

The Culicidae or Mosquitoes of the Transvaal.

By F. V. THEOBALD, M.A., F.E.S., etc., Vice-Principal and Zoologist
of the S.E. Agricultural College, Wye.

THE following report on the "Culicidae of the Transvaal" is mainly based on the large collections sent by Dr. Theiler from Pretoria and Onderstepoort.

Those from the latter place were all taken during 1909-10 on the farm on which the Government Bacteriological Laboratory is situated.

Two sets of these specimens were sent, one bred from larvae collected in pools, swamps, and the river on the farm, and the other of specimens caught in mosquito traps, that is to say "horse-boxes", in which a horse was placed during the night, and in the morning the mosquitoes found in the box were collected. The object was to find out which mosquitoes would feed on the horse and accordingly which mosquitoes can be connected with horse-sickness.

These insects from Onderstepoort bear on the labels M.T.1, M.T.2, and M.T.3, showing those caught in the boxes; specimens merely recorded from Onderstepoort were bred from larvae.

Previous material has been included so as to make the report a complete list of the adult Culicidae so far recorded in the Transvaal. A large collection had previously been received from the late Mr. Simpson, Government Entomologist, and others from Dr. Copland, Leydsdorp, and a few from Komatipoort. So far only forty-five species have been recorded, including two new *Anopheletes* and three new *Culex* described here.

Dr. Gough, late of the Veterinary Department, has recorded* one or two others, but on examining the specimens I cannot agree with some of the determinations. He has described two quite new and marked *Cellias*, and a variety of *Nyssorhynchus pretoriensis*, Theobald.

A systematic survey of the Transvaal would possibly reveal a great number more species, and possibly many new to science.

SYNOPTIC TABLE OF TRANSVAAL CULICIDAE.

Sub-family *Anophelinae*.

Genus *Myzomyia*, Blanchard.

- α Legs banded; fringe of wings spotted; palpi three white bands, apex white *funesta*, Giles.
- β Legs spotted and banded; palpi four snowy-white bands; apex white *pyretophoroides*, Theobald.
- γ Legs unbanded; third long vein dark; no fringe spots; apex of palpi dark *rhodesiensis*, Theobald.

* Report of the Government Veterinary Bacteriologist for 1908-1909, pp. 115-121 (1910).

Genus *Pyretophorus*, Blanchard.

a Legs spotted and banded.

β Last tarsals brown.

γ Femora, tibiae, and first tarsals spotted. Tarsal bands apical and basal.

Three palpal bands, apical one wide. Fringe spots narrow *costalis*, Loew.

Three palpal bands, last two wide .. *marshallii*, Theobald.

Four palpal bands, apex white *quadriannulata*, nov. sp.

ββ Last two hind tarsals all white; thorax pale golden scaled, creamy scaled in front.. .. *albipes*, nov. sp.

βββ Last three hind tarsals all white; thorax golden scaled *aureosquamiger*, Theobald.

αα Legs only banded.

γ Palpi with four white bands; legs with apical pale bands most pronounced on fore and hind legs .. *cinereus*, Theobald.

γγ Palpi with three white bands, two broad and equal, basal one small; thorax lined *transvaalensis*, Carter.

Genus *Cellia*, Theobald.

Apical segment of abdomen with ochreous yellow scales; legs banded *squamosa*, Theobald.

Apical segment of abdomen with white scales.

Metatarsi and tarsi of two hind legs black .. *argenteolobata*, Gough.

Metatarsi and first two tarsals of each leg apically pale banded *pretoriensis*, Gough.

Genus *Myzorhynchus*, Blanchard.

Last two hind tarsals white *mauritanus*, Grandpré.

Last three hind tarsals white *paludis*, Theobald.

Genus *Nyssorhynchus*, Blanchard.

Last two hind tarsals white *pretoriensis*, Theobald.

Last three hind tarsals white *maculipalpis*, Giles.

Sub-family **Culicinae**.Genus *Mucidus*, Theobald.

Only one species found *africanus*, Theobald.

Genus *Stegomyia*, Theobald.

a Legs basally banded.

β Thorax with two median yellow lines, and large lateral curved white lines *fasciata*, Fabricius.

β Thorax with two lateral white spots, first ones the largest, small median one near head, two yellow median lines and a short silvery one on each side before scutellum *simpsoni*, Theobald.

αα Legs unbanded; abdomen unbanded; thorax with six silvery spots *argenteopunctata*, Theobald.

Genus *Scutomylia*, Theobald.

Legs basally pale banded; thorax with white spots
sugens, Wiedemann.

Genus *Theobaldia*, Neveu-Lemaire.

Legs spotted, wings spotted *spathipalpis*, Rondani.

Genus *Culex*, Linnaeus.

A.—Proboscis banded.

a Legs basally banded and mottled .. *transvaalensis*, Theobald.

aa Legs apically and basally banded.

β Tibiae mottled; abdomen with basal triangular spots and apical pale lateral spots *annulioris*, Theobald.

ββ Tibiae not mottled; abdomen with basal semicircular pale spots; proboscis band broad .. *hirsutipalpis*, Theobald.

aaa Legs unbanded *ataeniata*, nov. sp.

A.A.—Proboscis unbanded.

a Legs basally banded *hirsutum*, Theobald.

aa Legs with femora and tibiae spotted or lined; abdomen basal pale bands.

Head and thorax brown; legs lined .. *theileri*, Theobald.

Head and thorax pale scaled .. *onderstepoortensis*, nov. sp.

Abdomen apical pale bands; legs spotted in lines

tigripes, Grandpré.

aaa Legs with apical and basal banding; thorax deep brown, paler at sides in front *bifoliata*, Theobald.

aaaa Legs unbanded.

β Abdomen with basal pale bands.

a Thorax with two median bare lines, mottled with pale ochreous and reddish brown scales; stem of first fork-cell about one-half length of cell; post. cross-vein twice its length from mid *simpsoni*, Theobald.

aa Thorax with three lines, median indistinct; white lateral abdominal spots nearly whole length of segment; stem of first fork-cell about one-quarter length of cell; post. cross-vein about its own length from mid .. *minuta*, Theobald.

ββ Abdomen with basal pale median areas and large basal lateral spots; palpi dark *pallidopunctata*, Theobald.

Abdomen with basal median white areas and white basal lateral spots; palpi with a white line in male and female

goughii, nov. sp.

βββ Abdomen with apical pale bands; apical pale bands on second and third segments; post. cross-vein its own length distant from the mid *bostockii*, Theobald.

Apical bands on all the segments, post cross-vein more than twice its own length from mid .. *salisburyensis*, Theobald.

βββ Abdomen unbanded *quasiquarti*, Theobald.

Genus *Banksinella*, Theobald.

Thorax golden scaled on each side .. *luteolateralis*, Theobald.

Genus *Taeniorhynchus*, Arribalzaga.

Front two-thirds of thorax greyish, posterior area dark; legs spotted
tenax, Theobald, var. *maculipes*, Theobald.*

Genus *Chrysoconops*, Goeldi.

Thorax and abdomen orange yellow, legs unbanded

aurites, Theobald.

Genus *Mansonia*, Blanchard.†

Wings with dark and pale large asymmetrical flat scales, thorax
ornamented with two spots and pale lines; legs basally pale
banded *africana*, Theobald.

Genus *Etiorleptomysia*, Theobald.

Wing scales heart-shaped .. *E. mediolineata*, Theobald (1904).

Sub-family **Aedinae**.

Genus *Aedes*, Meigen.

Abdomen unbanded, dark brown, head ochreous brown

inconspicuus, Theobald.

Sub-family **Uranotaeninae**.

Genus *Pseudoficalbia*, Theobald.

Abdomen unbanded, deep brown, also thorax; pleurae pale brown

inornata, Theobald.

ANOPHELINAE.

GENUS MYZOMYIA, BLANCHARD.

Myzomyia funesta, Giles (1900).

Anopheles funesta, Giles (1900).

Anopheles kumasii, Chalmers (1900).

Mem. Liv. School Trop. Med., Mem. II, 50 (1900), Giles; Mono. Culicid, I,
178 (1901); III, 34 (1903); IV, 46 (1907); V, 17 (1910), Theobald.

THORAX grey in the middle, dark brown at the sides, with pale hair-like
scales; palpi black with a white apex and two white rings. Abdomen
dark, with pale hairs. Legs dark brown to black, with apical banding to
metatarsi and tarsi, variable in size. Wings with black costa with three
large and two small basal creamy spots, wing field mottled with dark
and pale areas, fringe with yellow spots.

Female.—Head black, with pale upright forked scales in front, black
ones at the sides and behind, a tuft of long white scales projecting in
front; palpi black with white apex and two white rings, the one nearest
the apex involving both sides of the joint; proboscis dark, labellae pale;
antennae dark brown, with pale pubescence, basal segment dark, second

* It is quite probable that this so-called variety is a distinct species from *tenax*, just as
Culex tigripes Grandpre is from *C. cumminsii* Theobald, the last two species being separated
structurally by the male genitalia.

† The generic name *Mansonia* must sink as a synonym of *Taeniorhynchus* Arribalzaga.
Vide "Novae Culicidae", Part I, p. 18, 1911, Theobald.

with white scales. Thorax dark brown at the sides, grey in the middle, with pale hair-like curved scales, some thin narrow-curved pale ones project over the head in front, hairs often golden, there are dark longitudinal lines along the grey median area; scutellum dark in the middle, pale at sides; scutellum brown to deep brown; pleurae dark brown with grey reflections roughly arranged in six spots, but not always noticeable.

Abdomen bluish grey when alive, dark brown when dead, with scattered pale hairs. Legs deep brown, almost black in some specimens, a few pale scales on the apices of the metatarsi and tarsi, sometimes so scanty that they are only detected in certain lights and under the microscope.

Wings with the black costa with usually six pale spots, the apical one small, the next three large, and the two basal ones small; one of the latter may be absent, the first three extend evenly on to the first long vein, the fourth unevenly, being longer and passing towards apex of wing; one large and one small dusky area on both branches at first fork-cell, greater part of fork dark scaled, but a pale area at cross-veins and a markedly pale area at base of fork; a dark patch at base and apex of third vein. Two dark areas on each branch of second fork-cell, greater part of stem dusky; two dark patches on the upper and one on lower branch of the fifth, another at the fork and near base, two dark areas on the sixth, the apical large; first fork-cell longer and narrower than the second, its base nearer the base of the wing, its stem rather more than half the length of the cell; stem of the second fork-cell longer than the cell; mid cross-vein nearer apex of wing than either supernumerary or posterior cross-veins; fringe dark with pale areas at the junctions of all the veins, except the sixth; apex of wing mostly pale, yellow scaled.

Length: 3–4 mm.

Male.—Wing spotting much as in female, but the first fork-cell is nearly twice as long as the second, and its stem is much shorter than the cell, and the second fork-cell is very short and is narrow.

Habitat.—Zomba; Uganda; Nile Provinces; Tanganika Plateau; Lagos; Gambia; Congo and Zambesi watersheds and up the Zambesi as far as the Lupata Gorge; Senegal; Sierra Leone; Ashanti; Mashonaland; British Central Africa up to 500 feet; Congo Free State; Natal; Transvaal (as below). It has been recorded from the Philippine Islands, but I do not think it occurs outside Africa. Transvaal (Mr. Simpson); Onderstepoort (Dr. Theiler), M.T.2, 22.V.10, 721; 1168 labelled. Gough records one female taken 6th April, 1909.

Varieties.—Two marked varieties have occurred, one *v. umbrosa*, Theobald, (1903) in Gambia, and the other *v. subumbrosa*, Theobald (1903), in Gambia and in the Sudan.

In the former the costa is black, unbroken by the typical small pale spots, and the dusky areas cover most of the veins, the pale being restricted to the cross-veins and bases of the fork-cell and on the fifth long vein, while the whole third vein is dark.

In *subumbrosa* the costa is black at the base, and the third long vein is pale scaled in the middle, and there are also pale areas on the fourth, fifth, and sixth long veins.

I have not seen either from the Transvaal.

Myzomyia rhodesiensis, Theobald (1901).
Anopheles rhodesiensis, Theobald (1901).
 Mono. Culicid., I, 184; and III, 35 (1903).

(Plate I.)

This species resembles *M. funesta*, Giles, but can at once be told by the following characters:—

- (1) Wing fringe unspotted;
- (2) veins practically all brown scaled, except first long vein;
- (3) legs unbanded;
- (4) palpi thinner and longer and with only two pale bands, apical portion dark, a few pale scales at base of the apical segment;
- (5) costal dark areas more regular than in *funesta*.

Habitat.—Rhodesia; Mashonaland; Uganda, Bank of the Lualaba River, Congo Free State; Natal; Leydsdorp (Dr. Copland); Onderstepoort (1167 m. 100) (Dr. Gough).

This does not seem to be common in the Transvaal.

Dr. Gough records a single female taken end of March at Onderstepoort, in which the white spots on the first vein are not quite symmetrical. On the left wing there is a white spot on the first vein under each costal spot; on the right wing the middle spot is missing on the first vein, but present on the costa.

Myzomyia pyrethoroides, Theobald (1907).
 Mono. Culicid., IV, 48 (1907).

Thorax pale slaty grey, deep rich brown laterally, with a few pale scales in front and pallid hair-like scales over the dorsum and a dark median line. Abdomen deep brown, with traces of false pale basal banding; palpi of male deep brown, with four snowy white bands; apex white. Legs brown, spotted with white and with narrow white apical bands, last hind tarsal dark. Wings with costa with four large and two small black costal spots, the first two and the fourth spread evenly on to the first long vein; a few dark spots on the wing field.

Male.—Head deep brown, with dense black upright forked scales, a small patch of white ones in front; proboscis deep brown; palpi deep brown with four snowy-white bands, one apical, the first two rather closer together than the second and third, third and fourth still further apart, scanty long brown hairs on the last two segments and the apex of the antepenultimate; antennae with bright flaxen plume hairs.

Thorax with a slaty grey irregular median area, deep rich brown at the sides and with a median dark line, some long grey curved scales in front and numerous pale golden curved hair-like scales on the rest of the dorsum; scutellum darker in middle than on the sides, with golden hair-like curved scales and brown border-bristles; metanotum deep brown.

Abdomen deep brown, with pale sheen at the bases of the segments, clothed with dull golden hairs.

Legs deep brown, all the femora and tibiae spotted; first fore tarsals with fine white spots, second and third with narrow apical pale bands;

first mid tarsal with five pale spots, no banding to others; first hind tarsal with six pale spots, and the rest with narrow apical pale bands.

