

FURTHER NOTES ON AFRICAN CULICIDAE.

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The following notes consist of corrections and additions to my previous papers on African CULICIDAE. Several errors have become apparent, due either to carelessness or insufficient study of the material available, or insufficiency of the material itself. These are corrected. One or two apparently new species have been received and are now described; the description of one or two others, owing to the scanty material and doubtful systematic position, is left for a future paper.

Anopheles ardensis, Theo.

Reference to *Myzomyia pyretophoroides*, Theo. (Mon. Cul. iv, 1907, p. 48), which is a synonym of this, was accidentally omitted.

Toxorhynchites barbipes, sp. nov.

♂. Closely resembles *T. brevialpis*, Theo., in all respects except that the *first joint of the hind tarsus is thickly clothed with long black hair*. This is a most striking character and is not found in any other member of the genus, or, indeed, in any other mosquito. It hardly seems possible that this could be a mere individual variation, and I therefore regard it as a distinct species, though it seems to differ in no other way from *T. brevialpis*.

UGANDA: 1 ♂ (type), Mpanga Forest, Toro, 4,800 ft., 13-23 xi. 1911 (S. A. Neave).

Presented to the British Museum by the Imperial Bureau of Entomology.

Banksinella taeniarostris, Theo.

It was previously suggested that this might be a variety of *B. luteolateralis*, Theo. This is improbable. The hind femora were wrongly stated to be "all dark above"; in reality they are yellow at the tip and have a yellow dorsal line on the basal two-thirds; in this the species much resembles *B. punctocostalis*, Theo., in which the black ring of the hind femora is near but *not at* the apex, as previously stated. Both *B. taeniarostris* and *B. punctocostalis* have the abdomen black above, the lateral yellow spots being produced towards the middle of segments 5, 6 and 7. In *B. luteolateralis* the abdomen usually (though not invariably) has prominent yellow basal median as well as lateral spots on each segment. Theobald's *B. chrysothorax* is the male of *B. taeniarostris* and not of *B. luteolateralis*.

Banksinella luteolateralis var. *albicosta* nov.

♀. Differs from typical *B. luteolateralis* as follows:—Yellow scales of head, thorax, abdomen and wings replaced by creamy-white ones; scales of mesonotum only slightly darker in the middle, so that the whole mesonotum appears whitish

to the naked eye. The wings have the *apical two-fifths of the costa with whitish-yellow scales*, and similarly coloured scales are also present on the second and fourth veins, extending over almost the whole of the upper fork and the base of the lower.

This variety approaches Theobald's var. *albothorax*, which has a whitish mesonotum, only a little darker in the middle, but has the wings as in the typical form. The var. *pallida*, Theo., also resembles var. *albicosta* in some respects, but it has the entire costa and the middle of the mesonotum dark. If it were not for these two varieties which somewhat resemble it, I should not have hesitated to class this new form as a distinct species, and such it may eventually prove to be.

BRITISH EAST AFRICA: 1 ♀ (type), near Wangi, coast of Mainland, 21-22 ii. 1912 (*S. A. Neave*); 2 ♀, Juba River, ix.-x. 1911 (*Dr. C. L. Chevallier*); 1 ♀, Mombasa Island (*Dr. W. J. Radford*).

All these specimens have been presented to the British Museum by the Imperial Bureau of Entomology.

Ochlerotatus (Finlaya) furcifer, nom. n.

Mansonia nigra, Theo., Second Rept. Wellc. Lab., p. 80 (1906).

Diceromyia africana, Theo., Fourth Rept. Wellc. Lab., p. 151 (1911).

Three female specimens of this curious and interesting species have been taken at Weshiang, Gold Coast, on the River Dainsu, 10 miles north-west of Accra, by Dr. H. F. Hamilton. They agree with Theobald's excellent description of *D. africana*, except that the palpi have two indistinct white rings; one of the specimens has very narrow irregular white bands on the abdomen which touch the bases of the segments in the middle. The agreement with *M. nigra*, also, is nearly but not quite perfect, as there are no apical white bands on the abdominal segments, and the fore and mid claws are toothed. Apart from the last point, these are unimportant differences, and do not in my opinion indicate that two distinct species have been described. As all the legs of the type of *M. nigra* are lost, Theobald's statement that the claws are simple cannot be confirmed or corrected.

