown except the torus, which is testaceous; three following segments with a few white scales.

Thorax.—Integument of mesonotum slaty-grey in the middle, with traces of median darker lines, and dark brown at the sides, sparsely clothed with narrow-curved grey scales and a few brown hairs; the scales in front being larger and forming a tuft. *Legs* dark brown with minute yellow apical bands on the tibiae and tarsi, except on the last tarsal joint; indistinct on the forelegs, more pronounced on the hindlegs.

Abdomen black, with brown and dull golden hairs.

Wings.—Costa black with six small creamy spots. The first long vein is white at the base, and has in addition six small spots, of which the first, third, and fifth continue into the costa; the second is situated mid-way between the first and third white spots, and the fourth two-thirds distance from the fifth. The second long vein

black, except for a small spot on its stem, one at the base of the fork, and one on its lower branch. The third long vein is white with a black spot at the base and apex. The fourth long vein is mostly black, with a yellow patch and a small basal and apical spot on each of its branches and two on its stem. The fifth long vein is mostly pale-scaled with a black spot at the base of its stem, one at the fork, three dark spots on its upper branch, of which the two basal ones are situated close together, and one long apical spot on the lower. The sixth long vein is mostly black-scaled with two basal pale spots. Fringe dark with pale spots at the junction of all the veins. The stem of the first forked-cell is more than half the length of the cell; stem of second forked-cell as long as the cell; the mid-cross vein is about its own length in front of the supernumerary, the posterior longer than the mid, about its own length nearer the base of the wing.

Length 3·5 to 4 mm.

Distribution.—This species is by no means common in South Africa. Gough records having taken two females at Onderstepoort, Transvaal. We have taken two females in Zululand, one at Ntabanana and one near the Mhlatuse River, and Dr. Ingram collected specimens at the Barrage, Vaal River, O.F.S., in April, 1925. The Durban Museum possesses specimens taken at Mfongosi, Zululand, and the Natal Museum has specimens collected at Pietermaritzburg by Dr. Ackerman. It has also been recorded from Salisbury, S. Rhodesia; Congo Free State; Gold Coast; Nyasaland; Kenya Colony; Uganda and Angola. Ingram and Macfie record finding the larvae of this species in a Pistia-covered pool in the Gold Coast.

Seasonal Prevalence.—February to April.

20. ANOPHELES (MYZOMYIA) TRANSVAALENSIS (Carter).

Pyretophorus transvaalensis Carter (1910).

Carter, *The Entomologist*, p. 237 (Oct., 1910).

Theobald, 1st Rep. Dir. Vet. Res., Un. S.Afr., p. 248 (1911).

Edwards, *Bull. Ent. Res.*, Vol. III, Pt. 3, p. 249 (1912).

Habitat.—Leydsdorp, Onderstepoort, and De Wildt in the Transvaal; Weenen (coll. H. P. Thomasset), Jacobs, Isipingo, and Pietermaritzburg in Natal (coll. A. Ingram); Kenya Colony.

Seasonal Prevalence.—September to May at Onderstepoort.

Description of Adult:

Female.—*Head* clothed with dense black upright forked scales, and a small patch of white ones in front; projecting forwards between the eyes there are two tufts of long white scales, and a few hairs on the margins. *Palpi* dark brown with two broad apical white bands and a narrow one nearer the base.

Antennae dark brown with white pubescence, second segment with some white scales.

Thorax.—Integument of mesonotum grey in the middle with three longitudinal dark lines, dark brown at the sides, clothed with pale-grey narrow-curved scales. *Scutellum* dark in the centre, greyish-brown laterally, with a few pale grey narrow-curved scales and brown border bristles. *Legs* dark brown, tibiae and tarsi with very faint white apical spots. According to Edwards the tarsi are entirely brown.

Abdomen dark brown with yellowish hairs.

Wings.—Costa with four large and two small basal black patches, the third and sixth spread evenly on to the first long vein, the fourth and fifth are larger than the others, and the corresponding area of the fourth on the first long vein is interrupted by a small pale spot on the basal half; the fifth spreads evenly on to the sub-costal vein, but on the first long vein the end nearest the base of the wing is replaced by yellow scales. Stem of second long vein with a dark patch on either side of the supernumerary cross-veins; its upper branch with two dark areas, one near the base and the other near the apex; lower branches also with two dark areas, the basal one large, the apical one small; third long vein with two dark spots, the one near the base and the other at the apex. Fourth long vein with a dark spot near the base and one just behind the fork, with two spots, one at the base and one at the apex on each of its branches. Fifth long vein with a dark spot at its base, one at the apex of its stem, three dark areas on its upper branch, and one at the apex on its lower branch. Sixth long vein with three small spots. Fringe with pale spots at the junction of all the veins. Stem of second long vein about half the length of the cell; stem of fourth long vein rather longer than the cell; supernumerary cross-vein placed slightly in front of the mid-posterior cross-vein about its own length distant from the mid. Average length of wing 3·8 mm.

Length about 4 mm.

Tribe CULICINI.

Species large or small, with or without conspicuous markings. Proboscis either straight or curved, usually straight. Palpi short in the female, not exceeding half of the length of the proboscis, and long or short in the male. Antennae of female pilose, of male usually plumose, but may be pilose in one or two exotic genera. Thorax more or less rounded; metanotum without bristles, except in the genus *Eretmopodites*. Scutellum usually more or less distinctly trilobed, rounded only in *Megarhinus*. The veins of the wings are usually clothed with scales of a uniform colour, but in some species they are mottled with dark and pale scales, and in *Theobaldia* the veins have several distinct dark spots. One or two exotic species are known in which the wing markings resemble those of *Anopheles*. The fork-cells are usually large, and the first is always larger than the second except in the genera *Megarhinus* and *Uranotaenia*, etc.

TABLES OF THE GENERA.

A.—ADULTS.

- | | |
|---|--------------------------------|
| (1) Fork-cells short, the first shorter than the second. | [2] |
| Fork-cells longer, the first longer than the second. | [3] |
| (2) Small species (2–3 mm. in length); proboscis straight, swollen at the apex, more so in the male than in the female. | |
| | <i>Uranotaenia</i> , p. 927. |
| Large species, proboscis bent downwards, with the apical half much thinner than the basal. | <i>Megarhinus</i> , p. 929 |
| (3) Metanotum with a tuft of bristles near the posterior extremity. | |
| | <i>Eretmopodites</i> , p. 931. |
| Metanotum without bristles. | |
| (4) Female palpi half as long as the proboscis; legs shaggily scaled; large species. | [4] |
| | <i>Mucidus</i> , p. 932. |

- Female palpi less than half the length of the proboscis, legs not shaggily scaled. [5]
- (5) Female claws on fore and mid legs toothed (simple or toothed in *A. simpsoni*); last abdominal segment of female narrow, often completely retractile into the penultimate; female cerci often prominent; pulvilli absent. [6]
 Female claws simple; last abdominal segment of female broad, immovable; pulvilli absent or present. [7]
- (6) Male claspers with a row of spines (South African species with under surface of hind femora entirely white). *Armigeres*, p. 934.
 Male claspers without a row of spines; under surface of hind femora not all white. *Aedes*, p. 935.
- (7) Head without any flat scales in the middle above or around the eye-margins. [8]
 Head with either a row of flat scales round the eye-margins or clothed with flat scales in the middle. [12]
- (8) Wing-scales very broad. *Taeniorhynchus (Mansonioides)*, p. 958.
- (9) Metatarsus of hind legs distinctly shorter than the tibiae; last two joints of male palpi swollen. [10]
 Metatarsus of hind legs at least as long as the tibiae; last two joints of male palpi thin. [11]
10. Species entirely yellow (except in *T. metallicus* Theo., which is violet black); penultimate joint of palpi thicker and somewhat longer than terminal one. *Taeniorhynchus*, p. 955.
 Species large, with white scaled lines on mesonotum; wings with black spots at the base of the fork-cells and second and third long veins; penultimate joint of male palpi thinner but not longer than terminal one. *Theobaldia*, p. 960.
- (11) Lower mesepimeral bristles numerous; large species; proboscis either unbanded, or with traces of a median pale band; femora and tibiae spotted; tarsi unbanded. *Lutzia*, p. 962.
 Lower mesepimeral bristles either absent or not exceeding three; femora and tibiae usually not spotted, if spotted the tarsi and proboscis have pale bands *Culex*, p. 964.
- (12) Head with a row of flat scales round the eyes, basal joint of male palpi with a row of projecting scales. *Culex (Culiciomyia)*, p. 980.
 Head clothed with flat scales in the middle; palpi short in both sexes; very small species. *Culex* (part), p. 964.