Wings with five black costal spots, the first small, the third the largest, the second about the same size as the fourth, the basal one as long as the third, but confined to the costa, the first, second, and fourth spread evenly on to the first long vein. The third is spread evenly on to the sub-costal, but is broken by a pale spot near the basal end of the first long vein. The costa at the base is black, the area being about as large as the third black spot. Most of the wing scales are dark, but there are pale spots upon the upper branch of the first fork-cell under the pale costal spots and at the base of the fork, and then near the apex of the lower branch, another at the stem at the cross-veins, and then at the base. Third long vein pale scaled, with three black spots, the largest apical, the two other towards the base; a mixture of dark and light scales on the branches of second fork-cell, stem all dark; three large dark patches on upper branch of fifth, one at apex of lower branch, and another at base of the vein; sixth with three large black spots; fringe with pale grey spots where veins join costa, except at the sixth; first fork-cell much longer and narrower than the second, its base nearer base of wing, its stem not quite half the length of the cell; stem of second fork-cell as long as cell; supernumerary cross-vein just behind mid cross-vein and *curved round to join it*; posterior longer than the mid, not quite twice its own length distant from it.

Length.—5-6 mm.

Female.—Wing markings similar to male, but the fourth costal spot is smaller than the second, and the basal black area is represented by two small black spots, actual base yellow. In third vein the apical black spot is not so large as the second. Apical half of lower branch of fifth is dark scaled and the greater part of the apical half of the sixth, a few pale scales, but not yellow ones, separating the long dark area; first fork-cell much longer and narrower than the second; its base nearer the base of the wing, its stem not quite half the length of the cell, stem of second posterior not quite half the length of the cell; supernumerary cross-vein nearer base than mid cross-vein and *curved round to join it*, the posterior about three times its own length nearer the base than mid.

Length.—6 mm.

Habitat.—Pretoria (Dr. Theiler).

Observations.—Described from two males and one female, the peculiar curved cross-vein should at once separate it and also the large wing scales.

GENUS PYRETOPHORUS, *BLANCHARD*.

Pyretophorus costalis, Loew (1866).

Anopheles gambiae, Giles (1902).

Anopheles gracilis, Dönitz (1902).

Besch. ein. Afrik. Dip. Nem., 55 (1866); Loew; Mono. Culicid., I, 157 (1901); III, 74 (1903); IV, 74 (1907); V, 40 (1910), Theobald.

(Plates III and IV.)

Thorax dull brown, with pale creamy curved scales. Abdomen dark, with dense yellow golden hairs. Legs brown, femora and tibiae mottled

with yellow to almost grey spots, tarsal banding involving more or less both sides of the joints; wings with four large and two small black spots on outer costal border, pale area to some extent creamy yellow; below the two large middle spots on the first long vein are two broken black spots, under the other two, two entire black spots (several variations occur, *vide* figures).

Female.—Head brown, clothed with upright, rather broad white scales in front and on the occiput, similarly formed black ones at the sides, a tuft of pale creamy long scale-like hairs project forward between the eyes; antennae brown with pale pubescence, basal segments usually bright brown with white to creamy scales, which also occur on the next two segments of the flagellum; palpi black scaled, apical segment with a pale apical band, almost embracing the whole of the segment, in some specimens quite so, the next two segments also apically banded pale creamy white, the bands being narrow; proboscis blackish and brown, labellae pale.

Thorax brown, with slaty and dusky median and lateral lines, with numerous scattered, creamy yellow narrow-curved scales and pale hairs; scutellum dark, with pale creamy scales, almost white in some old specimens; pleurae deep brown with grey areas.

Abdomen dark with long golden hairs, especially dense apically.

Legs with femora and tibiae brown, spotted and mottled with yellow to grey scales; in the fore legs the joints are broadly banded with pale yellow, the bands involving both sides of the joints; in the mid and hind legs these bands are not so pronounced, and only now and then spread to the bases of the segments, the bands being mainly apical. Ungues equal and simple.

Wings with four large and two small black spots on the costa, the two median large ones the longest; on the first long vein is a black area under the apical spot and two under the next costal spot, two under the third, a single one under the fourth; a black patch at the tip of each vein and one at the fork of the first sub-marginal cell. On the stem of the first fork-cell, just at the fork and under the third costal spot, is a small patch, another on each side of the mid cross-vein on the third vein, another at the fork of the fourth vein and one on each branch of the second posterior cell and another past the cross-veins; two on the stem of the fifth, with three on its upper branch, and three on the sixth; first fork-cell longer but little narrower than the second, its base, if anything, a little nearer the apex of the wing than that of the second posterior cell, its stem about two-thirds the length of the cell; stem of the second posterior cell about equal in length to the cell; mid cross-vein not quite half its own length from the supernumerary, but subject to variation, sometimes being almost in a line with it; posterior cross-vein from one and a half to two and a half times its own length distant from the mid cross-vein. Fringe dark, with pale areas where the veins join the border of the wing.

Length.—3-4.5 mm.

Male.—Antennae dusky yellowish brown with darker plume hairs; palpi with the two swollen apical segments, mostly creamy scaled, and

the antepenultimate segment with a narrow creamy band at the apex, hair tufts brown to flaxen brown; proboscis thin, dark brown, pale at the apex.

Abdomen narrower than in the female, dark and pale ochreous brown with silvery grey markings, and a median dorsal line and pale line on each side, pale basally and with long hairs, genitalia with yellowish scales.

Wings marked as in the female.

Length.—2·5–4·5 mm.

Habitat.—Caffraria; Mashonaland; Sierra Leone; Gambia; Calabar; Lagos; Nigeria; Togo and Cameroons; Entebbe, Naniumba, Kamuli, Gabula Country, Busago, Sambroa in Bukedi Country, Bikira, Buddu in Uganda; British Central Africa; Banks of Lualaba River, Zambri, Boma, Princes Island, Matadi, Tumba, Wathen, Leopoldville, Telegraph Post No. 4, Kitoto, Yumbie, above Lukolela (in bush), Irebu, Coquilhatville, Bamamia, Lulongo, Nouvelle Anvers, Bokanga, Lisala, Bumba, Yaminga, below Basoko (in bush), Stanley Falls, Benaburungu, Lokandue, Sendowe, Makula, Kasongo, Tshofa, Lusambo, Lado Enclare, in Congo Free State; Natal; Delagoa Bay, East Africa; Sengar and Roseires on the Blue Nile; Khartum; Reunion; Madagascar; Phoenix and Vacoa, Pre, Seche, Maheburgh, etc., in Mauritius.

In the Transvaal it is recorded from Leydsdorp (Dr. Copland) and Onderstepoort (Dr. Theiler and Dr. Gough). Dr. Gough records that this is the commonest anophelid at Onderstepoort in March and April. He took 153 specimens from March to May.


The following are the data on the labels of the Onderstepoort specimens sent me:—

Onderstepoort: 18.IV.09, 73; 5.IV.09, 203; III.09, 4; 17.IV.09, 69; 5.IV.09, 206; 5.IV.09, 197; 5.IV.09, 198; 5.IV.09, 202; 55; 13.IV.09, 150; 18.IV.09, 64; IV, 09, 173; 17.IV.09, 83; 5.IV.09, 209; 5.IV.09, 195; 52; 9; 13.IV.09, 82; 13.IV.09, 156; 20.IV.09, 29; IV.09, 177; 5.IV.09, 212; IV.09, 151; IV.09, 171; IV.09, 176; 20; 36; 38; 41; 5.IV.09, 196; 5.IV.09, 210; IV.09, 161; III.09, 148; 20.IV.09, 91; 18.IV.09, 77; 12.IV.09, 96; 20.IV.09, 26; 13.IV.09, 139; 34; 42; 5.IV.09, 181; 40; 48; 50; 44; 5.IV.09, 117; III.09, 3; 2.V.09, 18; 21.IV.09, 88; 20.IV.09, 23; IV.09, 163; 5.IV.09, 194; III.09, 159; 33; 5.IV.09, 200; 39; 18.IV.09, 66; 13; 20.IV.09, 22; 17.IV.09, 61; 17.IV.09, 75; III.09, 154; 5.IV.09, 192; 5.IV.09, 199; 5.IV.09, 185; IV.09, 174; IV.09, 179; M.T. 2.21.10, 590; 20.IV.09, 21; 21.IV.09, 68; 17.IV.09, 20; IV.09, 167; IV.09, 166; 46; 58; 16.IV.09, 72; 3.IV.09, 178; 1167.c., 100; 1167.c., 101; 1167.c., 101; III.09, 188; III.09, 10; 5.IV.09, 190; III.09, 97; IV.09, 177; 5.IV.09, 214; 5.IV.09, 211; III.09, 5; 5.V.09; 13.IV.09, 162; 17.IV.09, 65; IV.09, 170; 43; III.09, 183; 53; 5.IV.09; IV.09, 153; 98; 29.IV.09, 217; 5.IV.09, 204; II.09, 7; 21.IV.09, 92.

Varieties of P. costalis.

The four marked varieties occur in the collection reported on :—

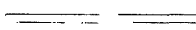
Variety I—

Wing spots  Six specimens, females.

All other characters the same as in the typical specimens.

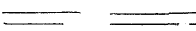
Onderstepoort, 13.IV.09, bred, 146; IV.09, 164; 2.V.09; 14; 15; 45.

Variety II—

Wing spots  Two females.


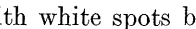
Onderstepoort, III.09, 2; 29.IV.09, 219 (Gough).

Variety III—

Wing spots  Fifteen females.

Onderstepoort, Trap. 5.IV.09, 175; 19; 73; III.09, 133; eight labelled *P. merus*; 5.V.09 (labelled *P. ardensis*); 17.IV.09, 78; 60; 1 (labelled *P. merus*); III.09; 21.IV.09, 67; III.09, 71 (labelled *P. merus*); 13.IV.09, 160, bred; IV.09, 169; 32; 20.IV.09, 28; 20.IV.09, 25.

Variety IV—

Wing spots  right wing;  left wing; palpi with white spots between the bands. 20.IV.09, 220. Onderstepoort. (Gough.)

In Vol. I of the Monograph of Culicidae, p. 161, three other variations are shown and reproduced here :—

		Normal.
		Variety.
		Variety.

P. costalis. Variety *melas*, Theobald.

Mono. Culicid., III, 76, 1903.

This dark or melanic form (a female) differs from the type in the absence of pale costal spots, one only reaching the actual costa, the whole wing field in dark and the legs pronouncedly spotted.

The markings on the first long vein are quite normal.

Gambia in December.

Pyretophorus marshallii, Theobald (1903).

Mono. Culicid., III, 78 (1903).

Close to *P. costalis*, but can at once be told by the female having two broad white palpal bands, the third basal one being small.

Habitat.—Salisbury, Mashonaland; Boma, Leopoldville, Coquilhatville, Yaminga, Congo Free State; Onderstepoort, Transvaal, two females taken in March and beginning of April, both damaged (long flown). (Dr. Gough.)

Observations.—I have not seen any specimen of this insect from the Transvaal, and record it on Dr. Gough's authority.

Pyretophorus quadriannulatus, nov. sp.

(Plate I)*

Thorax fawn coloured, slightly darker at the sides and behind, a dark median line and pale golden scales. Palpi thin with the basal third thicker with outstanding scales, black with four narrow white bands, apex white. Abdomen brown, with dull golden pubescence. Legs brown, femora and tibiae mottled, metatarsi with a few spots, fore and mid tarsi with pale bands involving both sides of the joints, hind with narrow apical pale spots. Wings with four large and two small black costal spots.

Female.—Head black, clothed with grey upright forked scales, dark ones at the sides, a few narrow-curved white scales in front, and a scanty long tuft of thin white hair-like scales projecting forwards; antennae dark brown, with brown hairs, a few pale scales on the basal segment of the flagellum, which is rather large and swollen. Last three segments of palpi thin and scantily clothed with scales, at the base of the third they

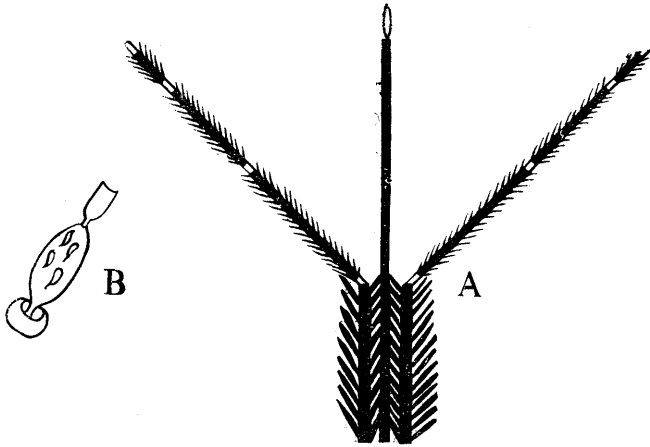


FIG. 1.

Pyretophorus quadriannulatus, n. sp.

A. Female palpi and proboscis. B. Basal segments of antenna.

are elbowed from the fourth which has longer and more outstanding scales giving a bushy appearance; black with four narrow black bands, one apical, the third nearly twice as far from the second as the second is from the apical, the fourth at the bend; proboscis deep brown, pale at the apex.

Thorax fawn coloured in some lights, with a dull slaty sheen in others, with a dark area on each side in front, a brown median line and a brown line on each side behind, clothed scantily with pale narrow-curved scales and a cocade of grey ones in the middle line in front projecting forwards, hairs brown with golden reflections; scutellum grey brown in the middle with brown border-bristles with golden reflections, and with a few narrow grey scales; metanotum brown with a dark median line; pleurae pale brown, and brown with golden reflections.

* For *quadripunctata* in Plate I read *quadriannulatus*.

Abdomen brown, hairy, hairs long, brown at sides, on the dorsum, short curved ones, which are dull golden.

Legs deep brown; femora, tibiae, and metatarsi slightly spotted, fore legs with pale tarsal bands involving both sides of the joints except on the last tarsal, which is unbanded; in the mid and hind legs the tarsi have very small pale yellow apical bands.

Wings with the outer costal border with four large and two small (basal) black spots, the apical one smallest of the four and passing evenly on to the first long vein, the second more than twice the length of the first and passing for only part of its length on to the first long vein, the third, the largest, represented on the first long vein by one long area and a small spot, the fourth the same size as the second and passing evenly on to the first long vein, the fifth very small and the sixth long, passing to the root of the wing, neither spread on to the other veins; the second long vein with the branches dark scaled, each with a small pale spot, the stem pale, with a dusky spot on each side of the cross-vein, the third vein pale with a dusky apical spot and a small black spot on each side of the cross-vein, the fourth mostly dark scaled, a small pale spot at the base of the fork and two on the inner branch, pale towards the base; the fifth with the outer branch dark, with a small pale spot at the cross-vein, the inner branch and stem yellow with a dark spot at the apex and another near the base; sixth yellow with three black spots; fringe with a pale spot at the junction of each vein with the costa; fork-cells short, nearly equal in length, the first slightly the longer, its base a little nearer the apex of the wing, its stem about two-thirds the length of the cell, stem of the second fork-cell nearly as long as the cell, supernumerary and mid cross-veins close together, the posterior nearly three times its own length distant from the mid.