As the group *Finlaya*, to which these species belongs, has been included by the writer under *Ochlerotatus*, the specific name has to be changed, as Giles' *Taenio-rhynchus niger* (1904) is an *Ochlerotatus*, and the name *africanus* has been used by Theobald for other species which are now included in *Ochlerotatus*. The *Finlaya* group is distinguishable by the very broad wing-scales, the short terminal joint of the male palpi and the rather large and non-retractile eighth segment of the female abdomen. It is quite possible that *Finlaya* will eventually be recognised as a good genus, in which case the name *nigra* will have to be reinstated. For the present, however, the toothed claws and tapering abdomen of the female seem to be sufficient justification for the inclusion of this group in *Ochlerotatus*; the eighth abdominal segment is in a similar condition in *Stegomyia*.

The name *furcifer* is suggested by the forked male claspers, which have been figured by Theobald. The writer's reference of this species to *Mansonioides*, without the examination of specimens, was an error. The group seems to be intermediate between *Ochlerotatus* and *Mansonia*.

Ochlerotatus durbanensis, Theo.

Additional localities:—**ABYSSINIA**: Mt. Fantali, 4000 ft., 21 viii. 1908 (*Dr. R. E. Drake-Brockman*). **UGANDA**: L. Bogosu, 19. xi. 1912, numerous on rim of crater morning and evening (*Dr. R. E. Mc Connell*).

The Uganda specimens differ from those from Durban and Delagoa Bay in having the yellow apical markings of the abdominal segments forming complete bands instead of lateral spots.

Ochlerotatus geniculatus, Olivier.

Culex geniculatus, Olivier, *Encycl. Méthod.* vi, p. 134 (1791).

Culex lateralis, Mg., *Syst. Besch.* i, p. 5 (1818).

Elsewhere (*Ent. Mo. Mag.*, May 1913) I have given in full my reasons for the above substitution. After careful consideration it seems advisable to refer back the two specimens named previously *O. ornatus*, Mg. (*Bull. Ent. Res.* iii, p. 21) to *O. geniculatus*, Oliv., and accept as the true *O. ornatus*, Mg., the species so designated by Ficalbi, of which I have recently received a pair from Hungary. The North African specimens constitute a distinct variety of *O. geniculatus*, differing from the European form in having complete white bands (though narrow in the middle) on the abdominal segments, and flat scales on the scutellum. Until more specimens come to hand, however, it does not seem advisable to name this form.

Ochlerotatus salinus, Fic.

Culex salinus, Ficalbi, *Bull. Soc. Ent. Ital.*, xxviii, p. 29 (1896).

This is the species referred to in the writer's earlier papers as *O. nemorosus*, Mg. It differs from the true *nemorosus* in having dark and light scales intermixed on the wings, femora, and tibiae; it breeds in salt-marshes, whereas *O. nemorosus* is almost confined to woods and heaths.

Ochlerotatus quasiunivittatus, Theo.

An examination of mounted male genitalia of specimens from Salisbury, Mashonaland, and Nairobi, British East Africa, led to the quite unexpected conclusion that the insects from these localities are distinct species, as the genitalia differ very markedly. The name *quasiunivittatus* must be retained for the Mashonaland form, while the East African form may be referred, for the present at least, to *O. dentatus*. In this species the hind claws may or may not be toothed. *O. caliginosus*, Grah., from Ashanti, though appearing distinct from being smaller and much blacker, has genitalia almost exactly like those of *O. dentatus*, and may eventually have to be ranked as a variety of it. The genitalia of *O. cumminsi*, Theo., are also very similar.

Aedes (Skusea) pembraensis, Theo.

This was previously (*Bull. Ent. Res.* iii, p. 13.) included with doubt in *Howardina*, as only Theobald's type, in very bad condition, was known. Recently however a small series of females has been received from Mr. S. A. Neave, who took them near Siyu, Patta Island, British East Africa, 19-20. ii. 1912. In

general appearance these specimens closely resemble the Oriental *Aedes butleri*, Theo., and the Australasian *A. (Skusea) similis*, Theo.; and though the male remains unknown, there is every probability that the present species belongs to *Aedes* in the restricted sense. The simple claws of the female characterise the subgenus or group *Skusea*, to which *A. pembaensis* belongs, and which is differentiated from the *Culex* group (not always very clearly) by the form of the abdomen.

In *A. pembaensis* the scutellum is clothed with flat black scales; the head has mostly black scales, a few round the eyes and lateral patches of variable size being white. Mr. Neave thinks the species must breed in salt water, as the district in which he found it is extremely dry. It is, he says, a very troublesome biter.

Taeniorhynchus versicolor, sp. nov.