B.—LARVAE (compiled after Edwards).

- (1) Ventral brush on anal segment present. [2]
 No ventral brush on anal segment; hairs on head reduced to one pair. *Eretmopodites*.
- (2) A lateral chitinous plate present on eighth abdominal segment. [3]
 No lateral chitinous plate on eighth abdominal segment. [4]
- (3) Comb absent; mouth-parts modified for predacity. *Megarhinus*.

- Comb present in addition to the plate; head small, mouth-parts not modified. *Uranotaenia*.
- (4) Mouth brushes consisting of chitinized teeth; larvae predaceous upon other mosquito larvae. [5]
Mouth brushes consisting of dense masses of long fine hairs; larvae not predaceous upon other mosquito larvae. [6]
- (5) Chitinized teeth of mouth brushes stouter and shorter; siphon three times as long as its width at base, without a ventral beard; pecten only extending one-third the length of siphon. *Mucidus*.
Chitinized teeth of mouth brushes longer and more slender; siphon short and thick, only one and a half times as long as its width at base, with a ventral beard; pecten extending whole length of siphon. *Lutzia*.
- (6) Siphon usually long and narrow, its hair-tufts numerous, rarely absent or represented by single hairs. *Culex*
Siphon usually broad and short or rather short, with only one pair of hair-tufts. [7]
- (7) Hair-tufts near base of siphon; antennae short, with a small hair-tuft on the inside. *Theobaldia*. [8]
Hair-tuft either near middle or beyond middle of siphon.
- (8) Siphon with well-developed pecten. *Aedes (Stegomyia and Aëdimorphus)*. [9]
Siphon without pecten.
- (9) Siphon with a minute hair-tuft, scarcely distinguishable; anal gills large and rounded apically. *Armigeres*.
Siphon with strong curved spines at the apex; apical third highly chitinized, with two strong curved bristles on dorsum and a weaker bristle on each side about the same level. *Mansonioides*.

Genus URANOTAENIA Arribalzaga.

Arribalzaga Rev. Mus. La Plata, II, p. 163 (1891).

Pseudouranotaenia Theo., J. Econ. Biol., I, p. 33 (1905).

Anisocheleomyia Theo., Entom., XXXVIII, p. 52 (1905).

Pseudoficalbia Theo., First Rep. Dir. Vet. Res., U.S.Afr., p. 272 (1911). Trans. Linn. Soc., Lond., XV, i, p. 89 (1912).

This genus contains a number of small species known to occur in Asia, Africa, N. and S. America, and in the Australian region. They may be readily distinguished by their small size (2-4 mm. in length), the first fork-cell being slightly or considerably shorter than the second; the head clothed with flat and upright forked-scales, the proboscis being slightly swollen at the apex in the female and distinctly so in the male, and the head and thorax having either blue or whitish markings; the latter colour, however, is probably due to fading after death. The ungues of the male are also different to those of other species of Culicini. On the fore legs they are small and equal in length, the inner pair being often broader than the outer; on the mid legs they are unequal, the larger one falcate, and on the hind legs they are both small and equal.

TABLE OF SPECIES.

- (1) Thorax with a whitish or blue line in front of the base of the wings composed of flat scales. [2]

- Thorax without such a line; no flat scales on mesonotum. [3]
- (2) Abdomen with faint traces of basal pale bands on the fifth, sixth, and seventh abdominal segments; pleurae with a distinct narrow line of bluish-white scales; hind tarsi with indistinct whitish bands; last two joints white.
U. bilaeniata fraseri.
 Abdominal segments two and four only with pale apical bands; pleurae without a pale line; hind tarsi unbanded. *U. alba.*
- (3) Lower half of pleurae pale yellowish, sharply contrasting with upper half and mesonotum, which are dark brown; hind tarsi with the last two joints whitish, but no pale bands on basal joints; head scales dark brown.
U. candidipes.
 Integument of pleurae more or less unicolorous, and not contrasting with the mesonotum; hind tarsi all dark. [4]
- (4) A spot of flat blue scales on the pleurae, and similar scales present on the prothoracic lobes. *U. fusca.*
 No flat scales on thorax, but a black spot on the integument just in front of each wing base. *U. mashonaensis.*

1. URANOTAENIA BILAENIATA FRASERI Edwards (1912).

Edwards, Bull. Ent. Res., III, i, p. 39 (1912).

Described from two females caught in the Upumu Forest, Uganda. Dr. Ingram informs the writer that he has taken it on the Umfolosi River and at Felixton in Zululand.

2. URANOTAENIA ALBA Theobald (1901).

Uranotaenia mashonaensis var. *alba* Theobald (1903).

Theobald, Mon. Culic., II, p. 262 (1901); III, p. 303 (1903).
 Edwards, Bull. Ent. Res., III, i, p. 40 (1912).

This species was described from a single male taken in Southern Rhodesia. Dr. Ingram informs the writer he took a female at Elim Hospital, Northern Transvaal.

3. URANOTAENIA CANDIDIPES Edwards (1912).

Uranotaenia nivipous Theobald (1912), nec *U. (A) nivipes* Theo. (1905).

Theobald, Entom., XLV., p. 93 (1912). Second Rep. Dir. Vet. Res., U. South Afr., p. 322 (1912).

Edwards, Bull. Ent. Res., III, i, p. 42 (1912).

Description of Adult:

Female.—*Head* with deep brown flat scales and rich golden forked-scales. Antennae brown, tori bright ferrugineous. Palpi short, brown. Proboscis deep brown. *Thorax* deep brown with scanty small narrow-curved brown scales and long brown chaetae. Pleurae pale ochreous with a few flat scales. Scutellum brown with flat dusky brown scales and dark border bristles. *Abdomen* black with median apical creamy areas; venter pale creamy white.

Legs deep brown, pale at the base; a pale apical spot on the femora and tibiae; last two hind tarsi creamy white and most of the third; in the other legs the last tarsus shows pale reflections.

Wings with brown scaled veins, the subcostal, first, second, and fourth veins showing brilliant violet reflections in some lights under the microscope.

Length 4 mm.

This species was described from a single female taken at Onderstepoort on the 1st January, 1911. It has not been taken here since.

4. URANOTAENIA FUSCA Theobald (1907).

Ficalbia inornata Theobald (1908).

Theobald, Mon. Culic., Vol. IV, p. 564 (1907); Vol. V, p. 542 (1910). Entom., XLI, p. 108 (1908).

Edwards, Bull. Ent. Res., III, i, p. 42 (1912).

Description of Adult:

Female.—*Head* clothed with blackish flat scales, a few paler ones and a few black upright forked-scales. Proboscis nearly black. Palpi and antennae deep brown.

Thorax deep brown, with deep dull bronzy-brown narrow-curved scales and long black chaetae. Scutellum with fuscous flat scales. Pleurae pale with some pale blue flat scales. Prothoracic lobes blue.

Abdomen uniformly deep blackish-brown above; venter uniformly whitish ochreous.

Legs deep brown, unbanded.

Wings with brown scales; the first fork-cell longer than usual in this genus, but shorter than the second.