Length.—4.2 mm.

Time of Capture.—3.V.09. (Dr. Gough.)

Habitat.—Onderstepoort (Dr. Gough).

Observations.—Described from a single perfect female.

The four annulations to the palpi are marked and so is the general form of the palpi, which appear elbowed, and the basal area shaggy; the second swollen segment of the antennae is also marked, and so are the hairs of the abdomen.

The specimen was labelled *P. ardensis*, Theobald. It is not that species, but comes near it.

Pyrethophorus albipes, nov. sp.

(Plate V.)

Thorax slaty grey in middle, dark brown at sides. Abdomen dark with golden hairs, densest apically. Palpi white at apex, a similar white band with equal dark intervening space and a small third white band; proboscis pale at apex. Fore and mid legs with small yellow apical bands, the hind with the same, but the last two tarsi white and the apical band on the next two broad. Wings mostly yellow scaled, the outer costal border yellow at apex with a small black spot, remainder black with two small yellow spots.

Female.—Head deep brown, with grey upright scales over most of the surface, some rather long narrow-curved grey ones in front and two very long tufts projecting forwards in front of them, at the sides of the head project outwards and to some extent at the back black forked-scales; golden hairs project forwards over the white tufts and dark ones at the sides; clypeus dark; palpi brown, testaceous apically, with almost black scales and three white bands, the apical one and the next about equal and rather broad, separated by an equal-sized dark area, the white involves both sides of the joints, the third more basal band is very small, the dark

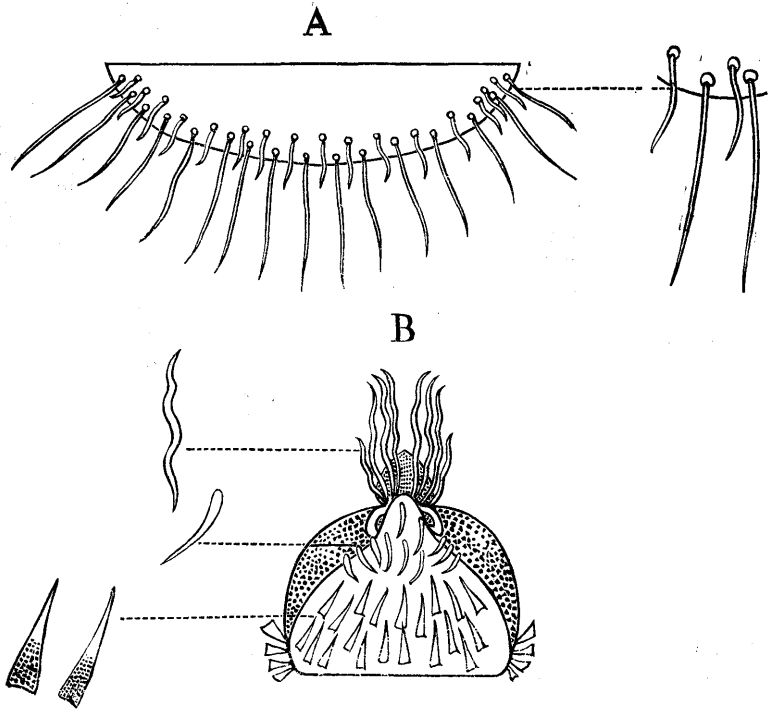


FIG. 2.
Pyretophorus albipes, n. sp. Female.
A. Scutellum. B. Head. (Greatly enlarged.)

scales below this are larger and more outstanding than the rest; proboscis deep brown, apex pale; antennae brown, basal segment bright reddish yellow, the verticillate hairs dark, pubescence pale, the basal segments of the flagellum have also small pale scales, basal segments show a trace of dusky scales.

Thorax slaty grey in the middle with narrow-curved pale golden scales, more creamy coloured in front and a tuft of longer creamy ones in front in middle line projecting over the head, the sides deep brown, hairs golden and brown; scutellum dark in the middle, pale on each side with bright brown border-bristles and a row of long thin white scales just behind, rather clustered at the sides; prothoracic lobes with hairs; metanotum deep brown.

Abdomen almost black with golden hairs, most dense apically.

Legs brown, the apices of the fore metatarsi and first and second tarsals with a broad creamy band, last two segments dark, in mid legs there is a small pale spot at the apex of the tibiae, metatarsi and first two tarsals; in the hind legs there is a pale spot at the apex of the tibiae and metatarsi, a white apical band on first tarsal, most of the second white, except for a narrow black basal band, last two segments all white; ungues equal and simple.

Wings with most scales pale yellow, outer costal border mostly black, with two nearly equal pale yellow spots and a small one nearest the base, the first long vein has a small black spot near the apex under the apical costal spot, a long black area under the second black costal area and a black spot towards the base; the subcostal has two black areas, the base pale and a pale spot under the pale costal spot; the second with an indistinct dusky spot near the apex of each branch and a few dusky scales on each side of the cross-vein on the stem, third with a small dusky spot at the apex and at the base; fourth with two dusky areas on the outer branch, the basal one largest and a dusky scaled area on the stem up to the cross-vein; fifth vein with a small dusky spot at the tip of each branch and a long dark area on the outer branch at the base, of flat scales, a small black spot near the base of the vein; sixth vein with a dark apical area and another dark area towards the middle; fringe with a pale area where each vein joins the costa, border scales pale yellow; first fork-cell longer than the second, about the same width, its base nearer the base of the wing, its stem rather more than one-third the length of the cell, stem of the second fork-cell about two-thirds the length of the cell; mid cross-vein about its own length nearer the apex of the wing than the supernumerary, and about one and a half times its own length distant from the posterior.

Length.—4 mm.

Time of Capture.—17.III. (M.T. 3), 202, and 3.IV.10 (M.T. 2.375).

Habitat.—Onderstepoort, Transvaal.

Observations.—Described from two females. A very marked species with yellowish and black wings and pronounced leg ornamentation. I can detect no abdominal scales and the vein scales differ to some extent from a typical *Pyretophorus*.

The female described by Dr. Gough as my *P. aureosquamiger* reads very much like this insect, but there are certain notable differences between them, and it is probable that Gough's species is quite distinct.

Pyretophorus aureosquamiger, Theobald (1907).

Mono. Culicid., IV, 73 (1907).

(Plate VI.)

Thorax deep slaty grey in the middle, deep brown on each side with golden spindle-shaped scales. Palpi deep blackish with four white bands. Abdomen deep blackish brown with dull golden hairs. Legs deep brown,

spotted with pale creamy yellow and banded with white, the last two hind tarsals all white and nearly all the third, which has a broad black band of varied length. Wings mostly dark scaled with three white costal spots.

Female.—Head black with ochreous upright forked scales in the middle, black ones behind and at the sides, and a few narrow-curved and flattened pale ones in front, some pale hair-like scales projecting forwards. Palpi clothed with black to brownish-black scales, outstanding at the base with four narrow white bands, one apical, the second rather close to it, the third further off, the fourth still further off; proboscis almost black; antennae deep brown with pale bands.

Thorax deep slaty grey in the middle, deep brown at the sides, clothed with short, rather broad, rich golden spindle-shaped scales; dark brown chaetae over the roots of the wings, paler ones below; scutellum deep slaty grey with similar golden scales to the mesonotum and deep brown border bristles (two specimens show the scutellum dark in the mid region, paler at the sides); metanotum dark. In the type the mesonotum shows some dark lines and some minute black specks.

Abdomen black with dark brown and black hairs, one specimen shown them deep brown and almost golden.

Legs deep blackish brown, femora and tibiae spotted with yellowish white, the first tarsal segment with three white bands, one apical; the mid first tarsal with the bands much smaller in the type (slightly in other specimens), the hind with six small spots; the first two tarsals in the fore legs broadly white banded at the apex, in the mid legs narrowly banded, in the hind legs the first has a broad apical white band, the third nearly all white in the type, which has a minute black basal band, in others this band reaches nearly to one-third the length of the segment, the last two segments white; ungues equal and simple.

Wings mostly dark scaled, scales large and almost *Myzorhynchus* like; three small pale costal spots, or four if the small apical area is included, the first and second (not including the apical) spread evenly on to the first long vein, the third spreads evenly on to the sub-costal and unevenly on to the first long vein, the apical spot embraces the branches of the second; a few scattered pale scales on the second and branches, scattered small spots on the others, a large pale area on the inner branch (near base) of the fifth; fringe with pale spots at the junction of all the veins. First fork-cell considerably longer and slightly narrower than the second, its base much nearer the base of the wing, its stem about one-fourth the length of the cell; stem of the second posterior cell quite as long as the cell; mid and supernumerary cross-veins nearly in a straight line, the posterior about twice its own length distant from the mid.

Length.—6 mm.

Habitat.—Pretoria (Dr. Theiler); Onderstepoort (Dr. Gough).

Time of Capture.—III and 10.IV.09. (Dr. Gough.)

Observations.—Described from two females sent me by Dr. Theiler from Pretoria. In the collections recently examined two females labelled by Dr. Gough as *Myzorhynchus natalensis*, Hill and Haydon, taken at

Onderstepoort, are this species. Some other details of venation have been added to the type description.

The basal black band on the second hind tarsal is wider than in the type, and the wing spotting varies in both specimens in this new collection, but they are undoubtedly all one.

Pyretophorus cinereus, Theobald (1901).

Mono. Culicid., I., 161 (1901).

(Plate II.)

Thorax with a broad grey median area, dark brown at the sides, with silvery grey to almost golden (according to age of specimen) narrow-curved scales. Abdomen dark brown, apical borders of the segments darker than the rest, covered with dull golden brown pubescence. Legs long and thin, black, bases pallid, knee spots and apices of tibiae pure white, apices of metatarsi and tarsi narrowly yellow banded on the fore and hind legs.

Wings with three large and two small basal white spots on the dark costa, wing field mostly creamy scaled with dark patches, fringe with pale spots except at junction of the sixth with costa.

Female.—Head black, ashy grey or paler around the eyes, covered with thick, black upright forked scales, except two patches of white ones on each side of the middle line in front; a small tuft of white hair-like scales projects forwards between the eyes, and also a few golden bristles and behind them some rather long creamy narrow-curved scales. Antennae brown, basal segment dark in some, testaceous in others, base of second segment testaceous, second segment rather long, equal to about two of the following, with small flat pale scales, a few of which also occur on the basal segment; palpi thin, straight, of nearly equal thickness, but the more outstanding scales near the base make them appear larger, dark scaled with four white bands, three involving both sides of the segments, the last band apical; proboscis thin, as long as the palpi.

Thorax grey in the middle, with a median dark line and now and then traces of lateral dark lines, the sides deep brown, covered irregularly with rather long narrow-curved pale scales, which become thinner and pale golden brown before the scutellum in the middle, over the head a dense cocode of pale long scales, there are three rows of brown bristles, often tipped with golden and most prominent before the scutellum; scutellum in type black with grey sheen and slight testaceous hue on lateral lobes, in others greyish with testaceous sheen and darker in the middle; border bristles pale golden brown to brown, and some long thin pale scales (almost hair-like); metanotum deep brown; pleurae dull, paler brown.

Abdomen deep brown, with dull golden and golden brown hairs.

Legs rather thin and long, dark, almost black, coxae and trochanters pale yellowish white, contrasted with the dark femora, apices of femora and tibiae white, apex of all the metatarsi and tarsi except the last with a pale creamy band, least prominent on mid leg; hind metatarsi longer than tibiae.

Wings.—Costa black scaled with three large pale yellowish spots and two small basal ones, the median of the three large ones the largest; the pale scales extend on to the first long vein which has also pale scales at the base and a small spot under the middle large dark costal spot; two small dark spots on the outer branch of the first fork-cell, one on the inner branch, and one at the base; the greater part of the third vein pale with three black spots; two on the outer branch of the second fork-cell and one on the inner branch, one at the base and another on the stem; three dark spots on the outer and one on the inner branches of the fifth long vein; one at the fork and another dark spot near the base of the fifth vein; the sixth mostly pale with three black spots; first fork-cell longer, sometimes slightly narrower, at others as wide as the second fork-cell, its stem not quite so long as the cell, stem of the second fork-cell longer than the cell; posterior cross-vein from its own length to rather more distant from the mid; fringe with pale spots at junction of fourth and fifth veins with costa, traces on third and second.

Habitat.—Salisbury, Mashonaland; Zomba; Cape Colony; Pretoria (Dr. Theiler).

Onderstepoort in Transvaal, labelled as follows: III.09 (57); 5.IV.09 (94), Dr. Gough; M.T., 3, 8.IV.10 (460); 3.09 (184); 5.IV.09 (98), and two unlabelled.

Pyretophorus transvaalensis, Carter (1910).

Entomologist, Oct., 1910, p. 237.

(Plate V.)

Thorax slaty grey in the middle, with a median dark line in front, becoming obscure in the middle and expanding posteriorly, a narrow dark line on each side except just in front, and deep brown lateral areas, grey scales and golden hairs. Abdomen deep brown with dull golden hairs. Palpi with two equal white bands, one apical and a third small band basal. Legs deep brown with minute apical pale bands. Wings much as in *P. costalis*.

Female.—Head black, with dense black upright forked scales behind, snowy white ones in front and some snowy white long narrow-curved ones and two tufts of long wavy white ones projecting forwards, above which are a few long dull golden hairs, projecting over the eyes are four (? five) curved long black chaetae; palpi thin, black, with two broad white bands, one apical, separated by a similar length of black, a small third white band; proboscis thin, black, apex pale; antennae black with black verticillate hairs and pubescence with pale grey reflections, basal segments of the flagellum with snowy white scales, basal segment dark.

Thorax slaty grey in the middle, deepish brown laterally, the grey area with rather long white scales which form two cocades in front over the head, a double median row of golden hairs and another row on each side, a dark median line in front, which becomes faint and then prominent before the scutellum, and one on each side except just in front, viewed in certain lights the hairs are dusty; scutellum slaty grey except at the

base and mid region, with brown border bristles and some long irregular grey scales on the border ; metanotum black with grey reflections, especially on two lateral spots.

Abdomen deep brown with dense brown hairs, tipped with dull golden reflections. Legs deep brown with traces of narrow pale apical bands on the metatarsi and tarsi, most prominent on the hind legs, ungues equal and simple.