♀. *Head* light brownish with golden-yellow narrow scales and dark brown upright ones. Palpi about one-quarter as long as the proboscis, with mainly yellow scales, and some black scales at the middle and apex. Proboscis yellow, black at the tip, with a few scattered black scales. Antennae rather light brown, basal joint almost orange, a few dark scales on the first two joints. *Thorax* clothed rather sparsely with golden-yellow scales, which extend on to the scutellum; bristles dark brown. Integument dull brown, lighter in colour on the shoulders; pleurae light brown with a darker brown stripe. *Abdomen* banded with purple-black and golden-yellow scales, the former occupying rather more than the apical half of each of segments 2-7. *Legs* with mixed black and yellow scales; black rings at the apices of the tibiae and first three tarsal joints; last two tarsal joints entirely black; hind tibiae with a broad black ring near the middle; the scales of the hind tibiae not projecting. *Wings* clothed with long and rather narrow scales; these are for the most part blackish, but a few yellow ones are mingled with them, and on the stems of the fork cells, the basal half of the third vein, and the apices of the first and second veins, the scales are almost all yellow. The wing thus has two yellow patches, one just beyond the middle and the other close to the tip, which are conspicuous to the naked eye. The costa and wing-fringe are entirely dark. First fork-cell a little longer than the second, its stem about half as long as the cell.

♂. Resembles the female, but the dark scales are much more extensive, so that the yellow patches on the wings, so conspicuous in the female, are practically obliterated, and the tarsi are mainly blackish; the dark bands on the abdomen occupy quite two-thirds of each segment. Palpi exceeding the proboscis only by about half the length of the last joint; the last two joints are short and about equal in length; the first two joints are black-tipped, the last almost entirely black. The larger claws of the fore and mid legs each bear a single long tooth.

BRITISH EAST AFRICA: 1 ♀ (type), Nairobi, 16 vii. 1912 (*T. J. Anderson*); UGANDA: 2 ♂♂, 1 ♀, Mbarara, in house, 21 ix. 1912, and 1 ♀, Kabula, 11 xii. 1912 (*Dr. R. E. McConnell*). All the specimens have been presented to the British Museum by the Imperial Bureau of Entomology.

This species most resembles *T. fuscopennatus*, but differs in its dull thoracic integument, broad blackish abdominal bands, yellow patches on the wing of the female, shorter terminal joints to the male palpi, etc. *T. fuscopennatus* has a shiny thorax, bare scutellum, the dark bands of the abdomen narrow and often

absent, the dark and light scales of the wings evenly mixed, and salient scales on the hind tibiae. Dark specimens of *T. annetti* have somewhat similar wing markings, but that species has different thoracic scaling, narrower black rings on the tarsi, yellow costa and different venation.

Mansonioides uniformis (Theo.).

Panoplites uniformis, Theo., Mon. Cul. ii, p. 180 (1901).

Panoplites africanus var. *reversus*, Theo., Mon. Cul. ii, p. 189 (1901).

Panoplites australiensis, Giles, Gnats Ed. 2, p. 355 (1902).

This differs markedly from *M. africanus* in the male genitalia (fig. 1), the harpagones being much longer and thicker. It can also be distinguished by the coloration of the thorax and legs. The thorax has a more reddish tinge than in *M. africanus*, and the two longitudinal pale stripes are unbroken and more greenish. There is often in addition a median pale stripe (of the same greenish

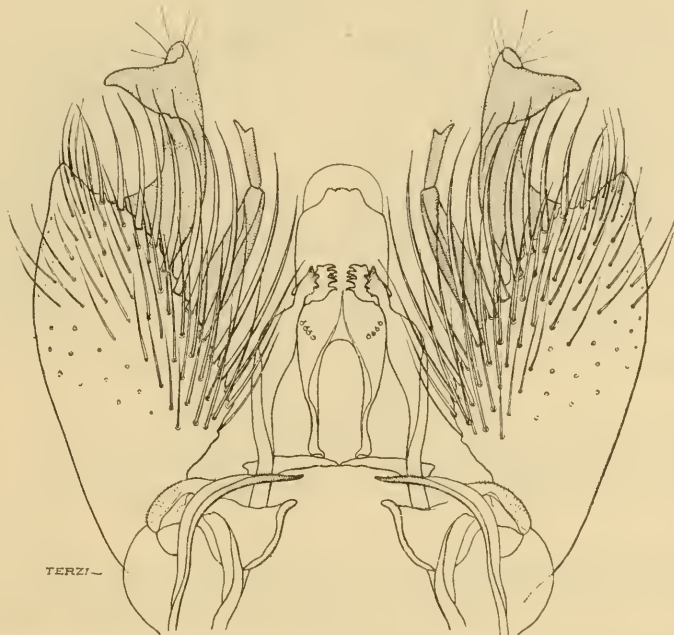


Fig. 1.—*Mansonioides uniformis* (Theo.) ; hypopygium from beneath.

colour) extending forwards from in front of the scutellum ; the type of *P. africanus* v. *reversus* is so marked. The five blotches on the femora are more ochreous and less well defined than in *M. africanus*, and the spots on the tibiae are also yellowish-ochreous instead of white, while the ground-colour of the legs is lighter, so that all the markings are much less sharply defined. Both species, however, vary somewhat in this respect.