Length 2.5-3 mm.

Theobald has recorded one female and two males taken in the Transvaal. It has also been found in Uganda and Sierra Leone.

5. URANOTAENIA MASHONAENSIS Theobald (1901).

Mimomyia mashonaensis Theobald (1903).

Uranotaenia bimaculata Theobald (1910).

Theobald, Mon. Culic., Vol. II, p. 259 (1901); Vol. III, p. 306 (1903); Vol. V, p. 522 (1910).

Edwards, Bull. Ent. Res., III, i, p. 42 (1912).

This species has been recorded from S. Rhodesia, Uganda, S. Nigeria, Gold Coast, and Ashanti. Dr. Ingram informs me he has taken specimens at Eshowe and Felixton in Zululand, also in the Transvaal at Brits, Princes Hill, and Vaalwater, Waterberg District.

Genus MEGARHINUS Robineau Desvoidy.

Robineau Desvoidy, Mém. Soc. d'Hist. Nat. de Paris, III, p. 412 (1827).

This genus was formerly included in the tribe *Megarhinini*. It is now divided into two sub-genera, *Megarhinus* and *Toxorhynchites*. The former includes fourteen species found in N. and S. America and the West Indies, and the latter about fifteen species, found in Africa, Asia, Philippine Islands, and New Guinea.

The species are large, completely clothed with flat metallic scales, usually blue or green in colour. The proboscis is curved downwards, and the apical half is much thinner than the basal half. The palpi are either long in both sexes (sub-genus *Megarhinus*), or they are short in the female and long in the male (sub-genus *Toxorhynchites*). The antennae are pilose in the female and plumose in the male. The

scutellum is evenly rounded. The wings are long and narrow, with both the fork-cells very short, but the first is much shorter than the second. Wing-margin indented just before the termination of the posterior branch of the fifth long vein, and with a small V-shaped thickening of the membrane opposite this indentation. Ungues of female unequal on the fore and mid legs, of which the larger are toothed, and equal on the hind legs; those of the male equal and simple.

The adults are non-bloodsuckers and are frequently found on flowers. The larvae are predaceous upon other mosquito larvae, and are usually found in water-barrels, hollow stumps of bamboos, or holes in trees containing water.

Sub-genus *TOXORHYNCHITES* Theobald.

Theobald, *Mon. Culic.*, I, p. 244 (1901).

Worcesteria Banks, *Philipp. J. Sci.*, I, p. 779 (1906).

Teromyia Leicester, *Stud. Inst. Med. Res., Fed. Malay States*, III, p. 49 (1908).

Only one species has been found in the Union.

MEGARHINUS (*TOXORHYNCHITES*) *BREVIPALPIS* Theobald (1901).

Toxorhynchites marshalli Theobald (1903).

Toxorhynchites conradti Grünberg (1907).

Theobald, *Mon. Culic.*, Vol. I, p. 245, Pl. IX, f. 6 (1901);
Vol. III, p. 121 (1903); Vol V, p. 103 (1910).

Giles, *Gnats or Mosquitoes*, 2nd Edit., p. 278 (1902).

Newstead, *Ann. Trop. Med. and Parasit.*, I, p. 11 (1907).

Grünberg, *D. Ent. Zs.*, p. 405 (1907).

Edwards, *Bull. Ent. Res.*, II, i, p. 3 (1912); *Ann. Durban Mus.*, I, ii, p. 160 (1915).

Macfie and Ingram, *Bull. Ent. Res.*, XIII, iv, p. 410, figs. 2, 3 (1923). Larva and pupa.

Description of Adult:

Female.—*Head* covered with bright blue flat scales, the median ones sometimes green. Antennae dark brown; torus dark with a white sheen round the apex and a patch of white flat scales above. Palpi covered with deep and a few bright purple scales. Proboscis curved, basal half deep purple, apical half bronzy.

Mesonotum covered with olive brown scales with a greenish tinge, bright blue ones at the sides; also a few dark bristles laterally and orange ones at the bases of the wings. Prothoracic lobes bright blue. Scutellum covered with green and blue scales. Pleurae black, almost covered with white scales.

Abdomen bright blue, with a tuft of white, black and orange hairs on each side near the apex; a few white scales are also sometimes present laterally.

Legs bright blue and purple; coxae dark, almost covered with white scales. Femora white beneath; first two joints of the tarsi usually have white basal bands, those of the first being narrow and of the second broad, but they may be incomplete dorsally or absent, especially on the first joint of the fore tarsi.

Wings with the scales on the veins metallic blue, appearing brown in some lights.

Length 8 mm.

Distribution.—Durban, Natal; Eshowe, Zululand (coll. A. Ingram); S. Rhodesia; Congo; Nyasaland; Uganda; N. Camerun; N. and S. Nigeria; Sierra Leone; Ashanti; Gold Coast (Macfie and Ingram).

Seasonal Prevalence.—Specimens have been taken in February and April in Durban, and in March, April, June, and November in S. Rhodesia.

Genus ERETMOPODITES Theobald.

Theobald, Mon. Culic., I, p. 280 (1901).

This genus was formally placed in the tribe *Sabethini*. It contains six or seven species, all of which are found in Africa. They possess a tuft of long bristles near the posterior end of the metanotum (usually absent in *E. quinquevittatus*); the head is clothed with flat metallic silvery scales and upright forked-scales; eyes widely separated; proboscis slender, shorter than abdomen; palpi of female short, of male long and thin, without hair-tufts; clypeus bare; abdomen black above, with a row of lateral silvery scales; venter uniformly golden-yellow, sometimes with some black scales on the apical segments.

TABLE OF SPECIES.

Prothoracic lobes silvery scaled:—

- (a) Mesonotum with five black longitudinal lines (*E. quinquevittatus*).
- (b) Mesonotum without distinct markings (*E. chrysogaster*).

1. ERETMOPODITES QUINQUEVITTATUS Theobald (1901).

E. austenii Theobald (1910).

Theobald, Mon. Culic., Vol. I, p. 280, 1901 (female only); Vol. V, p. 572 (1910).

Edwards, Bull. Ent. Res., III, i, p. 47 (1912). Ann. Durban Mus., I, ii, p. 166 (1915).

Macfie and Ingram, Bull. Ent. Res., XIII, iv, p. 421, figs. 10, 11 (1923). Larva and pupa.

Description of Adult:

Female.—*Head* clothed with metallic silvery flat scales, some black and a few yellow upright forked-scales and a patch of yellow narrow-curved scales behind. Antennae dark brown, with small pale ochreous flat scales. Palpi and proboscis black.

Mesonotum pale ochreous-brown, clothed with golden narrow curved scales and five longitudinal lines of black scales. Prothoracic lobes silvery scaled. Scutellum with black flat and narrow scales and a few silvery flat scales on the median lobe; lateral lobes with yellow and a few dark narrow curved scales. Pleurae pale ochreous-brown, with a line of silvery scales and three silvery spots below, one above each coxa. Metanotum sometimes with a few bristles.

Abdomen black with lateral silvery patches; venter uniform golden-yellow.

Legs with the coxae yellowish; femora black above, yellow below, with a white apical spot; tibiae and tarsi black. Ungues of fore and mid claws equal and toothed, of hind legs equal and simple.

Wings with dark brown scales on the wings.

This species is diurnal in habits and has been recorded from Sierra Leone, Gold Coast, Ashanti, S. Nigeria, Belgian Congo, Zanzibar, and Madagascar. Edwards records specimens collected at Durban during the months of September to November and March and June. The writer took one female in the Mhlatuse Settlement, Zululand, on the 19th February, 1923.

2. *ERETMOPODITES CHRYSOGASTER* Graham (1909).

Graham, Entomologist, XLII, p. 157 (1909).

Edwards, Bull. Ent. Res., III, i, p. 47 (1912).