Wings with four large and two small basal black outer costal spots, the first spreading evenly on to the first vein and outer branch of the second, the second with a pale spot on the basal half of the first long vein, the third spreading evenly on to the sub-costal and on to the first vein, but broken by a pale spot towards base of wing, the fourth spreading evenly on to the sub-costal and first vein, the two small ones not passing on to the other veins ; the second vein with a small spot apically and a long dark area basally, some dusky scales each side of the cross-vein ; third mostly pale, a dusky spot at apex and another small one on each side of the cross-vein ; the fourth with two dusky areas on the outer branch and traces of two on the inner, the stem up to the cross-vein mostly dusky scaled and some dusky scales half-way between the cross-vein and base ; fifth with a dusky spot at apex on outer branch and another before the cross-vein, from the latter to junction with inner branch dark, inner branch with a long dark apical area and a small spot at the base, stem with a small spot near the base ; sixth vein with a small dark area near apex and another in the middle ; fringe with pale spots at the junction of all the veins, border scales pale at junctions of the veins with costa, brown between. First fork-cell considerably longer and slightly narrower than the second fork-cell, its stem about half the length of the cell, its base nearer the base of the wing than that of the second, stem of the second as long as the cell ; mid cross-vein about half its length nearer the apex than the supernumerary, posterior cross-vein more than its own length nearer the base than the mid. Halterers with dusky knob.

Length.—3·5–4 mm.

Time of Capture.—23 and 31.III.10, No. 241 ; 351 ; 100 ; 1167 ; (M.T. 1, and M.T. 3).

Habitat.—Onderstepoort, Transvaal (Dr. Gough) ; Leydsdorp (Dr. Copland).

Observations.—Described by Carter from specimens from Leydsdorp. I have added some extra characters from two females from Onderstepoort. A marked species with slaty grey median thoracic area and dark sides, narrowly banded (apical) legs, no spotting and marked lines on the thorax.

A third specimen (No. 241, 23.III.10) resembles the type in all respects save that the wing markings on the outer costal area vary as follows :—The pale spot on the first long vein on the dark area under the second costal spot is more apical than basal, and the basal small dark spot on the first under the third costal spot is absent.

The thoracic hairs are all brown, not golden, but all other characters agree.

PROBABLY A NEW PYRETOPHORUS.

Under the heading "*Pyretophorus aureosquamiger*, Theobald, a single female taken 2nd May, 1909", Dr. Gough describes an anopheline as follows:—

"Head, covered with upright scales, white in front, passing through grey to black behind, a double tuft of long white hairs in front projecting over the bases of the antennae.

"Antennae, brown, with white hairs and pubescence. White flat scales on the first five joints. Palpi black, with three white rings, a narrow apical one at the end of the first joint, a broad one covering the apex of the second and base of the third, and a broad one covering the apex of the third and the whole of the fourth joint.

"Proboscis, black with light brown tip. Thorax slaty grey above, with three narrow black stripes, the median twice as broad as the other two, dark brown on the sides, with a horizontal white line running to the base of the wings. Pleura with three white stripes arranged in a Z. Legs dark brown, almost black.

"Femur and tibia mottled with lighter gold brown, the contrast in the two colours being very slight, with very narrow apical bands or patches of white. Metatarsus dark brown, with broad white apical ring. Tarsus of first and second pairs with broad white apical bands to all joints except to the distal two, tarsus of hind legs, first joint for the first three-quarters brown, apex and last quarter white; second joint brown at the base, the rest and the two ultimate joints pure white.

"Abdomen dark brown, densely covered above with longer and shorter golden hairs, the longer ones towards the sides, the shorter towards the middle. Lower surface scantily strewn with scattered brown hairs, a flat scale here and there (not more than six).

"The wings have the general appearance of a *Pyretophorus costalis*, with four yellowish patches, black being predominant, apex yellowish, a small black spot in the middle of the curve of the wing spreads on to the first vein and interior branch of second vein, the second black patch commences just proximally of the curve and spreads on to the first vein, being interrupted from the middle to the inner quarter. The second black patch is about twice as long as the third yellowish patch.

"The third black patch is rather longer than the second; it spreads evenly on to the first vein; it is followed by a very short light patch; the proximal portion of the costa is black, the black spreading only at its distal extremity on to the first vein, which is light at its base. The second vein has a dark spot on each side of the cross-vein and a dark spot on each of the branches; the fork is light.

"The third vein is light except a small black spot at the tip, and a small black spot on each side of the cross-veins.

"The fourth vein has a dark patch distally to the cross-veins; two dark patches on the upper and two on the lower.

"The fifth vein has a long black patch commencing at the fork on the interior branch, followed by a light dot and a dark spot, again followed by a light spot, tip black, lower branch with a black dot near the tip. Sixth

vein with three dark spots, middle ones largest, proximal one minute; the veins are all tipped with yellow, and all except the posterior branch of the second have a small spot near the margin.

“Fringe; apex yellow, a black spot between the branches of the second vein, next black spot after the third vein, rest black, with a yellow spot at the termination of each vein. The first fork-cell is much longer than the second, its fork being considerably nearer the base of the wing than that of the second.

“The specimen differs in some respects from the two described by Theobald, and may possibly be distinct. The flat white scales on the under surface of the abdomen make this species appear to be a connecting link between the genera *Pyretophorus* and *Myzorhynchus*; the white ends to the hind legs also somewhat suggest a relationship to the latter genus.”

This is probably a new species and should at once be told by the Z-shaped pleural markings.

GENUS *CELLIA*, *THEOBALD*.

Cellia squamosa, Theobald (1901).

Anopheles squamosa, Theobald (1901).

Mono. Culicidae, I, 167 (1901); III, 109 (1903); V, 70 (1910).

(Plate VII.)

Thorax black, with white scales; black pleurae with three almost parallel white lines; black abdomen, scaly, with black lateral tufts, scales dark and some dull ochreous, hairs brown and golden.

Legs dark, mottled with creamy and white. Wings with black costa with three small median white spots and still smaller white basal ones and another at apex; veins black and yellow scaled; fringe dark.

Female.—Head almost black, with black upright forked scales, except for a few almost white ones in front; antennae dark, basal segment deep brown with white scales, also some similar scales on the next four segments; palpi densely scaled with dark scales, with three narrow white bands, one apical.

Thorax black, with flat spindle-shaped scales more or less arranged in lines and with black bristles, the lateral scales are somewhat longer and stand at right-angles to the surface. Scutellum black with white spindle-shaped scales and black border bristles, sometimes showing dull golden reflections; metanotum black; pleurae black with three white horizontal lines.

Abdomen black, covered with black and bronzy scales and a few dull ochreous ones in the middle, each segment with prominent lateral tufts of black outstanding scales; abdomen is densely hairy, hairs brown and golden.

Wings with the costa deep black with three distinct small white spots in the middle, two smaller ones basally and two very small ones apically, some of them pass over on to the first long vein but very irregularly; most of the veins dark scaled, lateral scales somewhat clavate, always dark but paler on the pale scaled areas of the veins; the median scales are creamy white on most of the third long vein, the black forming three

spots; a small patch on each branch of the second fork-cell, a large patch on each branch of the fifth vein and another on the stem, and two large patches on the sixth long vein; fringe uniformly brown. The lateral scales, even on the pale areas, are dusky so that the pale spots do not show up very clearly; first fork-cell much longer and a little narrower than the second, the base nearer the base of the wing than that of the latter, its stem less than half the length of the cell; stem of second fork-cell as long as the cell; mid cross-vein about half its length nearer the base of wing than the supernumerary, posterior cross-vein longer than mid, more than its own length nearer the base wing.

Legs with the femora dark brown to black, tibiae and metatarsi of fore legs mottled with numerous white scales, apices of first and second tarsal segments of the fore and mid legs with broad white bands; hind legs with femora swollen, dark with white patches, one large patch near apex, apex white; tibiae mottled black and white; metatarsi and first three tarsi apically banded, last all dark.

Length.—5·5 mm.

Habitat.—Mashonaland; British Central Africa; Kajira, Masawa Country, West Lusinga Islands, Kaviardo, Uganda; Bahr el Ghazal; Kafé el Dewar, Egypt; Bihe, Angola; Natal; Madagascar.

In the Transvaal it seems common.

Mr. Simpson sent me specimens, but no definite localities.

It is recorded from Pretoria (Dr. Theiler), and a large series occurs in the collection recently received from Onderstepoort. The latter are labelled as follows:—

Onderstepoort: M.T. 3, 31.III.10, 250; M.T. 2, 21.III.10, 224; M.T. 2, 12.III.10, 167; M.T. 3, 5.IV.10, 412; M.T. 3, 15.III.10, 183; M.T. 3, 26.III.10, 290; M.T. 3, 30.IV.10, 673; M.T. 2, 23.III.10, 244; M.T. 2, 3.IV.10, 374; M.T. 1, III.10, 120; M.T. 3, 26.III.10, 292; M.T. 3, 25.III.10, 276; M.T. 2, 23.III.10, 245; M.T. 2, 31.III.10, 342; M.T. 2, 5.IV.10, 399; M.T. 2, 31.III.10, 340; M.T. 2, 16.IV.10, 529; M.T. 2, 5.IV.10, 398; M.T. 3, 23.IV.10, 610; M.T. 3, 18.V.10, 715; M.T. 2, 18.V.10, 712; M.T. 3, 21.V.10, 720; M.T. 2, 23.IV.10, 606; M.T. 3, 16.V.10, 706; M.T. 3, 16.V.10, 707; M.T. 2, 17.V.7 (?), 709; M.T. 3, 18.V.10, 714; M.T. 3, 2.V.10, 675; M.T. 2, 29.IV.10, 660; M.T. 2, 28.IV.10, 643; M.T. 2, 21.V.10, 718; M.T. 3, 23.IV.10, 608; M.T. 3, 23.IV.10, 611; M.T. 2, 27.IV.10, 633; M.T. 3, 28.IV.10, 658; M.T. 2, 28.IV.10, 641; M.T. 2, 28.IV.10, 642; M.T. 2, 5.IV.10, 401; M.T. 3, 27.IV.10, 718; M.T. 3, 24.III.10, 266; M.T. 3, 2.V.10, 676; M.T. 2, 11.III.10, 159; M.T. 3, 8.IV.10, 459; M.T. 3, 7.IV.10, 451; M.T. 2, 5.IV.10, 402; M.T. 2, 16.IV.10, 528; M.T. 1, 8.III.10, 141; M.T. 2, 7.III.10, 133; M.T. 3, 3.IV.10, 376; M.T. 1, 12.III.10, 165; M.T. 2, 31.III.10, 341; M.T. 11, II.10, 82; M.T. 26, I.10, 45; 5.IV.09, 114; 2.V.09; 12.IV.09, 103; 5.IV.09, 107; 1.IV.09, 111; 6.IV.09, 112; IV.09, 158; 14.IV.09, 109; 5.IV.09, 106; 148; 6.IV.09, 116; IV.09.

Cellia pretoriensis, Gough (1910).

Rept. Gov. Vet. Bac. 1908-1909, p. 117 (1910).

Head similar to *argenteolobata*; thorax slate coloured, with a median line, two curved black lines on either sides converging in front; covered by somewhat scattered narrow-curved white scales arranged more or less in lines or bands, and with black bristles, especially along the lateral black lines.

Abdomen black, with dark brown and ochraceous flat scales and black lateral tufts. Hairs black. Last segment above with flat white scales, denser apically. Basal lobes covered with black scales.

Legs, femur, and tibia, dark brown, mottled, with creamy in front, creamy to yellow behind. Metatarsus dark brown to yellow, with a few lighter scales, and a light apical ring, first two tarsi of each leg apically banded with lighter, terminal tarsus dark brown to brown.

Wings black and white, markings rather variable. The tips of most of the veins, usually of all, are white.

On the costa are an apical white spot, three larger white spots, and two small basal ones. The apical and the three larger spots spread on to the first vein, which has in addition a small white spot near the first larger spot (reckoning from the apex), but between spots one and two. A similar small spot near spot three, but between two and three, and a white base. The number of spots on the first vein varies, however, between five and eight. The second vein is mostly black, as are also the third and fourth. The fifth has two large white patches on the stem, and a large one on each branch (in addition to the terminal spots). The sixth vein has two large white patches in addition to the terminal spot. The fringe always has white patches opposite some of the veins. In some specimens there is a white patch opposite each vein.

This species can be recognized from *Cellia squamosa* and from *Cellia jacobii* by the head and antennae, thorax, and terminal segment of abdomen and by the mostly black third vein. From *Cellia squamosa*, in addition, by the fringe, and from *Cellia jacobii* by the legs.

Eighteen specimens taken in March and April.

Observations.—Described by Dr. Gough from eighteen specimens taken in March and April. The following are records of the specimens sent me:—

Onderstepoort: M.T. 2, 23.III.10, 242; 100, 116, 72; 6.IV.09, 108;
2.V.09; 2.V.09; 3.V.09.

Cellia argenteolobata, Gough (1910).

Rept. Gov. Vet. Bac. 1908-1909, p. 116 (1910).

(Plate VII.)

Head, entire upper surface covered with upright white forked scales and a few black bristles, similar black bristles on the sides. Two tufts of long white hairs project between the eyes. Eyes black with silvery margin.

Antennae, dark brown or black, with black hairs and white flat scales

on the first nine joints, pubescence on the remaining joints, white. Palpi with long black scales, with a few scattered white ones, and four rings of white scales, the apical one very narrow. Proboscis black.

Thorax dark brown, with a median black line, almost covered with white narrow scales arranged more or less in lines or bands, and with black bristles.

Pleura, dark brown, with three white lines forming a Z, white flat scales above the bases of the legs. Legs, femur, tibia, and metatarsus dark brown to black in front, mottled with white, white behind metatarsus, and first joint of tarsus of first leg apically banded with white, last three tarsi black. Metatarsus and tarsus of two hind legs uniformly very dark brown to black.

Abdomen densely covered above with dull ochraceous scales and with black bristles, lateral tufts of black scales. Last segment covered above with similar white scales; basal lobes covered above with white, below with black scales. Under side of abdomen largely clothed with white scales.

Wings, black and white; costa, black with three larger white spots, a minute apical and two small basal spots. The apical spot is continued on to the first vein, as are the larger spots, a smaller white spot midway between the outer two large costal spots; a similar one between the inner two larger costal spots is situated at two-thirds distance from middle and one-third from large spots. Basal portion of first vein pure white. The second vein has a minute whitish spot at its base, a similar one at the fork, the upper branch is tipped with white (as are the veins), the lower branch is white with the exception of its middle third.