The following localities for *M. uniformis* in Africa can be definitely confirmed from a re-examination of specimens (mostly female) :—

ANGOLA (*Dr. C. Wellman*) ; BECHUANALAND : Lake Ngami (*R. B. Woosnam*) ; PORTUGUESE E. AFRICA : Delagoa Bay (*Dr. J. F. Sant' Anna*) ; BRITISH E. AFRICA : Nzoia River (*W. Kennedy*), Lake Gango (*C. W. Woodhouse*), Malindi (*E. Brand*) ; NYASALAND : (*Dr. C. W. Daniels*, *F. O. Stoehr*), Zomba (*Dr. Gray*), Fort Johnston (*Dr. R. Bury*, *Dr. A. H. Barclay*), Rifu (*S. A. Neave*), Chiromo (*Dr. J. E. S. Old*) ; UGANDA : Busoga (*Dr. Hodges*),

Entebbe (*Dr. Moffat, Dr. Low*), shore of Lake Victoria Nyanza (*Captain A. D. Fraser*), Bussi (*Dr. C. A. Wiggins*), Muzizzi and Mugidi Rivers, Bunyampaka, Mohokya and Kavansa, Semliki River, all in Toro (*Dr. R. E. McConnell*), Koki Country, S.W. Buddu (*S. A. Neave*); SUDAN: Bahr-el-Ghazal (*Dr. Cummins*); N. NIGERIA: Amara, R. Benue (*J. McFarlane Pollard*), Maiduguri (*Dr. W. D. Inness*), Baro (*Dr. A. Ingram*), Lokoja, Derri and Yelwa (*Dr. J. J. Simpson*); S. NIGERIA: Lagos (*Dr. W. H. Sieger*), Yaba, Lagos (*Dr. W. M. Graham*), Aro (*Dr. J. J. Simpson*); SIERRA LEONE: (*Dr. Arbuckle*), Torma (*Dr. J. J. Simpson*); GOLD COAST: Accra (*Dr. W. M. Graham*), Weshiang, R. Dainsu (*Dr. H. F. Hamilton, Dr. A. C. Connal*).

I have studied the genitalia of male specimens from Ceylon and the Malay States, and find them identical with those of African specimens.

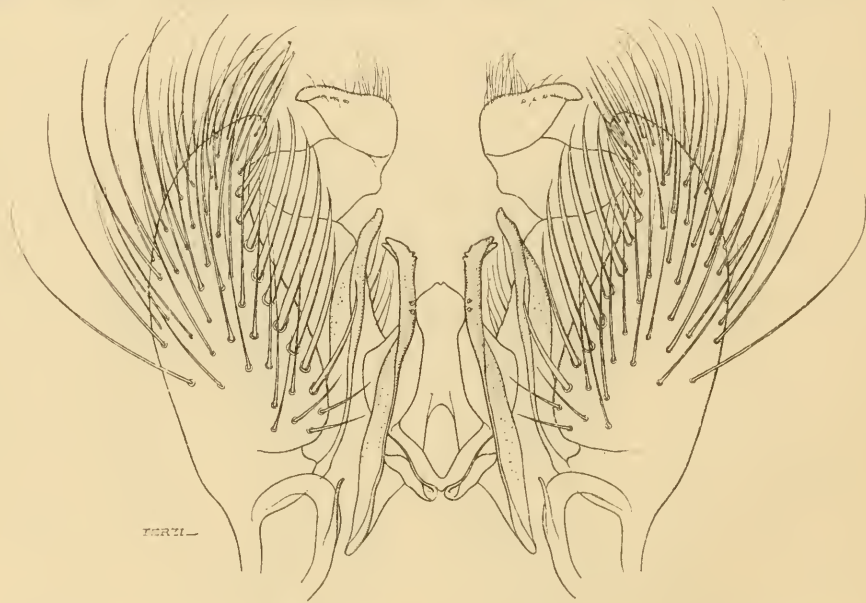


Fig. 2.—*Mansonioides africanus* (Theo.): hypopygium from beneath.

***Mansonioides africanus* (Theo.).**

Panoplites africanus, Theo., Mon. Cul. ii, p. 187 (1901).

Mansonia major, Theo., Mon. Cul. iii, p. 270 (1903).

Mansonia nigerrima, Theo., Mon. Cul. v, p. 450 (1910).