Macfie and Ingram, Bull. Ent. Res., XIII, iv, p. 417, figs. 7-9 (1923). Larva and pupa.

This species can be distinguished from *E. quinquevittatus* by the absence of longitudinal black stripes on the thorax, and from *E. grahami* by the hind tarsi of the male being feathered. The writer took females, which were kindly identified for me by Mr. F. W. Edwards, in Zululand on animals standing in thick bush near the Emseleni River during the months of February to March, 1923, and numerous specimens were collected near the Mhlatuse River on animals standing in thick bush and also in the sun in open ground during April, 1923. Dr. Ingram has bred adults from larvae collected at Empangeni, Zululand. The species has also been recorded from Sierra Leone, Ashanti, Uganda, and Tanganyika Territory (?).

Genus *MUCIDUS* Theobald.

Theobald, Mon. Culic., I, p. 268 (1901).

This genus includes five known large species which can be easily distinguished by their mouldy appearance due to the scales. Two are found in Africa, one of which extends to India, two in the Australian region, and one in Java.

1. *MUCIDUS SCATOPHAGOIDES* Theobald (1901).

Mucidus sudanensis Theobald (1903).

Theobald, Mon. Culic., Vol. I, p. 277 (1901); Vol. V, p. 129 (1910). Third Rep. Well. Labs. Khartoum, p. 252 (1903).

Edwards, Bull. Ent. Res., II, iii, p. 246 (1911).

Bedford, Fifth and Sixth Rep. Dir. Vet. Res., Union of S.Afr., p. 739 (description and figure of larva), 1918.

Description of Adults:

Female.—*Head* yellowish-brown clothed with ochreous thin upright forked-scales, a few scattered white scales, a broad line of white twisted scales in the middle, and a patch of white flat scales on the sides; golden hairs projecting over the eyes and a line of small white scales round the eye-margins. Antennae ochreous, last eight joints slightly darker; tori reddish with some white scales. Palpi about two-thirds the length of the proboscis; ochreous, clothed with large dark brown, yellow, and white scales; apices entirely white. Proboscis ochreous, black at the tip.

Mesonotum brown, clothed with golden and pale very narrow curved scales, golden bristles, and tufts of long-twisted white scales. Scutellum with long-twisted white scales. Pleurae with numerous white scales. *Legs* ochreous, covered with appressed and outstanding

bright ochreous and white scales, and some dark ones on the femora and tibiae. Coxae ochreous with some white scales; femora with white apical and basal bands, another white band near the apex, and an incomplete band near the base; tibiae with white bands at the base, middle, and apex, all of about equal breadth; tarsi with pale basal bands on all the joints. In the type *sudanensis* and specimens caught at Onderstepoort all the metatarsi have, in addition to the basal bands, a median white band, and the last two joints of the fore and mid tarsi are entirely yellow.

Abdomen with the first segment ochreous, with a patch of white flat scales in the middle and numerous golden hairs; the remainder of the segments covered with bright ochreous, white, and a few dark flat and long spatulate scales; on the second to fourth segments the scales are mainly ochreous with white basal and lateral patches, and on the remainder of the segments the scales are mainly white. Cerci long. *Wings* with the veins clothed with broad ochreous, dusky white, and parti-coloured scales. Wing fringe with seven or eight white spots.

Male not so densely scaled as the female. *Head* clothed with pale scales. Antennae with bright ochreous plumose hairs; apical segments darker. Palpi longer than proboscis, last two segments turned downwards; long joint with ochreous and dark brown and a few pale outstanding scales on the basal half, paler and thinner beyond the middle; apex darker beyond the middle, with numerous long ochreous hairs on the venter; last two joints ochreous with some white scales at the bases above; the penultimate joint with numerous long ochreous hairs on the venter. *Mesonotum* greyish with a brown median line and a brown patch on each side on the anterior portion; clothed mainly with white scales and a few very narrow curved ochreous scales on the brown areas.

Distribution.—Onderstepoort, Transvaal; Umbilo, Natal; Umfolosi River, near Empangeni, Zululand; Uganda; Gold Coast; Sudan; India.

Seasonal Prevalence.—January and February in the Transvaal and June at Umbilo.

Breeding Places.—The larvae have been found after heavy rains in mud-pools and marshy ground along with larvae of *Aedes hirsutus* Theo. and *Aedes lineatopennis* Ludlow, upon which they are pre-daceous.

2. MUCIDUS MUCIDUS Karsch (1887).

Mucidus africanus Theobald (1901).

Mucidus grahami Theobald (1910).

Karsch, Ent. Nachr., p. 25 (1887).

Theobald, Mon. Culic., Vol. I, pp. 272, 274 (1901); Vol. IV, p. 163 (1907); Vol. V, p. 127 (1910).

Giles, Handb. of Gnats, p. 214 (1900); 2nd Edit., p. 349 (1902).

Edwards, Bull. Ent. Res., II, iii, p. 246 (1911).

This species can be distinguished from the preceding species by the fore and mid tibiae being narrowly white at the base and broadly white at the apex. The hind tibiae are narrowly white at the base and apex, and have a narrow indistinct white band in the middle. Fore and mid tarsi unbanded. Wing fringe with usually seven white spots.

Distribution.—Edwards gives the following countries:—Ashanti, Sierra Leone, N. Nigeria, S. Nigeria, Nyasaland Protectorate, Delagoa Bay. It has been recorded by Theobald from Onderstepoort and an unknown locality in the Transvaal, and also from Natal. Walker has recorded *Culex commovens* = *M. alternans* from Natal, but as this species does not occur in Africa the specimen was apparently a variety of *M. mucidus* (*vide* Edwards). The specimens recorded by Theobald from Onderstepoort were probably *M. scatophagoides*.

Genus ARMIGERES Theobald.

Theobald, Mon. Culic., I, p. 322 (1901).

Desvoidya Blanch., C.R. Soc. Biol. LIII, p. 1046 (1901).

Desvoidia Theo., Mon. Culic., III, p. 134 (1903).

Blanchardiomyia Brun., Rec. Ind. Mus., IV, p. 440 (1912).

This genus is closely allied to *Aedes*, differing from the sub-genus *Stegomyia* only in the peculiar structure of the male genitalia and the larvae. The larvae are carnivorous. Only one species has been recorded from the Union, namely *A. argenteoventralis* (Theo.). It differs from all other Culicini except *A. albomarginata* Newst. in having the front and under surface of the hind femora entirely white.

ARMIGERES ARGENTEOVENTRALIS (Theobald).

Dendromyia argenteoventralis Theo. (1910).

Dendromyia affinis Theo. (1910).

Stegomyia argenteoventralis (Theo.) Edw. (1912).

Theobald, Mon. Culic. V, pp. 588, 589 (1910).

Edwards, Bull. Ent. Res., III, i, p. 12 (1912); Ann. Durban Mus., I, ii, p. 161 (1915).

Description of Adult:

Female.—*Head* clothed with dark flat scales, except for a small patch of white ones on each side and round the eye margins. Clypeus without scales. Proboscis blackish-brown. Tori with some white flat scales. Palpi blackish-brown.

Mesonotum clothed with dark brown curved scales and a patch of white ones on each side in front of the wings; on the lateral margins in front there is a small patch of broader white scales. Scutellum with dark and white flat scales. Pleuræ with patches of white flat scales.

Legs blackish-brown, except for numerous white scales on the coxæ, a narrow white line on the undersurfaces of the fore and mid femora, the hind femora which are mainly white, and a prominent white band at the apex of the hind tibiae.

Abdomen black, the fifth to seventh segments with basal white bands, and some of the others with basal lateral white spots. Venter with the basal segments white, the remainder black with basal white bands.

Wings clothed with brown scales.

Length 4 mm.