The stem of the fourth vein is dusky to black, a small whitish patch at the fork, two small white patches on each upper and lower branches. The stem of the fifth vein is white for its first third, followed by a black patch half as long, then follows a white patch of the same size as the basal one; the last sixth of the stem is black, as is the fork. The upper branch has two short white patches in addition to the terminal spot, the lower branch one long white patch near the base, and a terminal white spot. The sixth vein has two white patches and a terminal spot, being more black than white. Fringe smoky with white (or lighter) patches opposite most of the veins.

Evidently distinct from *Cellia squamosa* and *Cellia jacobi* by the white terminal segment and terminal lobes, scales on head, colour of thorax and legs, and from *Cellia squamosa* by the parti-coloured fringe.

Seven females, Nos. 107, 124, 125, taken end of March, one 6th, 13th, 29th April.

The specimens sent me bear the following labels:—

Onderstepoort: M.T. 3, 26.III.10, 291; M.T. 3, 25.III.10, 273; M.T. 3, 29.III.10, 275; M.T. 3, 23.III.10, 252; M.T. 3, 4.IV.10, 390; M.T. 3, 23.III.10, 251; M.T. 3, 8.V.10, 687; M.T. 1, 22.III.10, 237; M.T. 3, 25.III.10, 274; M.T. 3, 23.V.10, 731; M.T. 3, 23.IV.10, 609; M.T. 3, 27.III.10, 307; M.T. 1, 21.III.10, 220.

GENUS MYZORHYNCHUS, *BLANCHARD*.*Myzorhynchus paludis*, Theobald (1900.)*Anopheles paludis*, Theobald (1900).

Rept. Malarial Com. Roy. Soc., Eng., 75, 1900 ; Mono. Culicid., I, 128 (1901).

Thorax dark brown with dark lines and yellowish curved hair-like scales, almost hairs. Abdomen dark. Legs dark brown, apices of fore and mid metatarsi and first tarsal white, in the hind legs the last three tarsals all white, also apex of the first. Wings with two small pale spots on the black costa, mostly dusky scales.

Female.—Head dark, almost black in some specimens, a few long white curved scales in front, upright white ones in the middle and upright black ones at the sides, a few yellowish hairs in front, some specimens show them dusky at the base and pale golden apically; antennae dark brown, almost black; basal segment dark, with some white or pale hairs, three basal segments of the flagellum with a few white scales; palpi densely scaled with black scales, with four narrow rings of white scales; proboscis black, labellae paler.

Thorax dark brown, with greyish tomentum, some dark longitudinal lines, with scattered yellowish curved hair-like scales; scutellum brown with dusky and dull purplish brown tinges, border bristles vary from brown to pale chestnut brown; metanotum deep brown; pleurae dark brown with some pale reflections.

Abdomen steely black, with a few irregular, deep ochreous areas in some lights, clothed with dark brown and black hairs.

Legs testaceous to testaceous brown with dark scales, making them look almost black, the first tarsal segment of the fore and mid legs with a fine yellow band, hind legs with the tip of the first tarsal white, the last three all pure white; in certain lights the last segments of the fore and mid legs look paler; ungues equal and simple.

Wings clothed with black and yellowish scales, the former predominate; outer costal border with two small pale yellow to almost white spots, one near the apex and the other about one-third of the length from the apex, the apical spot extends on to the first long vein and the upper fork of the second long vein, the second spot on to the first long vein only; there is also a yellow spot further back on the first long vein which does not normally reach the costa, but I have seen it do so in one or two specimens.

Length.—5-5.5 mm.

Habitat.—Leydsdorp, Transvaal (Dr. Copland), one female; Jur, Meshra, Bahr el Ghazal, in Sudan; Sambwa, Bukedi, Kisimbika, in Uganda; Leopoldville, Bama Islands, Bamanna, Eala, Barumbu, Kumba, Kasongo, Lusambo in Congo Free State; Katmiga and Sierra Leone.

Observations.—It occurs widely distributed, but rarely in the Sierra Leone swamps. In the Congo Free State it was caught in forests, marshes, native huts, and in camps.

The adults were bred from larvae taken in stagnant water in marshes and overgrown but fairly clean water left in pits, from which clay had been taken for brickmaking.

This species has been shown on two occasions to certain sporozoites in the salivary glands in Sierra Leone, although taken a quarter of a mile from any human habitation.

- Myzorhynchus mauritanus*, Grandpré (1900).
Anopheles mauritanus, Grandpré (1900).
Anopheles paludis, var. *similis*, Theobald (1901).
Anopheles tenebrosus, Dönitz (1902).

(Plate II.)

Planters' Gazette Press, Les Moustiques, 1900; Mono. Culicid., I, 129 (1901); III, 85 (1903); IV, 88 (1907); V, 53 (1910).

Easily told from the former by the last two hind tarsals only being white. It is evidently abundant in parts of the Transvaal, as shown below.

Pretoria (Dr. Theiler), a long series, no data.

Understepoort (Dr. Theiler and Dr. Gough).

A. 4a, 5032a, 14.II.10, 90; M.S.E., A., 2a, 19.I.10, 24; M.S.E., A., 2, 19.I.10, 23; M.S.E., A., 4a, 8.II.10, 72; M.S.F., 15.IV.10, 554; M.S.F., 18.IV.10, 588; M.T., 2, 23.V.10, 726; M.T., 3, 24.V.10, 734; M.T., 10.II.10, 80; M.T. 2, 23.III.10, 243; M.T. 2, 22.V.10, 722; M.T. 2, 13.V.10, 697; M.T., 5.I.10, 1; M.T. 1, 17.III.10, 199; M.T. 10, II.10, 81; M.T. 2, 20.III.10, 216; M.T. 2, 18.IV.10, 555; M.T. 2, 26.III.10, 283; M.T. 2, 16.III.10, 194; M.T. 7, I.10, 9; M.T., 18.II.10, 93; M.T. 3, 17.III.10, 201; M.T. 3, 9.IV.10, 477; M.T. 2, 24.IV.10, 618; III.09, 149; 10.IV.09, 119; 6.IV.09, 118; 5.IV.09, 126; V.09, 127; III.09, 144; III.09, 138; 6.IV.09, 128; 6.IV.09, 129; III.09, 157; 6.IV.09, 120; 6.IV.09, 121; 6.IV.09, 130; 6.IV.09, 105; 6.IV.09, 123; 1167 m; 1145.

It also occurs in Uganda; Natal; British Central Africa; Cairo; Bahr el Ghazal; Wadi Nutrun, Lower Egypt; Bihe, Angola; Congo Free State; Delagoa Bay; Madagascar; Mauritius; Cape Colony.

GENUS NYSSORHYNCHUS, *BLANCHARD*.

Nyssorhynchus maculipalpis, Giles (1902).

Handbook Mosquitoes, 2nd Ed., 297 (1902), male; Mono. Culicid., III, (1903), female; V. 62 (1910).

(Plate I.)*

Thorax black with narrow-curved white scales. Abdomen black, hairy with a few scales; palpi dark, with three white bands, two broad, one narrow, one broad band apical, the narrow one basal, dark areas of palpi spotted with white scales. Legs black, spotted with white; last three hind tarsi pure white and apex of the first. Wings with most of the veins black scaled, with a few small white areas, costa black with five white spots.

* On Plate I read *Nyssorhynchus maculipalpis*, Giles, for *Pyreophorus maculipalpis*, Theob.

Female.—Head black, with upright white forked scales in the middle, similar black ones at the sides, white curved scales in the middle in front, and a tuft of long white ones projecting forwards; antennae black, four basal segments with white scales, basal segment also with black chaetae; remainder of segments with pale and brown hairs and pubescence; palpi black, ornamented with white as follows: a narrow apical ring on the long second segment, which is densely scaled with black and a few pale scales. The third segment with a broad apical white band and white spots of scales; the fourth segment white at base and apex, the fifth all white; proboscis black; clypeus black.

Thorax black, with scattered narrow-curved, and small, narrow, flat white scales and short golden hairs and dark brown bristles; scutellum black, with similar white scales; pleurae deep and bright brown; metanotum black.

Abdomen black, with dense dark brown hairs; a few scales only on the apical segment, remainder bare and shiny.

Legs black, femora and tibiae, and to some extent the metatarsi, with small white spots; first anterior tarsi with apical white bands, mid tarsi plain; in hind legs the last three tarsi and apex of the first pure white.

Wings mainly clothed with dusky-black narrow-curved elongate scales, slightly clavate, with white areas as follows: five pure white spots on the costa, the two apical ones and the fourth spreading on to the first long vein which is also at the base, a small white patch on the lower branch of first fork-cell, a few white scales at base of the fork, a small white spot about the middle of the third long vein and another near its base; one small white spot on each branch of second fork-cell and one at the base; three white spots on the outer and one large one on the inner branch of the fifth and two on the stem; apex and base of sixth white and a broadish median white spot; fringe all dark; first fork-cell longer and narrower than the second fork-cell, its base nearer the apex of the wing than that of the latter; supernumerary cross-vein half its length nearer the apex of the wing than the mid, the mid about twice its own length distant from the posterior cross-vein; stem of first fork-cell about two thirds-the length of the cell; stem of the second fork-cell longer than the cell.

Length.—5-5.8 mm.

Habitat.—Mashonaland; Angola, West Africa; Mauritius; Leydsdorp, Transvaal.

Observations.—Evidently common in parts of Africa. Dr. Copland's series from Leydsdorp consisted of thirty males and females. It is not common in Mauritius.

Nyssorhynchus pretoriensis, Theobald (1903).

Mono. Culicid., III. 79 (1903); V, 59 (1910).

(Plate VI.)

Very like *N. maculipalpis*, Giles, but the palpi are longer and not mottled, and the two apical bands are further apart. The hind tarsi have also different ornamentation, the second hind tarsus having a small black

patch near its base; the metatarsus is mottled black and white and has a broad white apical band like the tarsal.

Length.—5 mm.

Observations.—The larvae have simple frontal hairs. Dr. Theiler observed this species first on 10th February, and it gradually became more prevalent, superseding the other common species (*cinereus*) in April. It is subject to some variations. It is spoken of as the black anopheles in Pretoria.

Habitat.—So far only recorded from Natal and the Transvaal, evidently common in the latter. Pretoria (Dr. Theiler); Leydsdorp (Dr. Copland); Onderstepoort (Dr. Theiler and Dr. Gough).

Onderstepoort: M.S.E., 8.II.10, A, 4a, 67; M.T. 2, 5.IV.10, 405; M.T. 3, 18.IV.10, 564; M.T. 3, 21.III.10, 229; M.T. 2, 4.IV.10, 383; M.T. 2, 26.IV.10, 739; M.T. 3, 8.IV.10, 458; M.T. 3, 21.IV.10, 596; M.T. 3, 12.III.10, 170; M.T. 2, 16.IV.10, 530; M.T. 3, 23.III.10, 254; M.T. 3, 5.IV.10, 428; M.T. 3, 15.IV.10, 525; M.T. 3, 21.IV.10, 595; M.T. 3, 23.III.10, 253; M.T. 2, 21.IV.10, 589; M.T. 2, 26.V.10, 740; M.T. 3, 20.III.10, 218; M.T. 2, 26.V.10, 738; M.T. 2, 19.IV.10, 570; M.T. 2, 26.V.10, 737; M.T. 3, 20.IV.10, 579; M.T. 2, 29.IV.10, 661; M.T. 3, 16.IV.10, 543; M.T. 3, 21.III.10, 228; M.T. 2, 18.IV.10, 556; M.T. 3, 31.III.10, 249; M.T. 3, 21.III.10, 227; M.T. 2, 20.IV.10, 577; M.T. 3, 30.IV.10, 672; M.T. 2, 5.IV.10, 397; M.T. 3, 4.IV.10, 414; M.T. 2, 4.IV.10, 382; M.T. 2, 4.IV.10, 384; M.T. 2, 24.IV.10; M.T. 3, 24.IV.10, 733; M.T. 3, 2.IV.10, 360; M.T. 3, 2.IV.10, 361; M.T. 3, 7.IV.10, 450; M.T. 2, 9.IV.10, 468; M.T. 3, 21.IV.10, 594; M.T. 3, 12.IV.10, 499; M.T. 3, 4.IV.10, 392; M.T. 2, 9.IV.10, 469; M.T. 2, 8.IV.10, 454; M.T. 2, 5.IV.10, 400; M.T. 2, 31.III.10, 339; M.T. 3, 16.IV.10, 551; M.T. 3, 6.IV.10, 432; M.T. 2, 13.IV.10, 503; M.T. 2, 5.IV.10, 403; M.T. 2, 11.IV.10, 490; M.T. 3, 27.III.10, 306; M.T. 3, 4.IV.10, 391; M.T. 2, 9.IV.10, 470; M.T. 2, 31.III.10, 343; M.T. 2, 19.IV.10, 571; M.T. 2, 21.III.10, 223; M.T. 3, 1.IV.10, 357; M.T. 2, 5.IV.10, 404; 20.IV.09, 132; 18.IV.09, 79; 21.IV.09, 71; 20.IV.09, 137; 1168; 17.IV.09, 87; 13.IV.09, 145; 1168; 58c, 1167; 20.IV.09, 125; 1168; 111, 100, 1167a; 1045; 1045; 12.IV.09, 133; 100, 1167a.

Gough says two specimens, 133 and 136, have four white palpal bands.

Nyssorhynchus pretoriensis, var. *rufipes*, Gough.

Rept. Gov. Vet. Bac., p. 119 (1910).

“Legs not spotted with white but uniformly ruddy brown; the tarsus of the first legs not annulated, and the stem of the second vein is three-spotted.”

The specimens were numbered 134 and 140. I cannot trace either in the collection. The ruddy brown appearance of the legs reads much as if the legs were rubbed or denuded of scales.

CULICINAE.GENUS MUCIDUS, *THEOBALD.**Mucidus africanus*, Theobald (1901).Mono. Culicid., I, 274 (1901); III, 134 (1903); IV, 163 (1907);
V, 126 (1910).

Transvaal (Simpson), two females, no data.

Also occurs in Natal, Uganda, Nigeria, and West Africa.

GENUS STEGOMYIA, *THEOBALD.**Stegomyia fasciata*, Fabricius (1805), (*C. calopus*, Meigen).Syst. Antl., 36, 13 (1805), Fabricius; Mono. Culicid., I, 289 (1901);
III, 141 (1903); IV, 176 (1907); V, 158 (1910).

(Plate VIII.)

Leydsdorp (Dr. Copland) and Onderstepoort, Transvaal (Mr. Simpson):
1167a, 20; 1167a; 54m, 1167a; 1167a, 549; 8.IV.09 (Dr. Theiler).Apparently not common in the Transvaal, its place being taken by
S. argenteopunctata.For details of the wide distribution of this yellow fever carrier, the
reader is referred to a paper by the writer in the Records of the First Inter-
national Congress of Entomology. (Read at Brussels, 1910.)*Stegomyia simpsoni*, Theobald (1905).Entomologist, XXXIX, 224, 1905; Mono. Culicid., IV, 182 (1907);
V, 166 (1910).