The pale stripes of the thorax are twice interrupted, but more distinctly so in some specimens than in others; the thoracic integument is usually darker than in *M. uniformis*, and the palpi of the female have a much more distinct white tip. The structure of the male genitalia is shown in the figure (fig. 2). As in the case of *Culex pipiens* and *C. fatigans*, the genitalia of the two African species of *Mansonioides* differ mainly or only in their basal parts (harpes and harpagones). *M. major* was described from a flattened, but typical female specimen.

M. nigerrima may perhaps rank as a good variety; it is much darker than the type: the thorax is darker, with hardly a trace of pale markings; the dark scales of the wings are much more numerous than the light, and the white rings

at the bases of the hind tarsal joints are much narrower than in typical *M. africanus*. The male genitalia, however, do not differ in any way. This form has up to the present only been found in Uganda.

The following distribution may be confirmed: BECHUANALAND: L. Ngami (*R. B. Woosnam*); BRITISH EAST AFRICA: near Wangi, coast of mainland (*S. A. Neave*), Magogoni Swamp, near Witu (*S. A. Neave*), Nzoia River (*W. Kennedy*), Kisumu (*Dr. A. Mouat*); NYASALAND: Fort Johnston (*Dr. A. H. Barclay*, *Dr. R. Bury*), Fort Maguire (*Dr. A. H. Barclay*), Zomba (*Dr. Gray*), Bua River and Chiromo (*Dr. J. E. S. Old*), Karonga, mouth of Nkumbaleza R. and near Kota Kota (*S. A. Neave*); N. RHODESIA: junction of Luangwa and Mpamadzi Rivers (*S. A. Neave*), Mburuma (*O. C. Silverlock*); UGANDA: Entebbe (*Dr. Moffat*, *Dr. Low*, *Capt. Grieg*), Chagwe (*Capt. A. D. Fraser*), Muzizzi, Mugidi and Lami Rivers, Ndaiga, Kidongo, Bunyampaka, Mohokya and Kikorongo, all in Toro (*Dr. R. E. McConnell*), western shore of Lake Victoria Nyanza, Buddu (*S. A. Neave*); BELGIAN CONGO: Coquilhatville and Yumbi (*Dr. A. Yale Massey*); SUDAN: Bahr-el-Ghazal (*Capt. Cummins*); N. NIGERIA: Lokoja (*Dr. E. A. Chartres*, *Dr. C. F. Watson*), Baro (*Dr. A. Ingram*, *Dr. J. J. Simpson*), Yelwa, Mama, Zungeru and Derri (*Dr. J. J. Simpson*); S. NIGERIA: Yaba, Lagos (*Dr. W. M. Graham*), Siluko (*Dr. A. H. Wilson*), Yewa River, Badagry (*Capt. L. E. H. Humfrey*), Obubra Station, Ikom District (*Dr. W. S. Clarke*), Bende and Ikpe (*Dr. P. H. Macdonald*), Oshogbo (*Dr. T. F. G. Mayer*), Aro, Ere, Onitsha and Asaba (*Dr. J. J. Simpson*); GOLD COAST: Bole (*Dr. A. Ingram*), Weshiang, R. Dainsu (*Dr. A. C. Connal*, *Dr. H. F. Hamilton*); SIERRA LEONE: Torma (*Dr. J. J. Simpson*); GAMBIA: (*Dr. Burdett*).

Var. *nigerrinus*: UGANDA: Mpumu (*Sir D. Bruce*), Entebbe (*Dr. Moffat*), Kafu River, near Hoima, Koki Country, S.W. Buddu, and Mabira Forest, Chagwe (*S. A. Neave*).

In many districts *M. africanus* seems to be commoner than *M. uniformis*, but it has not been found outside the Ethiopian Region.

Culex pipiens, L.

Culex pipiens, L., Syst. Nat. Ed. x, p. 602 (1758).

? *Culex zombaensis*, Theo., Mon. Cul. ii, p. 143 (1901).

Culex varioannulatus, Theo., Mon. Cul. iii, p. 198 (1903).

Culex azoriensis, Theo., Mon. Cul. iii, p. 210 (1903).

Culex osakensis, Theo. (♀ only), Mon. Cul. iv, p. 439 (1907) [♂ = *C. fatigans*].

Culex quasiquarti, Theo. (♀ only), Mon. Cul. v, p. 374 (1910) [♂ = *C. pallidocephalus*].

This species is common at Nairobi and other places in British East Africa.