This species was described from females collected by Dr. Graham, in Ashanti; they were caught in the bush between 3 and 5 p.m. It was also found in Lagos, and Edwards has recorded two males caught at Durban on the 20th March and 4th October, 1914. The writer captured a single female in a house at Ntabanana, Zululand, at 4 p.m. on the 27th March, 1923.

Genus AÆDES Meigen.

Meigen, Dipt. Beschr., I, 13 (1818).

TABLE OF SUB-GENERA.

- (1) Male palpi with only one terminal segment; mesonotum with bright scales on each side. *Banksinella*, p. 951.
Male palpi with two terminal segments; mesonotum with no yellow scales at the sides. [2]
- (2) Lower mesepimeral bristles absent. [3]
Lower mesepimeral bristles present. [5]
- (3) Last two joints of male palpi thin, turned up; head all flat scales; abdomen of female without distinct cerci. *Stegomyia*, p. 936.
Last two joints of male palpi turned down, more or less thickened, especially the penultimate which is longer than the terminal; head usually not all flat scaled. [4]
- (4) Cerci scarcely distinguishable; hind tarsi with a broad white basal band on the second joint and sometimes a narrow one on the first; remainder of joints dark. *Finlaya*, p. 953.
Cerci long and conspicuous (short only in *A. capensis*); tarsi not so marked; hind tarsi either dark or with apical or basal bands. *Aëdimorphus*, p. 941.
- (5) Head all flat-scaled; black and white species. *Stegomyia* part, p. 936.
Head not all flat-scaled; species not black and white. *Ochlerotatus*, p. 954.

TABLE OF LARVA OF "STEGOMYIA" AND "AÆDIMORPHUS."

- (1) Antennae short, without hair-tuft on shaft; anal brush small and not very distinct. [2]
Antennae longer with hair-tuft; anal brush quite distinct. [4]
- (2) Siphon more than twice as long as broad; teeth of comb barbed. [3]
Siphon less than twice as long as broad; comb consisting of 7-8 barbed teeth. *A. (S.) simpsoni*.
- (3) Hook-like spines on latero-ventral aspect of thorax large; hair-tuft on siphon placed at or just beyond the middle. *A. (S.) metallicus*.
Hook-like spines on thorax not so large; hair-tuft on siphon placed well beyond the middle. *A. (S.) argenteus*.
- (4) Median hairs on head single. [5]
Median hairs on head multiple, or single and multiple. [6]
- (5) Pecten without detached teeth outwardly; siphon less than three times as long as broad. *A. (S.) vittatus*.
Pecten with detached teeth outwardly; siphon more than three times as long as broad. *A. (A.) nigriensis*.
- (6) Siphon about three times as long as broad. [7]
Siphon about four times as long as broad; pecten consisting of eight thorn-like spines, the last two widely separated, and between them a plumose tuft of four hairs. *A. (A.) punctothoracis*.

- (7) Pecten comprising 9–11 spines; outer mid-frontal hairs multiple, plumose. *A. (A.) albocephalus.*
 Pecten comprising about thirty-two spines; outer mid-frontal hairs single, plumose. *A. (A.) hirsutus.*

Sub-genus STEGOMYIA Theobald.

Theobald, Mon. Culic., I, p. 283 (1901).

Twenty-two species have been recorded from the Ethiopian Region, and of these six have been found in South Africa.

TABLE OF SPECIES.

- (1) The white bands on the first four joints of hind tarsi almost equal in length, last joint usually all white. [2]
 The white bands on hind tarsi not so arranged. [3]
- (2) Clypeus not scaly; thorax with six small white spots. *A. (S.) vittatus* (Bigot).
 Clypeus scaly; mesonotum with lyre-shaped white marks and two median yellow lines. *A. (S.) argenteus* (Poir).
- (3) Fourth joint of hind tarsi all white; mid femora without a white spot near the middle in front; mid and hind tibiae with small white spots on the underside near the base. *A. (S.) pseudonigeria* Theo.
 Fourth joint of hind tarsi not all white; mid femora with a white or silvery spot near the middle; mid and hind tibiae unspotted. [4]
- (4) Fourth joint of hind tarsi almost all white, fifth dark; mesonotum with a yellow median line, a silvery spot on each side, a small one below it near the base of the wing, a small median one in front, and a yellow line on each side extending forwards from the scutellum almost to the large lateral spots; abdomen with basal white bands on second to seventh tergites. *A. (S.) poweri* Theo. [5]
- (5) Fourth joint of hind tarsi black, fifth mostly or all white. [5]
 Mesonotum with two yellow median lines (may be indistinct anteriorly or even absent, especially in the male); a silvery spot on each side, a small one below it near the base of the wing, a small median one in front, and a short silvery line of narrow curved scales on each side in front of the scutellum. *A. (S.) simpsoni* Theo.
 Mesonotum differing in having no yellow median lines and a patch of broad flat silvery scales on each side in front of the scutellum in place of the lines. *A. (S.) metallicus* Edw.

1. *Aedes* (STEGOMYIA) VITTATUS (Bigot).

Culex vittata Bigot (1861).

Stegomyia sugens Theobald (1901), nec Wiedemann.

Scutomyia sugens Theobald (1905).

Stegomyia brumpti Neveu-Lemaire (1905).

Reedomyia albopunctata Theobald (1907).

Bigot, Ann. Soc. Ent. d. Fr. S. 4, T. I (1861).

Theobald, Mon. Culic., Vol. I, p. 300 (1901); Vol. IV, pp. 199, 262 (1907); Vol. V, p. 201 (1910).

Neveu-Lemaire, Bull. Soc. Zool. France, XXX, p. 8 (1905).
 Edwards, Bull. Ent. Res., Vol. III, i, p. 9 (1912); VII, iii,
 p. 210 (1917); Vol. XV, iii, p. 265 (1925).

Description of Adults :

Female.—*Head* clothed with dark brown flat scales, dark forked scales behind, and a line of white broadish scales in the middle; on each side there is a patch of white forked scales, and a narrow line of white scales on the eye-margin. Clypeus with two patches of white scales. Proboscis dark brown. Tori white-scaled. Palpi blackish-brown, the apex broadly white-scaled; second segment sometimes with a few white scales at the apex.

Mesonotum clothed with dark brown narrow scales and a few scattered pale ones in addition to six small admedian white spots. Scutellum with a patch of white flat scales on each lobe. Pleurae dark brown with patches of white scales.

Legs.—Femora white at the base, black beyond with numerous scattered white scales, and a narrow white band near the apex and another at the tip. Tibiae black, with a white band near the middle, broadest on hind tibiae. Fore and mid tarsi with narrow basal white bands on the first three joints; hind tarsi with broad basal white bands on the first four joints; fifth joint white.

Abdomen clothed with flat scales; the first segment with black and white scales, the remainder blackish-brown with white basal bands and very small lateral white spots. Venter clothed with blackish-brown and numerous scattered white scales.

Male.—Palpi blackish-brown, slightly longer than the proboscis; first segment with a white band in the middle; second and third segments upturned, each with a narrow white basal band. Seventh abdominal segment with some white scales on the posterior-margin. Edwards (19) states that this species is not a true *Stegomyia*, and may have to be removed from the sub-genus owing to the presence of four well-marked lower mesepimeral bristles (these being absent in all the other species), and the peculiarities of the hypopygium and larva.

Distribution.—Brits (coll. A. Ingram) and Onderstepoort, Transvaal; Weenen (coll. H. P. Thomasset), Tugela (coll. A. Ingram), Natal; Begamusi Drift (coll. A. Ingram) and Ntabanana, Zululand; S. Rhodesia; Angola; Gold Coast; N. and S. Nigeria; Sierra Leone; Gambia; Uganda; Sudan; Abyssinia; Corsica; Aden; Ceylon; India.

Seasonal Prevalence.—This species has been collected at Onderstepoort during the months of December to April. It is mainly nocturnal in habits.