(Plate VIII.)

Transvaal (C. B. Simpson).

Onderstepoort (Drs. Theiler and Gough); 54, 1167b, 54, 1167e, 54m,
1167e, 20, 1167e.

Katemas, Bihe, Angola. (Dr. C. Wellman.)

Stegomyia argenteopunctata, Theobald (1901).

Mono. Culicid., I, 316 (1901); V, 18 (1910).

(Plate VIII.)

A very long series from Onderstepoort labelled as follows:—

Onderstepoort (Dr. Theiler); 22.IV.09; 6.V.09, two females (Gough);
M.T. 3, 8.IV.10, 465; M.T. 2, 8.IV.10, 455; M.T. 3, 10.IV., 486;
M.T. 3, 11.IV.10, 496; M.T. 2, 12.IV.10, 497; M.T. 3, 13.IV.10,
511; M.T. 3, 14.IV.10, 519; M.T. 2, 14.IV.10, 513; M.T. 3,
15.IV.10, 524; M.T. 2, 16.IV.10, 535; M.T. 2, 18.IV.10, 560;
M.T. 2, 4.IV.10, 683; M.T. 3, 26.III.10, 294; M.T. 2, 23.III.10,
247; M.T. 3, 28.III.10, 319; M.T. 2, 28.III.10, 301; M.T. 3,

29.III.10, 326; M.T. 3, 26.III.10, 296; M.T. 3, 22.III.10, 240; M.T. 3, 26.III.10, 293; M.T. 3, 25.III.10, 279; M.T. 2, 5.IV.10; M.T. 3, 7.IV.10, 453; M.T. 3, 6.IV.10, 441; M.T. 2, 23.III.10, 246; M.T. 2, 7.IV.10, 447; M.T. 2, 29.III.10, 323; M.T. 3, 6.IV.10, 443; M.T. 3, 26.III.10, 297; M.T. 2, 29.III.10, 324; M.T. 3, 26.III.10, 298; M.T. 2, 28.III.10, 316; M.T. 2, 4.IV.10, 385; M.T. 1, 9.III.10, 143; M.T. 3, 19.III.10, 210; M.T. 3, 19.III.10, 214; M.T. 2, 20.III.10, 215; M.T., 19.I.10, 15; M.T. 3, 15.III.10, 188; M.T. 3, 7.III.10, 134; M.T. 3, 16.III.10, 198; M.T. 3, 19.III.10, 211; M.T. 3, 17.III.10, 206; M.T. 3, 12.II.10, 171; M.T. 3, 13.III.10, 179; M.T. 4.II.10, 87; M.T. 3, 19.III.10, 212; M.T., 25.I.10, 36; M.T. 18.II.10, 94; M.T. 3, 15.III.10, 191; M.T. 3, 7.III.10, 136; M.T. 20, I.10, 19; M.T. 3, 18.III.10, 207; M.T., 27.I.10, 48; M.T. 3, 15.III.10, 187; M.T. 3, 18.III.10, 208; M.T. 3, 15.III.10, 184; M.T. 3, 19.III.10, 209; M.T. 3, 22.III.10, 239; 12.IV.09; 21.IV.09,

Apparently very common in parts of the Transvaal.

Also found in Mashonaland, and at Nasser, Sobat River, Sudan.

GENUS SCUTOMYIA, *THEOBALD*.

Scutomyia sugens, Wiedemann (1828).

Stegomyia sugens, Wiedemann and Theobald (1901).

Culex sugens, Wiedemann (1828).

Culex vittatus, Bigot (1861).

Auss, Zweiflüg. Insec., I, p. 545, 4, 1828, Wiedemann; Mono. Culicidae, I, 300 (1901); IV, 199 (1907); V, 201 (1910).

This species occurs in the Transvaal at Onderstepoort (Dr. Theiler); (24, 11,679; 29, 11,679; 30, 11,679). Mr. Simpson also sent it to me, but no localities were given.

Outside the Transvaal it has been found in Corsica, Nubia, Aden, India, Ceylon, Mashonaland, Uganda, Sierra Leone, Gambia, Angola, and the Sudan.

GENUS THEOBALDIA, *NEVEU-LEMAIRE*.

Theobaldia spathipalpis, Rondani (1872).

Culex spathipalpis, Rondani. (1872).

Culex longiareolatus, Macquart.

Bull. Soc. Ent. Ital. IV, 31.12 (1872), Rondani; Mono. Culicid., I, 339 (1901), III, 154 (1903), IV, 276 (1907); V, 273 (1910), Theobald.

Transvaal (Mr. Simpson).

Onderstepoort (Dr. Gough), 11,675, 3.

It also has been recorded from Cape Colony, Cairo, Sudan, Algeria, Madeira, St. Michael, Teneriffe, Spain, Switzerland, Italy, Gibraltar, Crete, Cyprus.

Culex transvaalensis, Theobald (1903).

Mono. Culicid., III, 165 (1903); V, 336 (1910).

(Plate IX.)

Pretoria (Mr. Simpson).

Onderstepoort (Dr. Theiler).

M.T. 2, 9.V.10, 688; M.T. 2, 4.V.10, 682; M.T. 2, 12.V.10, 596;
 M.S.D., C 1a, 20.XII.20; M.S.D., 8.II.10, c, 10a, 63; M.S.D.,
 c, 3a, 23.I.10, 26; 21.IV.09 (10); M.T., 5.I.10, 2; M.T., 6.I.10,
 7; 6.I.10, 5; M.T., 6.I.10, 3; M.T., 6.I.10, 6; M.T., 6.I.10, 4;
 M.T., 9.I.10, 10; 15.IV.09; 54, 1167b.

Has also been taken at Bihe, Angola.

Culex annulioris, Theobald (1901).

Mono. Culicid., I, 371 (1901); III, 163 (1903), V, 336 (1910).

(Plate XI.)

Transvaal (Mr. Simpson).

Pretoria (Dr. Theiler). Onderstepoort: M.T. 2, 23.III.10, 248.

Also at Salisbury, Mashonaland.

Culex hirsutipalpis, Theobald (1901).

Mono. Culicid., I, 378 (1901); V, 342 (1910).

(Plate IX.)

Transvaal (Mr. Simpson); Onderstepoort (Dr. Theiler).

Onderstepoort: M.S.D.C., 10a, 8.II.10, 69; M.S.D.C., 9a, 24.I.10,
 30; M.S.D.C., 9a, 24.I.10, 29; M.S.D.C., 9a, 24.I.10, 31;
 M.S.D., 9a, 26.I.10, 46; M.S.E., 8.II.10, C., 11a, 66; M.S.D.C.,
 8a; C., 3a, 21; M.S.D.C., 8a, 24.I.10, 33; M.S.D.C., 8a, C., 3a,
 22; M.S.E., 8.II.10, C., 11a, 65; M.S.D.C., 8a, 24.I.10, 34;
 M.S.D.C., 9a, 26.I.10, 47; 6.IV.09; 54, 1176; M.T., 13.II.10,
 84.

Also recorded from Salisbury, Mashonaland, and Bihe, Angola, West Africa.

Culex ataeniata, nov. sp.

Head brown with grey scales; proboscis dark at base and apex, dull ochraceous in the middle, forming a broad pale band; palpi dark with grey apical scales; thorax deep brown with golden scales, paler behind and on the scutellum; abdomen brown with narrow basal pale bands, apical segment mostly pale scaled. Legs brown, unbanded, ungues equal and simple. Lateral veins scales rather long and dense.

Female.—Head dark brown, clothed with narrow-curved pale scales and flat pale lateral scales, dark upright forked scales behind, chaetae dark; clypeus brown; palpi black, paler at the base, with some grey apical scales, small golden chaetae apically, dark ones at the sides; antennae black, basal segment partly ferruginous; proboscis black at base and apex with a broad dull ochreous pale band.

Thorax deep brown, with small narrow-curved golden scales, some paler, almost grey ones at the sides in front, over the roots of the wings and before the scutellum; chaetae brown and golden; scutellum brown with narrow-curved pale scales, long golden brown border bristles and some short very pale grey ones; metanotum slaty grey, with rusty brown markings.

Abdomen testaceous, with almost black scales and basal pale bands, first segment with an area of black scales in the middle with a few pale ones and pale golden hairs, second segment a pale basal median area, the third to seventh with almost complete basal pale bands, the eighth mostly pale scaled, but dark scaled in the middle; border bristles short pale golden; pale lateral basal spots, almost white.

Legs brown, a white spot at apex of hind femora, venter of pleura pale; unguis small, equal and simple.

Wings with the first fork-cell much longer and narrower than the second, its base nearer the base of the wing, its stem about one-third the length of the cell, stem of the second fork-cell nearly as long as the cell; posterior cross-vein a little more than its own length distant from the mid; lateral vein scales long, thin, and dense. Halteres with pale stem and fuscous knob.

Length.—3 mm.

Time of Capture.—21.IV.10.

Habitat.—Onderstepoort (Dr. Theiler).

Observations.—Described from a single perfect female (M.T. 3, 21.IV.10, 597). A small distinct species, at once told from all other *Culex* by the banded proboscis and unbanded legs.

Culex hirsutum, Theobald (1901).

Mono. Culicid., I, 392 (1901); V, 344 (1910).

Transvaal (Mr. Simpson).

Also recorded from Salisbury, Mashonaland, and doubtfully from the Philippine Islands.

Culex theileri, Theobald (1903).

Mono. Culicid., III, 187 (1903); V, 356 (1910).

(Plate X).

Evidently very abundant in parts of the Transvaal. It has also been found in Cape Colony and Madeira. The following are the Transvaal records :—

Pretoria (Dr. Theiler) and Onderstepoort (Dr. Theiler): M.T. 2, 23.V.10, 727; M.T. 2, 15.V.10, 705; M.T. 3, 1.IV.10, 693; M.T. 2, 21.V.10, 719; M.T. 3, 17.V.10, 711; M.T. 3, 17.V.10, 710; M.T. 2, 14.V.10, 703; M.T. 2, 10.V.10, 690; M.T. 2, 12.V.10, 594; M.T. 2, 4.IV.10, 680; M.T. 3, 14.V.10, 704; M.T. 2, 23.V.10, 729; M.T. 2, 2.V.10, 674; M.T. 3, 3.V.10, 677; M.T. 2, 18.V.10, 713; M.T. 2, 20.V.10, 716; M.T. 2, 29.IV.10

662; M.T. 3, 24.V.10, 735; M.T. 3, 13.V.10, 700; M.T. 2, 29.IV.10, 663; M.T. 2, 28.IV.10, 657; M.T. 2, 14.V.10, 702; M.T. 2, 29.IV.10, 668; M.T. 2, 28.IV.10, 653; M.T. 2, 28.IV.10, 352; M.T. 2, 28.IV.10, 651; M.T. 2, 28.IV.10, 650; M.T. 2, 29.IV.10, 667; M.T. 2, 29.IV.10, 669; M.T. 2, 28.IV.10, 655; M.T. 3, 29.IV.10, 670; M.T. 2, 7.V.10, 684; M.T. 3, 8.V.10, 685; M.T. 2, 28.IV.10, 656; M.T. 2, 28.IV.10, 645; M.T. 2, 13.IV.10, 510; M.T. 2, 13.IV.10, 509; M.T. 2, 13.IV.10, 507; M.T. 2, 13.IV.10, 506; M.T. 2, 13.IV.10, 505; M.T. 3, 3.V.10, 679; M.T. 2, 29.IV.10, 665; M.T. 2, 23.V.10, 730; M.T. 2, 29.IV.10, 666; M.T. 3, 14.10, 518; M.T. 3, 19.IV.10, 576; M.T. 3, 14.IV.10, 520; M.T. 3, 21.IV.10, 598; M.T. 3, 14.IV.10, 522; M.T. 3, 14.IV.10, 521; M.T. 2, 28.IV.10, 649; M.T. 2, 28.IV.10, 646; M.T. 2, 29.IV.10, 648; M.T. 2, 27.IV.10, 636; M.T. 2, 23.IV.10, 607; M.T. 3, 15.IV.10, 523; M.T. 3, 21.IV.10, 603; M.T. 2, 16.IV.10, 533; M.T. 3, 4.IV.10, 416; M.T. 3, 23.IV.10, 512; M.T. 3, 9.IV.10, 575; M.T. 2, 16.IV.10, 548; M.T. 3, 24.IV.10, 620; M.T. 3, 19.IV.10, 574; M.T. 2, 27.IV.10, 639; M.T. 3, 24.IV.10, 621; M.T. 2, 13.IV.10, 508; M.T. 2, 25.IV.10, 628; M.T. 2, 18.IV.10, 558; M.T. 3, 24.IV.10, 627; M.T. 3, 18.IV.10, 567; M.T. 2, 18.IV.10, 563; M.T. 3, 20.IV.10, 582; M.T. 2, 26.IV.10, 632; M.T. 3, 21.IV.10, 602; M.T. 3, 24.IV.10, 626; M.T. 2, 25.IV.10, 630; M.T. 3, 16.IV.10, 544; M.T. 2, 24.IV.10, 619; M.T. 3, 24.IV.10, 616; M.T. 2, 27.IV.10, 635; M.T. 3, 4.IV.10, 413; M.T. 2, 25.IV.10, 631; M.T. 2, 8.IV.10, 457; M.T. 3, 8.IV.10, 463; M.T. 2, 11.IV.10, 491; M.T. 2, 24.IV.10, 623; M.T. 3, 10.IV.10, 488; M.T. 2, 9.IV.10, 471; M.T. 3, 10.IV.10, 484; M.T. 2, 24.IV.10, 624; M.T. 2, 16.IV.10, 540; M.T. 2, 25.IV.10, 629; M.T. 3, 8.IV.10, 461; M.T. 2, 27.IV.10, 638; M.T. 3, 12.IV.10, 502; M.T. 3, 9.IV.10, 482; M.T. 3, 9.IV.10, 478; M.T. 3, 11.IV.10, 494; M.T. 3, 12.IV.10, 500; M.T. 2, 12.IV.10, 498; M.T. 2, 28.IV.10, 644; M.T. 3, 18.IV.10, 495; M.T. 2, 9.IV.10, 475; M.T. 3, 16.IV.10, 549; M.T. 3, 8.IV.10, 462; M.T. 3, 8.IV.10, 464; M.T. 2, 28.IV.10, 647; M.T. 3, 9.IV.10, 479; M.T. 3, 20.IV.10; M.T. 2, 16.IV.10, 541; M.T. 3, 8.IV.10, 467; M.T. 2, 26.III.10, 286; M.T. 2, 24.III.10, 265; M.T. 2, 24.III.10, 300; M.T. 2, 6.IV.10, 430; M.T. 2, 4.IV.10, 389; M.T. 2, 4.IV.10, 389; M.T. 2, 2.IV.10, 358; M.T. 3, 30.III.10, 338; M.T. 3, 354; M.T. 3, 23.III.10, 256; M.T. 2, 23.III.10, 259; M.T. 3, 25.III.10, 280; M.T. 2, 31.III.10, 348; M.T. 2, 23.III.10, 249; M.T. 3, 25.III.10, 282; M.T. 3, 2.IV.10, 366; M.T. 3, 23.III.10, 255; M.T. 2, 23.III.10, 250; M.T. 3, 27.III.10, 309; M.T. 3, 6.IV.10, 440; M.T. 3, 27.III.10, 310; M.T. 3, 6.IV.10, 435; M.T. 2, 6.IV.10, 429; M.T. 2, 5.IV.10, 407; M.T. 3, 24.III.10, 270; M.T. 3, 28.III.10, 355; M.T. 3, 29.III.10, 327; M.T. 3, 5.IV.10, 420; M.T. 2, 5.IV.10, 408; M.T. 3, 24.III.10, 268; M.T. 3, 27.III.10, 312; M.T. 3, 5.IV.10, 423; M.T. 2, 6.IV.10, 431; M.T. 2, 4.IV.10, 386; M.T. 3, 6.IV.10, 445;