The males from these localities differ in no way from the typical *C. pipiens* of Europe, but strangely enough the females are very variable in markings, which is not the case with European specimens; sometimes the abdomen has well-marked yellowish-white bands, sometimes these are reduced to inconspicuous pale lateral spots, so that the whole dorsal surface of the abdomen appears blackish. Every gradation occurs between these two extremes. In these dark varieties the

reddish thorax and the venation generally give fairly safe clues to the specific identity. The only absolutely reliable character, however, is the structure of the male genitalia (fig. 3). *C. quasiquarti* was certainly described from females of *C. pipiens*; the type of *C. zombaensis* is either the dark form of *C. pipiens* referred to above, or a corresponding variety of *C. fatigans*, the venation more resembling that of the last-named species, though I prefer to regard it as the former; it is, however, a matter of no consequence, as both species occur in East Africa.

In mounting genitalia I find it advantageous to use the following method: The tip of the abdomen is carefully snipped off with a pair of sharp-pointed scissors, and placed in 10 per cent. caustic potash, which is then just brought to the boil. The specimen is then washed well with water, transferred to absolute

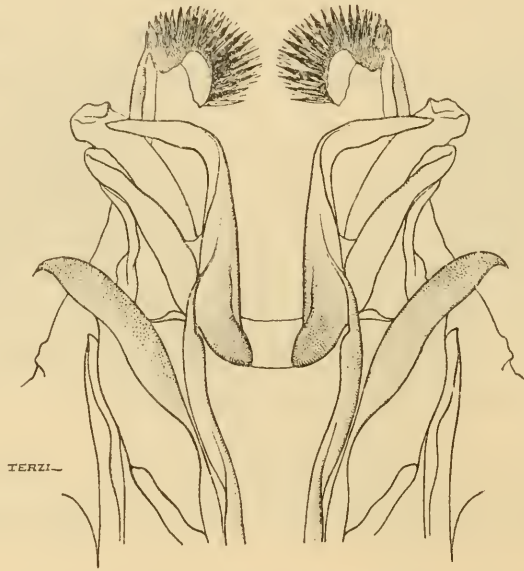


Fig. 3.—*Culex pipiens*, L.

Basal parts (harpes and harpagones) of hypopygium from above. The large side pieces are not shown, as they exactly resemble those of *C. fatigans*, and are essentially similar to those of *C. pallidocephalus*, except that their lateral processes bear only one leaf-like appendage.

alcohol for two or three minutes, thence to clove oil, where the hypopygium is separated from the terminal abdominal segments, and is then transferred to a drop of stiff Canada balsam on a small strip of transparent celluloid, without any coverslip, which is placed on the pin below the stage bearing the insect from which the genitalia were removed. The hypopygium should be carefully adjusted when placed in the balsam, so that good dorsal and ventral views can be obtained, either for examination or for drawing. If this is not done, however, it is quite easy to remount the specimen at any time.

I find that if specimens of complex genitalia are mounted on ordinary glass slides with coverslips over them, the arrangement of the parts is apt to become so much altered that without considerable experience they are hardly recognisable. The figures given by Messrs. Dyar & Knab for *Culex pipiens* and *C. fatigans* (Proc. Ent. Soc. Wash. 1909, pl. 2, fig. 4, and pl. 1, fig. 1) were made from slide preparations, and the differences between them and those here given are mainly

due to that circumstance. The method of mounting described above has, in addition to much greater reliability, the considerable advantage of keeping the mount and the rest of the specimen together. The figures here given (except figs. 5 and 6) have been prepared from such mounts.

Culex fatigans, Wied.

C. fatigans, Wied., Auss. Zweifl. Ins., p. 10 (1828).

C. quasipipiens, Theo., Mon. Cul. ii, p. 136 (1901).

C. fouchowensis, Theo., Mon. Cul. ii, p. 137 (1901).

? *C. reesii*, Theo., Mon. Cul. ii, p. 145 (1901).

? *C. sericeus*, Theo., Mon. Cul. ii, p. 147 (1901).

C. osakensis, Theo. (♂ only), Mon. Cul. iv, p. 439 (1907).

C. christophersi, Theo., Mon. Cul. iv, p. 453 (1907).

C. quinquefasciatus, D. & K. (? *nec* Say), Proc. Ent. Soc. Wash. xi, p. 34 (1909).

C. goughii, Theo. (♂ only), U.S. Afr. Dept. Agric., First Rept. Vet. Res., p. 268 (1911).

The types of *C. reesii* and *C. sericeus* are in Dr. Rees' collection at Hong Kong, but though I have been unable to examine them, I have little doubt that they are

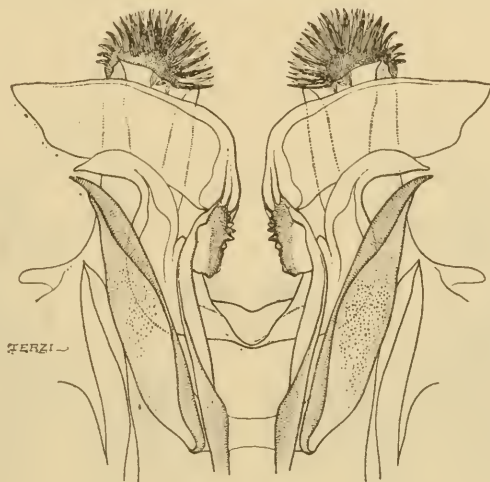


Fig. 4.—*Culex fatigans*, Wied.