Breeding Places.—The larvae breed mainly in rock pools. They have also been found in cement drinking-troughs and in a galvanized-iron tank.

2. *AÈDES (STEGOMYIA) ARGENTEUS* Poirët.

Culex argenteus Poirët (1787).

Culex fasciatus Fabr. (1805).

Culex calopus Meigen (1818).

Culex annulitarsis Macquart (1846).

Culex elegans Ficalbi (1889).

Stegomyia nigeria Theobald (1901).

Poiret, Journ. de Phys., XXX, p. 245 (1787).

Fabricius, Syst. Antiatorum, p. 13 (1805).

Meigen, Syst. Besch. I, p. 3 (1918).

Theobald, Mon. Culic., Vol. I, pp. 289, 303 (1901); Vol. III, p. 141 (1903); Vol. IV, p. 176 (1907); Vol. V, p. 158 (1910); Ist. Congress Intern. D'ent., Bruxelles, 1910, pp. 145-170, Pl. V.

Edwards, Bull. Ent. Res., Vol. XII, p. 325 (1921); Vol. XV p. 265 (1925).

Kirkpatrick, The Mosquitoes of Egypt, pp. 87-90 (1925).

♂, ♀, larva, and pupa.

Description of Adults :

Female.—Head clothed with brown, broad, flat scales, except for a median patch of white ones and some white ones at the side. Eye-margins with a line of narrower white scales. Clypeus with two patches of white scales. Proboscis dark brown. Tori black with white scales. Palpi black, broadly white at the apex.

Mesonotum clothed with narrow brown scales and ornamented as follows:—A small white median spot on the anterior margin, behind this a pair of parallel admedian lines of narrow yellow-coloured scales extending almost to the scutellum; a broad curved band of white scales on each side, curved inwards about the middle of the thorax and continuing backwards as a thin line to the scutellum, and a small patch of white scales on each side above the wing base. Scutellum with a patch of broad white flat scales on each lobe. Pleurae brown with patches of white flat scales.

Legs.—Femora blackish-brown, yellow at the bases, and with a narrow white patch at the apex. Tibiae blackish-brown. Fore and mid tarsi blackish-brown with narrow white basal band on the first two joints; hind tarsi with broad white bands on the first four joints; fifth joint white.

Abdomen clothed with flat scales; first segment with pale yellow scales; second to sixth segments blackish-brown with cream-coloured basal bands and lateral white triangular spots; seventh segment with lateral white spots.

Wings clothed with brown scales.

Length of wing about 3 mm.

Male.—Palpi slightly longer than the proboscis, blackish-brown with four white bands, the second being the longest, the last two are narrow and are situated at the bases of the two apical segments. Abdominal bands white, incomplete.

Distribution.—This species is widely distributed throughout the tropics and sub-tropics, and is frequently very common where it occurs. It has been collected in the following localities in the Union:—Transvaal: Onderstepoort (very rare), Potchefstroom, Komatipoort, and Leydsdorp. Natal: Durban and Bond's Drift. Zululand: Ntabanana and Mhlatuse Settlements (coll. G. A. H. B.), also Empangeni, Candover Rail, and Hluhluwe River bridge (coll. A. Ingram). Orange Free State

Habits.—The adults are frequently found in and around houses, and the females are vicious biters during the day-time.

Breeding Grounds.—The larvae are usually found in water-barrels, old pots, tins, etc., containing water. The writer observed a female at Ntabanana laying eggs on the sides of a tin containing water in thick bush at 3.15 p.m. on the 15.11.1923. The eggs, which were deposited singly, were attached to the sides of the tin about 4–5 mm. above the surface of the water. The ova can retain their vitality for 47 days or more when kept dry.

Economic Importance.—This species is the well known carrier of yellow fever, and is also a transmitting agent of *Filaria bancrofti* and dengue fever.

3. AÆDES (STEGOMYIA) SIMPSONI Theobald (1905).

Stegomyia lili Theo. (1910).

Stegomyia bromeliae Theo. (1911).

Theobald, Entom., XXXIX, p. 224 (1905); Mon. Culic., Vol. IV, p. 182 (1907); Vol. V, p. 160 (1910); Novae Culic., I, p. 10 (1911); First Rep. Dir. Vet. Res., Union S. Afr., p. 259 (1911).

Edwards, Bull. Ent. Res., III, i, p. 11 (1912).

Description of Adult:

Female.—*Head* clothed with black flat scales and one or two grey ones, except for a small median patch of white flat scales and a patch of white scales on each side near the lateral margins; also a few upright forked scales behind and a narrow line of silvery scales round the eyes. *Palpi* clothed with black scales, except for a patch of white ones at the apices. *Antennae* black, tori with a small patch of silvery flat scales on the inside. *Proboscis* black.

Mesonotum black, clothed with dark bronzy curved scales and ornamented as follows:—Two yellow median lines (these may be indistinct anteriorly or entirely absent); a large patch of silvery scales on each side; a small spot on each side below these and close to the base of the wing; a small median spot in front and a short silvery line on each side in front of the scutellum. *Scutellum* and *prothoracic lobes* with silvery flat scales. *Pleurae* black with patches of silvery flat scales.

Abdomen blackish-brown, with silvery basal bands and lateral spots, except on the first and seventh tergites, the latter usually with large lateral spots only. *Cerci* long.

Legs black; fore femora black, mid pale at base, with a small silvery spot near the middle and another at the apex; hind femora with the basal half pale and a silvery spot at the apex; tibiae black; tarsi with the first two joints of fore and mid legs with broad white basal bands; hind tarsi with broad white basal bands on the first three joints, fourth entirely dark, fifth all white. The unguis may be either simple or toothed.

Wings with the vein scales brown.

Length 3.5 to 4.5 mm.

Male.—*Palpi* black; long joint with a narrow white band near the base and another broader one in front of it; last two joints with a white patch at their bases. *Ungues* of fore and mid legs unequal and simple, of hind legs equal and simple.

Distribution.—This species was described from specimens collected in the Transvaal by the late Mr. Simpson. Theobald has also recorded

it from Onderstepoort, but I have never taken it here. A single female has been received from Captain Impey, S.A.M.C., taken in Durban on the 25th March, 1918. The writer found this species fairly common in the Ntabanana and Mhlatuze Settlements, Zululand, during the months of January to April, 1923. Specimens were taken in houses at night, and on animals at night and during the day; usually in shady places, but on one or two occasions females were captured on animals standing in the sun. Dr. Ingram collected specimens at Empangeni, Zululand, in April, 1927. It has also been recorded from Angola, Nyasaland, Abyssinia, and the Sudan.

4. *AËDES (STEGOMYIA) METALLICUS* Edwards (1912).

Quasistegomyia dubia Theobald (1910).

Theobald, Mon. Culic., V, p. 133 (1910).

Edwards, Bull. Ent. Res., III, i, p. 12 (1912).

This species closely resembles the preceding, the main differences being given in the table. In the male the ungues of the fore and mid legs are unequal and have a tooth on the smaller claws; the hind ungues are equal and simple.

Three females were collected by the writer in the Ntabanana and Mhlatuze Settlements, Zululand, in 1923. One was taken on a cow during the day in thick bush near the Umhlatuze River on the 20th February, and two were captured on a horse standing in the thick bush near the Emseleni River between 4 and 5 p.m. on the 26th March. It had previously been recorded from the Sudan and Gold Coast; also from Tanganyika, where Haworth obtained larvae in the tops of coconut palms.

5. *AËDES (STEGOMYIA) PSEUDONIGERIA* Theobald (1910).

Stegomyia wellmani Theobald (1910).

Theobald, Mon. Culic., V, pp. 163, 166 (1910).

Edwards, Bull. Ent. Res., III, i, p. 9 (1912).