M.T. 3, 27.III.10, 315; M.T. 2, 7.IV.10, 448; M.T. 3, 4.IV.10, 393; M.T. 3, 2.IV.10, 364; M.T. 3, 23.III.10, 261; M.T. 3, 4.IV.10, 396; M.T. 3, 2.IV.10, 371; M.T. 3, 2.IV.10, 370; M.T. 3, 23.III.10, 260; M.T. 2, 26.III.10, 288; M.T. 3, 3.III.10, 381; M.T. 2, 30.III.10, 335; M.T. 3, 4.IV.10, 395; M.T. 3, 27.III.10, 311; M.T. 3, 4.IV.10, 394; M.T. 3, 2.IV.10, 369; M.T. 3, 2.III.10, 367; M.T. 2, 28.III.10, 317; M.T. 3, 6.III.10, 446; M.T. 3, 5.IV.10, 426; M.T. 3, 3.IV.10, 377; M.T. 3, 5.IV.10, 425; M.T. 2, 31.III.10, 346; M.T. 3, 2.IV.10, 362; M.T. 2, 28.III.10, 318; M.T. 3, 23.III.10, 258; M.T. 3, 29.III.10, 329; M.T. 3, 24.III.10, 271; M.T. 3, 30.III.10, 333; M.T. 3, 31.III.10, 352; M.T. 2, 5.IV.10, 408; M.T. 3, 25.III.10, 277; M.T. 3, 3.IV.10; M.T. 2, 5.IV.10, 409; M.T. 3, 6.IV.10, 437; M.T. 2, 2.IV.10, 359; M.T. 3, 3.IV.10, 379; M.T. 3, 7.IV.10, 452; M.T. 2, 31.III.10, 347; M.T. 2, 31.III.10, 344; M.T. 3, 3.IV.10, 378; M.T. 3, 2.IV.10, 368; M.T. 2, 7.IV.10, 449; M.T. 2, 4.IV.10, 388; M.T. 3, 2.IV.10, 365; M.T. 3, 24.III.10, 272; M.T. 3, 6.IV.10, 438; M.T. 3, 6.IV.10, 436; M.T. 3, 2.IV.10, 363; M.T. 3, 6.IV.10, 439; M.T. 2, 4.IV.10, 387; M.T. 3, 6.IV.10, 444; M.T. 2, 3.IV.10, 373; M.T. 1, 6.III.10, 126; M.T. 2, 13.III.10, 172; M.T. 2, 27.II.10, 111; M.T., 27.II.10, 110; M.T., 27.II.10, 108; M.T., 27.II.10, 112; M.T., 27.II.10, 107; M.T. 3, 21.III.10, 235; M.T. 3, 21.III.10, 234; M.T. 3, 17.III.10, 203; M.T. 1, 12.III.10, 164; M.T. 3, 16.III.10, 197; M.T. 3, 13.III.10, 175; M.T. 3, 11.III.10, 162; M.T. 3, 21.III.10, 231; M.T. 1, 15.III.10, 182; M.T. 3, 13.III.10, 177; M.T. 3, 13.III.10, 178; M.T. 3, 21.III.10, 232; M.T. 2, 13.III.10, 174; M.T. 2, 22.III.10, 238; M.T. 2, 13.III.10, 173; M.T. 1, 10.III.10, 149; M.T. 2, 12.III.10, 168; M.T. 2, 10.III.10, 152; M.T. 2, 10.III.10, 152; M.T. 1, 21.III.10, 222; M.T. 2, 12.III.10, 169; M.T. 3, 10.III.10, 156; M.T. 1, 12.III.10, 166; M.T. 2, 10.III.10, 154; M.T. 1, 9.III.10, 142; M.T. 1, 9.III.10, 144; M.T. 1, 10.III.10, 148; M.T. 1, 10.III.10, 151; M.T. 1, 7.III.10, 130; M.T. 3, 21.III.10, 230; M.T., 22.II.10, 97; M.T., 13.II.10, 85; M.T. 2, 10.III.10, 155; M.T. 3, 17.III.10, 204; M.T., 14.II.10, 88; M.T. 1, 6.III.10, 127; M.T. 1, 7.III.10, 132; M.T. 1, 6.III.10, 125; M.T., 21.II.10, 96; M.T. 2, 9.III.10, 145; M.T. 2, 20.III.10, 219; M.T. 11, 10.III.10, 150; M.T., 14.II.10, 89; M.T. 3, 23.IV.10, 614; M.T. 2, 20.IV.10, 578; M.T. 3, 16.IV.10, 547; M.T. 2, 19.IV.10, 572; M.T. 2, 9.IV.10, 473; M.T. 2, 17.IV.10, 550; M.T. 3, 17.IV.10, 552; M.T. 2, 18.IV.10, 559; M.T. 2, 24.IV.10, 622; M.T. 3, 3.V.10, 678; M.T. 3, 24.V.10, 736; M.T. 3, 10.IV.10, 483; M.T. 2, 16.IV.10, 537; M.T. 2, 18.IV.10, 561; M.T. 2, 27.IV.10, 634; M.T. 3, 20.IV.10, 581; M.T. 3, 14.IV.10, 516; M.T. 3, 18.IV.10, 565; M.T. 3, 11.IV.10, 601; M.T. 3, 21.IV.10, 600; M.T. 2, 21.IV.10, 592; M.T. 2, 10.V.10, 689; M.T. 3, 14.IV.10, 515; IV.09; M.T. 3, 14.IV.10; M.T. 1, 7.III.10, 131; M.T. 3, 8.IV.10, 466; IV.09.

Culex onderstepoortensis, nov. sp.

(Plate X.)

Head brownish black, with pale scales; proboscis deep ochraceous, dark at apex; thorax brown with scanty pale, almost white, scales, the latter mainly in front, pleurae ochraceous and grey with some small white spots; metanotum bright pale brown; abdomen brown with basal white bands. Legs brown with a pale line on femora and tibiae as in *C. theileri*, venter of femora also pale.

Female.—Head brownish black, clothed with rather irregular pale creamy, narrow-curved scales and some very thin black upright forked scales, deep brown frontal and lateral chaetae, small flat lateral creamy scales with rounded apices; clypeus brown with a grey sheen; palpi brown with black scales in the middle, a few grey ones at the apex and a large area of grey ones at the base, chaetae dense, black; proboscis ochraceous, dark at the apex and base, with curved black hairs at sides; antennae brown, basal segment testaceous and brown.

Thorax blackish, with two dark median parallel longitudinal lines on the integument clothed with scanty pale creamy, almost white, narrow-curved scales and brown chaetae with golden reflections apically (in some lights the thoracic scales show pale golden reflections on a median posterior line); scutellum pale brown, with narrow-curved pale scales and long brown posterior border bristles; metanotum brown.

Abdomen deep brown almost black, with basal white bands and patches; the first segment mostly white scaled with two small black spots, the second and third with basal median triangular white patches extending nearly to the posterior borders of the segments, the fourth and fifth with basal white bands spreading out somewhat in the middle, the sixth with a basal white band and traces of two median white spots, the seventh and eighth with basal and apical creamy bands, posterior border bristles and lateral bristles pale dull golden; venter pale scaled.

Legs brown, femora and tibiae with a pale scaled line on one side, venter of femora pale ochreous, ungues all equal and simple.

Wings with the first fork-cell longer and narrower than the second, its base nearer the base of the wing, its stem one-fourth the length of the cell; stem of the second posterior rather more than half the length of the cell; posterior cross-vein about two-thirds its own length distant from the mid.

Length.—4·5–5 mm.

Time of Capture.—3. 12. 13. 16.V., 8. 16. 28.IV.10.

Habitat.—Onderstepoort (Dr. Theiler).

Observations.—Described from seven females (Nos. 456, 545, 595, 654, 6984, and 708, and another). Related to *Culex theileri*, but easily told by the pale scaled head and thorax.

Culex tigripes, Grandpré (1900).

Planters' Gazette Press, Les Moust., 1900, Grandpré; Mono. Culicid., II, 34, 65 (1901); III, 227 (1903); V, 392 (1910).

(Plate IX.)

Onderstepoort (Dr. Theiler).

One male (no date).

M.S.D.C., 9a, 24.I.10, 32; 584, 585, 586, 587, April, 1910. River furrow vegetation; 54f-1167d; 54-1167d.

This widely distributed species has been found at Bonny, Sierra Leone; Mombasa; Natal; Mashonaland; British Central Africa; Delagoa Bay; Uganda; Ashanti and Cape Colony in Africa; also in India, Ceylon, Queensland, and Mauritius.

Variety *bimaculata*, Theobald (1910).

Mono. Culicid., V, 393, 1910.

Onderstepoort (Dr. Theiler): C. 12a, M.S.E., 8.II.10, 71; M.S.D.c., 10a, 8.II.10, 68; M.S.E.c., 22a, 8.II.10, 70.

This variety has also been found in the Sudan.

Culex bifoliata, Theobald (1905).

Journ. Eco. Biol., I, 31 (1905); Mono. Culicid., IV, 425 (1910).
Transvaal (Mr. Simpson).

Culex simpsoni, Theobald (1905).

Jour. Eco. Biol., I, 28 (1905); Mono. Culicid., IV, 441 (1907).

Transvaal (Mr. Simpson), and a long series from Onderstepoort (Dr. Theiler), labelled as follows:—

M.T. 1, 6.III.10, 124; M.T. 4, III.10, 119; M.T., 26.II.10, 104; M.T., 26.II.10, 106; M.T. 3, 23.III.10, 257; M.T. 1, 7.III.10, 129; M.S.F., 28.III.10, 321; M.T. 3, 10.IV.10, 487; M.S.D.C., 3a, 23.I.10, 25; M.T. 3, 23.IV.10, 613; M.S.D., 28.II.10, 113; M.S.D., 28.II.10, 117; M.S.D.C., 3c, 27.I.10, 50; M.S.E.C. 11a, 3.II.10, 73; M.S.D.C. 7a, 1.II.10, 57; M.S.D.C. 7a, 1.II.10, 55; M.S.D.C. 7a, 1.II.10, 54; M.T. 3, 20.IV.10, 580; M.T. 2, 16.IV.10, 531; M.S.F., 10.V.10, 691; M.S.D., 4.II.10, 58; M.T. 3, 18.IV.10, 569; M.S.D., C, 10a, 8.II.10, 61; IV.09; 13.IV.09; M.S.F., 22.V.10, 724; M.S.D.C. 3c, 27.I.10, 51; M.S.D.C. 3c, 8.II.10, 76; M.T. 3, 19.IV.10, 573; M.S.F., 22.V.10, 725; M.T. 3, 11.V.10, 692; M.S.D. 3, 16.IV.10, 546; M.T. 3, 13.III.10, 176; M.T., 26.I.10, 37; M.S.D., 4.II.10, 59; M.S.F., 18.III.10, 263; M.S.F., 18.III.10, 262; M.S.D. (?) c, 3a, 23.I.10, 27; 149, 1167o (3).

Culex minutus, Theobald (1905).

Jour. Eco. Biol., I, 30 (1905); Mono. Culicid., IV, 445 (1907).

Transvaal (Mr. Simpson), a long series; also the same from Onderstepoort (Dr. Theiler), labelled as follows:—

M.S.D.C., 7a, 1.II.10, 56; M.S.E., 21.V.10, 723; M.T., 24.IV.10, 625; IV.09; M.S.D.C., 3a, 8.II.10, 75; M.S.D., 8.II.10, C, 10a, 62; M.T. 3, 23.IV.10, 615; M.S.D.C., 3a, 23.I.10, 28; M.S.D., 8.II.10, C, 10c, 64; M.S.E., C, 11a, 8.II.10, 74; Trap. 5.IV.09; M.S.F., 13.V.10, 701; M.T. 3, 9.IV.10, 481; M.S.D.C. 3c (?), 27.I.10, 52; M.T., 26.II.10, 105; M.T. 3, 16.III.10, 196; M.T., 14.III.10, 181; 2.IV.09, 5.

Culex pallidopunctata, nov. sp.

(Plate X.)

Head brown, speckled, with pale scales in the middle, a black patch on each side and then a pale area; palpi black; proboscis dark unbanded. Thorax deep chestnut brown with two median frontal parallel broad golden-scaled lines, and two posterior golden scaled lines outside the two median and starting where they end, a few pale scales over the front of wing roots; pleurae brown with white puncta; abdomen deep brown and black with basal creamy median areas in some cases forming almost bands, and large creamy basal lateral spots. Legs deep brown to black unbanded, base and venter of femora pale, fore and mid ungues equal and uniserrated, the hind equal and simple.

Female.—Head black, with small narrow-curved, bronzy and brown scales in the middle, then longer pale golden curved scales on each side of them, the dark ground showing through, then a prominent patch of flat black scales, then more lateral flat creamy white scales, a few scattered thin black upright forked scales, two golden chaetae project forwards in middle of frontal line and brown incurved chaetae over the eyes; palpi black, with black chaetae and scales; proboscis deep brown, slightly pale at the base; clypeus deep brown; antennae deep brown, basal segment bright ferruginous on the outer side, a few short black hairs on the dark inner side.