Basal parts (harpes and harpagones) from above.

C. fatigans, which is very common in that locality. The male types of *C. quasipipiens*, *C. fouchowensis*, *C. osakensis*, *C. christophersi* and *C. goughii* I have examined, and they are certainly *C. fatigans*. There seems to be insufficient justification for Dyar and Knab's replacement of the name *fatigans* by *quinquefasciatus*, Say, and it is therefore reinstated, for the present at least. Say's description of the thorax of *C. quinquefasciatus* indicates an *Anopheles* rather than a *Culex*, and Wiedemann, who stated that he had seen most of Say's original specimens, referred the species to *Anopheles*. Howard examined some of Say's specimens in the Vienna museum, all of which were *Culex* of the *pipiens* group, but there is nothing to show that these are the examples on which the description was based.

This species is difficult to distinguish from *C. pipiens* until the male genitalia are mounted and examined microscopically; when this is done, however, the differentiation is easy.

As in *C. pipiens*, the harpagones are divided into four plates (not three, as Dyar and Knab say), but these have a very different structure and arrangement (fig. 4). Males are usually somewhat smaller than those of *C. pipiens*; females also are a trifle smaller on the average, and have the upper fork cell shorter than in *C. pipiens*.

Culex fatigans has a wider distribution in Africa than has been stated previously. I can confirm its occurrence in the following localities from examination of male specimens:—

CAPE COLONY: Cape Town; TRANSVAAL: Onderstepoort (*Dr. Theiler*); NATAL: Pietermaritzburg, Durban (*Dr. S. R. Christophers*); NYASALAND: Zomba (*Dr. C. W. Daniels, Dr. Gray*); BRITISH EAST AFRICA: Mombasa (*Dr. J. D. McKay, S. A. Neve*), Nairobi (*H. J. Mackinder*); ZANZIBAR: Zanzibar Island (*Dr. W. M. Aders*), Pemba Island (*Dr. R. O'Sullivan Beare*); SOMALILAND: Bulhar (*Dr. R. E. Drake-Brockman*); UGANDA: Entebbe (*Dr. Low*); SUDAN (*H. H. King, Dr. A. Balfour*); BELGIAN CONGO: Leopoldville (*Dr. Dubois*); N. NIGERIA: Lokoja (*Dr. C. F. Watson*), Sokoto (*Dr. J. M. Dalziel*); GOLD COAST: Accra (*Dr. W. M. Graham, Dr. A. C. Connal*).

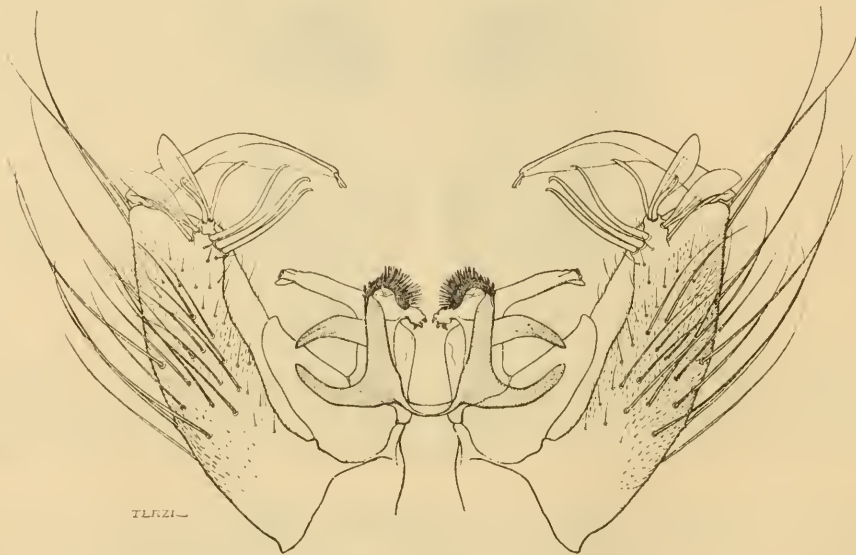


Fig. 5.—*Culex pallidocephalus*, Theo.