This species closely resembles the preceding, the main differences being, in addition to those given in the table, the markings on the mesonotum and seventh abdominal tergite. On the mesonotum there are traces of a median pale line, and a short line on each side in front of the scutellum; the seventh abdominal tergite has a median white basal spot. The fifth hind tarsal joint may be either black or white. Edwards (18) records two females collected at Otjiwarongo, South-West Africa, by Dr. K. H. Barnard. Dr. Ingram collected specimens in the forest at Eshowe, Zululand, in April, 1927. The species was described from female specimens collected in Angola.

6. *AËDES (STEGOMYIA) POWERI* Theobald (1905).

Theobald, Jour. Econ. Biol., I, p. 18 (1905); Mon. Culic., Vol. IV, p. 185 (1907); Vol. V, p. 166 (1910).

Edwards, Bull. Ent. Res., III, i, p. 10 (1912).

This species resembles the preceding, from which it can be distinguished by the characters given in the table.

Distribution.—Onderstepoort and Roberts Heights, Pretoria District, Transvaal; Natal; Bechuanaland; Congo; N.E. Rhodesia; Kenya Colony.

Seasonal Prevalence.—Specimens have been taken during the months of November to February in the Transvaal.

Observations.—This species is by no means common at Onderstepoort. Specimens have been collected here in the mosquito-traps on several occasions, and I have also taken females endeavouring to bite me late in the afternoon.

Sub-genus AEDIMORPHUS Theobald.

TABLE OF SPECIES (compiled after Edwards).

- | | |
|--|------------|
| (1) Hind tarsi with pale bands, at least on some of the joints.
Hind tarsi entirely dark. | [2]
[6] |
| (2) Tori silvery-scaled; hind tarsi with apical pale bands.
A. (<i>A.</i>) <i>capensis</i> (Edw.).
Tori either bare or with inconspicuous scales; hind tarsi with either pale basal bands or with narrow basal and apical bands on some of the segments. | [3] |
| (3) Tarsi with a narrow ochreous band at the apex of the first and base of the second joint, and a still narrower band at the apex of the second and base of the third.
A. (<i>A.</i>) <i>bevisi</i> (Edw.). | [4] |
| Hind tarsi with white basal bands on all the segments. | [5] |
| (4) Wings mottled with black and white scales.
Wings not mottled; costal fringe whitish beyond middle.
A. (<i>A.</i>) <i>hirsutus</i> (Theo.). | [5] |
| (5) Abdominal segments with basal white bands and apical lateral yellowish spots.
A. (<i>A.</i>) <i>durbanensis</i> (Theo.).
Abdominal segments with basal white bands only.
A. (<i>A.</i>) <i>nigeriensis</i> (Theo.). | [7] |
| (6) Scutellum clothed with white or silvery-white broad flat scales, at least in the male.
Scutellum clothed with narrow scales except in the ♂ of <i>olbocephalus</i> . | [9] |
| (7) Thorax with four small silvery-white spots of flat scales; abdomen with basal white lateral spots
A. (<i>A.</i>) <i>punctothoracis</i> (Theo.).
Thorax without such spots; abdomen with or without basal white bands. | [8] |
| (8) Head-scales (in female) nearly all dark.
A. (<i>A.</i>) <i>tarsalis</i> (Newst.)
Head-scales mainly pale.
A. (<i>A.</i>) <i>abnormalis</i> (Theo.). | [10] |
| (9) Very yellow species, recalling <i>Taeniorhynchus</i> .
Species not yellow.
A. (<i>A.</i>) <i>ochraceus</i> (Theo.). | [10] |
| (10) Hind tibiae with a broad white apical band.
A. (<i>A.</i>) <i>albocephalus</i> (Theo.).
Hind tibiae with inconspicuous yellow spots. | [11] |
| (11) Abdominal segments with complete basal pale bands.
Abdominal segments without complete basal bands; large species.
A. (<i>A.</i>) <i>cumminsi</i> (Theo.). | [12] |
| (12) Hind claws of female simple; thorax without distinct lines; pale spot at apex of hind tibia about as broad as long.
A. (<i>A.</i>) <i>quasiunivittatus</i> (Theo.).
Hind claws of female toothed; thorax darker, more or less ornamented with yellowish scales; pale spot at apex of hind tibia about half as long as broad.
A. (<i>A.</i>) <i>dentatus</i> (Theo.). | |

Edwards (19) has divided this sub-genus up into four groups, three of which are represented by species in South Africa.

Group II.—Posterior pronotal lobes bare, except for a few dark scales above. No scales on post-spiracular area. No lower mesepimeral bristles. Tori silvery-scaled. Head and thorax with silvery-white markings formed by patches of broad scales; scutellum clothed with similar scales. Hind tarsi with apical white bands. Male hypopygium without scale-tuft; side-piece with small hairy basal lobe. Female cerci short, abdomen rather blunt-tipped.

Five species are included in this group, one having been found in the Union.

7. *AÈDES (AÈDIMORPHUS) CAPENSIS* (Edwards).

Aedes (Ecculex) capensis Edwards (1924).

Edwards, Ann. S. Afr. Mus., XIX, i, p. 162 (1924).

Described from three females collected at Oudebosch, 1,500 feet, in the Caledon Division, C.P., in January, 1919. As they were in poor condition a full description could not be given.

It is closely allied to *A. (A.) marshalli* Theo. (Mon. Culic., I, p. 310, 1901), a species recorded from S. Rhodesia. It differs from it in having the silvery scales on the anterior lateral margins of the mesonotum extending as a narrow line from almost the middle line in front to the scutal angle. In *A. marshalli* the lines are shorter and broader. In the middle of the mesonotum there is a pair of small round silvery spots composed of flat scales. Femora without white pre-apical spots.

Group III.—Posterior pronotal lobes almost bare below, with some narrow dark scales above. No post-spiracular scales. No lower mesepimeral bristles. Tori bare. Scutellum with white or silvery flat scales. Lateral abdominal spots silvery-white. Tarsi dark. Male hypopygium without basal lobe on side-piece. Female cerci long, the abdomen tapering.

This group includes five species found in the Ethiopian region and some oriental species.

8. *AÈDES (AÈDIMORPHUS) PUNCTOTHORACIS* (Theobald).

Aëdimorphus punctithorax Theo., Mon. Culic., V, p. 205 (1910).

Ochlerotatus punctothoracis (Theo.) Edws., Bull. Ent. Res., III, i, p. 20 (1912).

Ochlerotatus argenteopunctatus (Theo.) Bedf., 5th and 6th Repts., Dir. Vet. Res., Union of S.Afr., p. 741, f. 3 (1918).

Description of Adults.

Female.—*Head* dark, clothed with black flat scales, a few dull ochreous ones on each side of the middle, a small patch of silvery white ones on each side, a similar but smaller patch in the middle of the eye margins, a few silvery white scales in front between the eyes, and black upright forked scales on the occiput. Antennae dark brown, apex of torus and base of following joint ochreous. Palpi black. Proboscis blackish-brown. Mesonotum dark brown, clothed with golden-brown narrow-curved scales, and with four small spots of flat silvery white scales on the anterior half. Scutellum with a patch of white-silvery flat scales on each lobe. Pleurae brown, with small patches of silvery white scales. *Abdomen* clothed with blackish-brown flat scales and a row of golden bristles on the posterior margins; on the lateral margin of each segment except the last, there is a small silvery-white basal spot. *Legs* dark brown, basal two-thirds of femora

pale beneath; femora and tibiae with a small white spot at their apices. *Wings* with brown scales on the veins.

Length 3.5-4 mm.

Male.—Palpi dark brown with an inconspicuous narrow pale band near the middle of the long joint; last two joints hairy, about equal in length.