Thorax deep brown, clothed with small narrow-curved scales; of a rich deep chestnut brown hue, with two median parallel lines of golden scales from the front to the middle of the mesonotum and two more irregular lines behind outside the two median and starting about where the latter cease, outside these and in front of the scutellum are scattered golden scales and there is a patch of broader creamy scales in front of each wing root, chaetae brown; scutellum pale ochreous brown, with narrow-curved pale scales and brown border bristles, ten to the mid lobe; metanotum bright chestnut brown; pleurae brown and grey brown, with patches of creamy white flat scales and some of a golden tint, chaetae golden.

Abdomen almost black, basal segment testaceous with black median scales and long golden hairs, second segment with a few pale scales at the base in middle line; fifth and sixth with basal creamy areas, not quite

forming bands, seventh all black, border bristles of two sizes, bright golden, also the lateral ones, each segment with very prominent large creamy lateral basal spots; venter mostly creamy scaled, but with dark-scaled median areas to the segments.

Legs deep blackish brown, base and venter of femora pale, chaetae partly golden brown; fore and mid ungues equal and uniserrate, hind equal and simple.

Wings with the first fork-cell longer and narrower than the second, its base slightly nearer the base of the wing, its stem less than half the length of the cell; stem of the second fork-cell nearly as long as the cell; posterior cross-vein about its own length distant from the mid. Halteres pale creamy.

Length.—4·5–5 mm.

Time of Capture.—15. 17. 18. 19. 25. 26. I; 10. 11. 13. 16. 17. 20. II; 5. 6. 7. 8. 11. 15. 16. 17. 25. 26. 27. 28. 29. 30. 31. III; 5. 6. 11. 16. 18. IV; 4. 13. 20.V.1910.

Habitat.—Onderstepoort (Dr. Theiler).

Observations.—A series of fifty-eight females, labelled as follows:—

M.T., 5.III.10, 122; M.T. 2, 16.IV.10, 536; M.T., 26.I.10, 44; M.T., 11.II.10, 83; M.T. 3, 15.III.186; M.T. 3, 18.IV.10, 566; M.T. 2, 20.V.10, 717; M.T., 19.I.10, 17; M.T. 3, 11.IV.10, 493; M.T., 13.II.10, 84; M.T. 2, 13.V.10, 699; M.T. 2, 26.III.10, 289; M.T. 3, 30.III.10, 336; M.T. 3, 6.IV.10, 433; M.T. 2, 8.III.10, 140; M.T. 3, 6.IV.10, 434; M.T. 3, 25.III.10, 270; M.T. 3, 28.III.10, 320; M.T. 3, 6.IV.10, 442; M.T. 3, 27.III.10, 313; M.T. 3, 30.III.10, 337; M.T. 2, 31.III.10, 345; M.T. 3, 29.III.10, 320; M.T. 2, 11.III.10, 157; M.T. 3, 11.III.10, 160; M.T. 3, 15.III.10, 189; M.T. 2, 16.III.10, 193; M.T., 17.I.10, 13; M.T. 3, 139; M.T., 10.II.10, 77; M.T. 3, 9.III.10, 331; M.T. 3, 27.III.10, 314; M.T. 3, 17.3.10, 205; M.T., 24.II.10, 100; M.T., 25.I.10, 35; M.T., 5.III.10, 121; M.T., 17.II.10, 92; M.T. 2, 6.III.10, 138; M.T. 3, 7.III.10, 137; M.T. 3, 7.III.10, 135; M.T. 3, 5.IV.10, 424; M.T., 20.II.10, 95; M.T., 26.I.10 39; M.T., 26.I.10, 41; M.T., 26.I.10, 38; M.T., 26.I.10, 42; M.T., 18.I.10, 14; M.T., 19.I.10, 16; M.T., 20.I.10, 18; M.T. 3, 15.III.10, 192; M.T., 16.II.10, 91; M.T., 15.I.10, 11; 20.V.09; M.T. 2, 4.V.10, 681.

This is a very marked *Culex*, easily distinguished from other Transvaal species by the marked lateral basal pale abdominal spots. The series is very constant in characters, the venation shown in the photograph being practically identical in all.

Culex goughii, nov. sp.

(Plate XI.)

Head dark brown with scattered pale golden scales, densest in the middle in front, and a pale border around the eyes; palpi deep brown with white scales above towards the apex; proboscis deep brown, unbanded; palpi of the male and female with white scales on all sides towards the

apex. Thorax deep brown with narrow-curved small golden brown scales ; pleurae with pale scales. Abdomen black, with basal white areas and basal lateral pale spots. Legs black, femora white beneath ; a white knee spot and white apex to the tibiae, most pronounced on hind legs ; unguis equal and simple.

Female.—Head deep brown with narrow-curved pale scales especially in the middle and around the eyes, black upright forked scales, the heads expanded, black chaetae project forwards over the eyes and a few dull golden ones in the middle in front ; palpi black with scattered pale scales towards the apex on one side, almost white, chaetae black ; proboscis and antennae black ; clypeus brown.

Thorax deep brown with narrow-curved golden and dull golden brown scales varying with the light, showing no ornamentation except traces of a more pronounced spot of scales on each side on the anterior half ; chaetae black, dense over the roots of the wings ; scutellum deep brown, with narrow-curved pale golden scales, posterior border bristles brown, six to the mid lobe, and in addition a series of small thin pale golden ones ; metanotum brown ; pleurae with patches of flat white scales and golden hairs, dark.

Abdomen with first segment black, with some black scales and dark hairs tipped with golden, all golden in some lights ; second segment with a basal median white spot, third to sixth with basal semicircular white bands, seventh and eighth with a few basal white scales ; posterior border bristles pale golden, long at the sides, shorter in the middle ; all segments with basal lateral white spots, especially large on the apical segments.

Legs black, femora white beneath, a white knee spot on all the legs and a narrow white apical band to the hind tibiae ; venter of hind tibiae white scaled in the middle ; unguis equal and simple.

Wings with first fork-cell much longer and narrower than the second fork-cell, its base nearer the base of the wing, its stem one-third the length of cell, stem of the second fork-cell nearly as long as the cell ; posterior cross-vein longer than the mid, about its own length distant from it ; lateral vein scales long and thin ; halteres with pale stem and fuscous knob.

Length.—4 mm.

Male.—Head dark brown, clothed with narrow-curved pale scales and small flat pale lateral ones, black upright forked scales behind ; antennae banded brown and grey with brown plume hairs, flaxen at the base ; palpi deep brown, acuminate, last two segments nearly equal, with black hairs, also the apical region of the antepenultimate, a pale band near the base of the palpi and the penultimate segment with a line of white scales beneath, and some beneath at base of the apical one.

Thorax deep brown with golden brown scales, paler behind and black chaetae ; scutellum pale brown, like the neighbouring region of the metanotum, and with narrow-curved pale scales and deep brown border bristles, seven to the mid lobe ; metanotum pale ochreous brown.

Abdomen with the first segment dark, nude except for two small patches of black scales, with long pale brown hairs on each side, shorter ones in the middle ; second segment black with a small median basal triangular white spot, third, fourth, and fifth segments with basal creamy

bands, the sixth and seventh with the bands spreading down each side to the posterior borders of the segments, eighth segment with basal lateral creamy spots only; hairs, long, dense, golden.

Legs deep brown, femora grey beneath, knee spot pale and small, a pale apex to hind tibiae, fore and mid unguis unequal, uniserrate, hind equal and simple.

Wings with the first fork-cell longer and narrower than the second fork-cell, its base nearer the base of the wing, its stem nearly half the length of the cell, stem of the second fork-cell as long as the cell; posterior cross-vein about one-and-a-half times its own length distant from the mid cross-vein.

Length.—4.5 mm.

Time of Capture.—28.II and 12.IV.1910. Nos. 115, 501, 116.

Habitat.—Onderstepoort (Dr. Theiler).

Observations.—Two females and one male. One female varies slightly from the type, the sixth and seventh abdominal segments showing only a trace of basal pale scales, and the eighth two prominent white lateral spots. A rather obscure species of *fatigans* type, but can be easily told in both sexes by the white scaled line on the palpi, which is ventral and very marked in the male.

(Labels: M.S. II, 28.II.10, 116; M.S. II, 28.II.10, 115; M.T. 3, 12.IV.10, 501.)

Culex bostockii, Theobald (1905).

Jour. Eco. Biol., I, 29 (1900); Mono. Culicid., IV, 444 (1907).

(Plate IX.)

Transvaal (Mr. Simpson), and a long series from Onderstepoort (Dr. Theiler), labelled as follows:—

M.S.D.C. 3, 27.I.10, 53; M.T. 3, 11.IV.10, 492; M.T., 27.I.10, 49; M.T., 7.I.10, 8; M.T. 2, 29.IV.10; M.T. 3, 7.III.10, 138; M.T. 2, 23.V.10, 728; M.T. 1, 21.III.10, 221; M.T. 2, 27.II.10, 109; M.T., 10.II.10, 79; M.T. 3, 18.IV.10, 568; M.T. 3, 21.III.10, 236; M.T. 2, 22.IV.10, 604; M.T. 3, 13.III.10, 213; M.T. 3, 10.IV.10, 485; M.T. 3, 13.III.10, 180; M.T. 3, 21.III.10, 233; M.T., 13.II.10, 86.

Culex salisburyensis, Theobald (1901).

Mono. Culicid., II, 113 (1901); III, 221 (1903); IV, 452, Male (1907).

Pretoria (Dr. Theiler) and Onderstepoort. M.S.D., 4.II.10, 60 (one female).

Also recorded from Sierra Leone.

Culex quasigwiarti, Theobald (1910).

Mono. Culicid., V, 374, 1910.

(Plate X.)

Onderstepoort : M.T. 3, 27.III.10, 308 ; M.T. 3, 25.III.10, 281 ;
M.T. 2, 26.III.10, 284 ; M.T. 2, 9.IV.10, 472 ; M.T. 3, 9.III.10,
146.

Originally described from Uganda.

GENUS BANKSINELLA, *THEOBALD*.

Banksinella luteolateralis, Theobald (1907).

Mono. Culicid., II, (1901) ; IV, 469 (1907) ; V, 403 (1910).

(Plate XI.)

Onderstepoort (Dr. Theiler), labelled as follows :—

M.T. 2, 9.IV.10, 476 ; M.T. 2, 1.IV.10, 356 ; M.T. 3, 26.III.10, 295 ;
M.T. 3, 24.III.10, 269 ; M.T. 2, 26.III.10, 287 ; M.T., 23.II.10,
99 ; M.T., 26.I.10, 43.

Also found in Natal, Mashonaland, Uganda, Sudan, Nile Pro-
vinces, Angola, Malay States, Philippine Islands.

Banksinella luteolateralis, Theobald.

Variety *circumluteola*, Theobald.

Mono. Culicid., V, 404 (1910).

Transvaal (Simpson).

GENUS TAENIORHYNCHUS. *ARRIBALZAGA*.

Taeniorhynchus tenax, var. *maculipes*, Theobald (1905).

First Rep. Gord. Coll., Well. Lab., 79 (1905).

(Plate XI.)

Onderstepoort :—

M.T. 2, 16.IV.10, 542 ; M.T. 3, 17.IV.10, 553 ; M.T. 2, 16.IV.10,
543 ; M.T. 2, 14.IV.10, 512 ; M.T. 2, 14.IV.10, 514 ; M.T. 2,
27.IV.10, 637 ; M.T. 2, 14.IV.10, 513 ; M.T. 2, 9.IV.10, 474 ;
M.T. 2, 18.IV.10, 562 ; M.T. 2, 16.IV.10, 532 ; M.T. 2, 16.IV.10,
539 ; M.T. 2, 16.IV.10, 538 ; M.T. 2, 22.IV.10, 605 ; M.T. 3,
21.IV.10, 599 ; M.T. 2, 18.IV.10, 557 ; M.T. 2, 21.IV.10, 591 ;
M.T. 2, 21.IV.10, 593 ; M.T. 3, 28.IV.10, 659 ; M.T. 2, 29.III.10,
299 ; M.T. 2, 29.III.10, 322 ; M.T. 3, 30.III.10, 334 ; M.T. 3,
29.III.10, 332 ; M.T. 2, 29.III.10, 325 ; M.T. 2, 29.III.10, 302 ;
M.T. 2, 29.III.10, 304 ; M.T. 2, 29.III.10, 305 ; M.T. 2, 27.III.10,
303 ; M.T. 3, 15.III.10, 185 ; M.T. 3, 16.III.10, 195 ; M.T. 2,
21.III.10, 226 ; M.T., 25.II.10, 103 ; M.T., 5.III.10, 123 ;
M.T. 3, 11.III.10, 161 ; M.T. 2, 13.IV.10, 504 ; M.T. 2, 21.III.10,
225.

Also recorded from Kenissa, White Nile, and Middle Sobat.

GENUS CHRYSOCONOPS. *GOELDI*.*Chrysoconops aurites*, Theobald (1901).*Taeniorhynchus aurites*, Theobald (1901).

Mono. Culicid., II, 209 (1901), III, 269 (1903); IV, 493 (1907);
V, 434 (1910).

Onderstepoort (Dr. Theiler), one female, M.T. 1, 17.III.10, 200.

Also recorded from Bonny, West Africa; Entebbe, Mpuma, Uganda;
Dindings, Perak, Kuala Lumpur, Federated Malay States; Philippine
Islands; West Lake, Hangchow, China.

GENUS MANSONIA, *BLANCHARD*.*Mansonia africana*, Theobald (1901).

Mono. Culicid., II, 187 (1901); III, 273 (1903); V, 449 (1910).

(Plate VIII.)

Onderstepoort, M.T. 3, 10.IV.10, 489 (one female).

This common African species occurs in Dr. Theiler's collection recently
sent me, but represented by a single specimen only.

GENUS ETIORLEPTIOMYIA, *THEOBALD*.*Etiorleptiomyia mediolineata*, Theobald (1904).

First Rep., Well. Lab., Gord. Coll., 74 (1904); Mono. Culicid., IV, 505
(1907); V, 454 (1910).

Transvaal (Mr. Simpson), one female. I could not separate this from
the type from the Sudan, although there were slight differences.

GENUS AEDES, *MEIGEN*.*Aedes inconspicuus*. Theobald (1908).

The Entomologist, XLI, 109 (1908); Mono. Culicid., V, 483 (1910).
Transvaal (Mr. Simpson), one female and one male.

GENUS PSEUDOFICALBIA, *THEOBALD*.*Pseudoficalbia inornata*, Theobald (1908).*Ficalbia inornata*, Theobald (1908).

The Entomologist, XLI, 108 (1908); Mono. Culicid., V, 542 (1910).
Transvaal (Mr. Simpson), one female and two males.

This comes in a new genus recently created for two species from
the Seychelles and not in the genus *Ficalbia*.