This small mosquito resembles *A. (A.) argenteopunctatus* Theo., a species found in S. Rhodesia, from which it can be distinguished by the absence of a white spot before the apex of the femora. It is fairly common at Onderstepoort, and has been found here during the months of November to May. We also found this species in the Ntabanana and Mhlatuse Settlements, Zululand, from the 24th January, 1923, to the 6th April, 1923. Females were collected on animals tethered to poles in thick bush during the day-time, and one or two specimens were also taken at night and between 6 and 6.30 a.m. Dr. Ingram has collected specimens at Brits, Transvaal, and at the Barrage in the Orange Free State. It has also been recorded from S. Rhodesia, Angola, and Gold Coast.

9. AÆDES (AÆDIMORPHUS) TARSALIS (Newstead).

Duttonia tarsalis Newst. (1907).

Duttonia africana Newst. (1907).

Reedomyia biannulata Theo. (1907).

Reedomyia neobiannulata Theo. (1910).

Reedomyia bipunctata Theo. (1910).

Neopecomyia uniannulata Theo. (1910).

Reedomyia sudanensis Theo.

Ochlerotatus tarsalis (Newst.) Edw.

Newstead, *Ann. Trop. Med.*, I, pp. 18, 20 (1907).

Theobald, *Mon. Culic.*, Vol. IV, p. 263 (1907); Vol. V, pp. 255, 256, 261 (1910).

Edwards, *Bull. Ent. Res.*, VII, p. 219 (1917).

Description of Adult:

Female.—*Head* with golden and black upright forked scales in the middle, and with two patches of black flat scales on each side, separated by a patch of white flat scales. *Antennae*, *palpi*, and *proboscis* black.

Mesonotum blackish-brown, covered with narrow curved bronzy scales, and with two small yellowish spots in the middle, two in front, and one near the base of each wing. *Scutellum* with white flat scales on each lobe. *Pleurae* brown with small patches of white flat scales.

Abdomen black, with or without basal white bands and with basal white lateral spots; *venter* with creamy and black scales.

Legs dark brown with a pale spot at the apices of the femora and tibiae; femora mainly pale beneath.

Wings with brown scales.

Length about 4 to 4.5 mm.

The writer collected two females in Zululand in 1923, one in the Mhlatuse Settlement on the 21st February and one at Ntabanana on the 16th March. This species has previously been recorded from the Congo Free State, Uganda, Sierra Leone, and Ashanti.

Group IV.—Posterior pronotal lobes mainly covered with scales, which are mostly or all narrow and usually for the most part pale in colour. Post-spiracular scales and bristles present. No lower mesepimeral bristles. *Tori* either bare or with small inconspicuous scales.

Scales of scutellum and lateral abdominal spots dull white or creamy. Male hypopygium with the basal lobe of side-piece either more or less developed or absent (small in *albocephalus*). Female cerci long, the abdomen tapering.

This group contains numerous Ethiopian and a few Oriental species. Edwards has divided it up into five series.

I. The *albocephalus* series. Scales on scutellum partly or entirely broad and flat, at least in the male. Tarsi dark. Basal lobe of male side-piece small or absent.

10. *AËDES* (*AËDIMORPHUS*) *ABNORMALIS* (Theobald).

Bathomyia abnormalis Theobald (1910).

Stenoscutus africanus Theobald (1910).

Ochlerotatus minutus var. *stenoscutus* Edwards (1912).

Theobald, Mon. Culic., V, pp. 263, 268 (1910).

Edwards, Bull. Ent. Res., Vol. III, i, p. 22 (1912); Vol. VII, iii, p. 220 (1917).

Description of Adult:

Male.—*Head* dark, clothed with pale ochreous narrow-curved scales, some upright forked scales behind, and a patch of pale flat scales on each side. Antennae pale, brown at the insertions of the plumose hairs. Proboscis dark brown. Palpi dark brown, slightly longer than proboscis; last two joints of nearly equal length with numerous hairs on their venter.

Mesonotum deep brown, clothed with ochreous narrow-curved scales. Scutellum with pale creamy narrow-curved scales. Pleurae with patches of pale flat scales.

Abdomen clothed with black scales and with pale basal bands.

Legs dark brown; femora pale beneath; tibiae with small pale apical spot.

Wings with brown scales on the veins.

Length about 4 mm.

The male genital claspers have been figured by Edwards (p. 220, f. 7E, 1917).

Described from specimens collected in Ashanti. The writer caught one male at Ntabanana, Zululand, on the 25th December, 1922.

11. *AËDES* (*AËDIMORPHUS*) *ALBOCEPHALUS* (Theobald).

Stegomyia albocephalus Theobald (1903).

Polyleptomyia albocephala Theobald (1905).

Ochlerotatus albocephalus (Theo.) Edw.

Theobald, Mon. Culic., III, p. 140 (1903). Gen. Ins. Culic, p. 21 (1905).

Edwards, Bull. Ent. Res., Vol. III, i, p. 21 (1912); Vol. V, iv, p. 276 (1915). Ann. Durban Mus., I, ii, p. 162 (1915).

Description of Adult:

Female.—*Head* dark, covered with creamy narrow-curved and dark upright forked scales in the middle, and with two patches of black flat scales on each side separated by a patch of pale flat scales. Antennae blackish-brown, except the torus and base of the following joint, which are yellowish-brown. Palpi black. Proboscis blackish-brown.

Mesonotum deep brown with golden narrow-curved scales. Pleurae with patches of white flat scales.

Abdomen black with basal white bands and basal lateral white spots; venter white with apical black bands, except the last segment, which is entirely dark.

Legs black with a broad white apical band on the hind tibiae; coxae brown with a few white flat scales; femora pale beneath.

Wings with brown scales on the veins; m. cu. slightly more than its own length distant from rm.

Length about 4.5 mm.

Male.—*Head* clothed with dull white flat scales, a small patch of black ones on the border about the middle of the eyes, a black patch on each side; posteriorly are black upright forked scales, and in front there are a few yellow ones. Palpi blackish-brown with a trace of a pale band on the long joint; two apical joints nearly equal with black hair-tufts. Scutellum with broad creamy-white flat scales. Wings with m. cu. about half its own length distant from rm.

This species has been recorded from Durban, and Dr. Ingram collected specimens at Isipingo, Natal, in May, 1927. It is one of the commonest mosquitoes found at Durban, and has been taken there during the months of February, June, and August to December (*vide* Edwards). We also found it fairly common at Ntabanana, Zululand, in thick bush near the Emseleni River during the day-time from the 24th January to the 14th February, 1923. It was described from a single male bred by Dr. Dutton from a larva found in a canoe in Gambia. It has also been recorded from the Gold Coast.

II. The *dentatus* series. Scutellum with narrow scales only. Basal lobe of male side-piece well developed. Post-spiracular scales broad. Hind tarsi dark or with two faint rings only (*bevisi*).

12. AËDES (AËDIMORPHUS) CUMMINSI (Theobald).

Culex cumminsi Theo. (1903).

Culicada mediopunctata Theo. (1910).

Culicada fuscopalpalis Theo. (1910).

Ochlerotatus cumminsi (Theo.) Edw. (1911).

Theobald, *Mon. Culic.*, Vol. III, p. 214 (1903); Vol. V, pp. 304, 307 (1910). *Sec. Rep. Dir. Vet. Res., Un. S.Afr.*, p. 329 (1912).

Description of Adult:

Female.—*Head* deep brown with pale golden narrow-curved and black upright forked scales; a small patch of dark and also a patch of pale flat scales at the sides. Antennae dark brown, torus and base of following joint testaceous with a few pale narrow scales on the inner sides. Proboscis and palpi deep brown.

Mesonotum dark brown with pale golden narrow-curved scales and pale brown bristles. Scutellum with pale golden narrow-curved scales. Pleurae with patches of creamy-white flat scales.

Abdomen deep brown, with or without median pale basal markings, and with pale basal lateral spots.

Legs deep brown with a small pale spot at the apices of the femora and tibiae; femora pale at the base and on the venter.

Wings with brown scales on the veins; m. cu. about half its own length distant from rm.