Hypopygium from beneath (slide preparation). The two leaf-like appendages to the lateral processes of the side pieces are an unusual feature for a *Culex*, and may not be normal in this species.

Culex pallidocephalus, Theo.

C. pallidocephalus, Theo. (♀ only), First Rept. Welle. Lab. p. 73 (1904)
[♂ = *C. decens*].

C. stoehri, Theo., Mon. Cul. iv, p. 419 (1907).

C. quasiquarti, Theo. ♂ only), Mon. Cul. v, p. 374 (1910) [♀ = *C. pipiens*].

This species is quite distinct from *C. pipiens* and *C. fatigans*, and is not very difficult to identify. The thorax, instead of being almost uniformly reddish

brown, is dark brown, clothed mainly with dark brown scales, but with a variable number of yellowish ones distributed as follows: on the margins of the posterior third or half of the mesonotum; in front of the scutellum; and sometimes in two more or less defined spots near the middle of the mesonotum, connected with the pale patch in front of the scutellum. The hind tibiae usually have a much more distinct yellowish white spot at the apex than is found in *C. pipiens* or *C. fatigans*. The abdomen of the female is very variable in its markings; usually it has distinct yellowish basal bands of even width on each segment; these bands may be slightly expanded in the middle, but are more often contracted, being occasionally reduced to lateral spots. The genitalia (fig. 5) have the harpes with a large basal projection, the harpagones being divided into three untoothed plates.

SUDAN: Sennar (*Dr. A. Balfour*); UGANDA: Mpumu (*Sir D. Bruce*), Entebbe (*Dr. Low*), Kasala, Chagwe and Kampala (*Capt. A. D. Fraser*), Bembadalada (*Dr. C. H. Marshall*); BRITISH EAST AFRICA: Njoro and Nairobi (*T. J. Anderson*), Nassisi Hills, 20 miles north of Muniyas (*S. A. Neave*), southern slopes of Mt. Elgon (*S. A. Neave*), eastern slopes of Aberdare Mts. (*S. A. Neave*), Laikipia and near Lake Naivasha (*W. Kennedy*); NYASALAND: Zomba (*Dr. J. E. S. Old*), Upper Shire (*Dr. J. B. Davey*), Fort Maguire (*Dr. A. H. Barclay*).



Fig. 6. *Culex mirificus*, sp. n.

Hypopygium from beneath (slide preparation).

Culex mirificus, sp. nov.

Resembles *C. pallidocephalus* so closely that, apart from the genitalia, I can detect no differences whatever. The male genital organs however are totally different in every part (fig. 6)—much more so than are, for example, those of

C. pallidocephalus from *C. ager* or *C. tipuliformis*, which could not possibly be confused. If there were only one specimen it might have been regarded as a remarkable monstrosity or perhaps a hybrid; the occurrence of two other similar specimens makes both these hypotheses, especially the former, improbable. How the females of *C. pallidocephalus* and *C. mirificus* may be distinguished I cannot say.

BRITISH EAST AFRICA: 1 ♂ (type), Njoro, 28 i. 1912 (*T. J. Anderson*), 2 ♂, L. Nakuru, 20 ii. 1911 (*Dr. H. A. Bödeker*).

Ten females taken by Dr. Bödeker at the same time and place as the males may be either this species or *C. pallidocephalus*. The three males and five females have been presented to the British Museum by the Imperial Bureau of Entomology.

Culex decens, Theo., and **C. invidiosus**, Theo.

The genitalia have the harpes with an even larger basal projection than in *C. pallidocephalus*; the harpagones are divided into three plates, of which the second is toothed.

Culex simpsoni, Theo.

The genitalia resemble those of *C. decens* and *C. invidiosus*, but the third plate of the harpagones is not distinctly separated from the second, which is toothed otherwise than in the two species named. *C. simpsoni* varies a good deal in size; it closely resembles *C. univittatus*, except that the tibiae are without the pale stripe; the coloration of the thorax is the same in the two species. This similarity has led to confusion; the specimen which Theobald selected for his male type of *C. univittatus* is really *C. simpsoni*, as also is the specimen referred to by the writer (*Bull. Ent. Res.* iii, p. 32), as apparently a *C. univittatus* lacking the tibial stripe.

Culex univittatus, Theo.

As in the three species last considered, the harpes have a very large basal projection; the harpagones are divided into only two plates, the second very difficult to see; it is untoothed, though emarginate at its tip. The side-pieces and claspers of all species of *Culex*, except such abnormal ones as *C. mirificus*, resemble one another extremely closely, and usually it is only in the small basal parts that specific differences can be made out.

In this species the femora sometimes show traces of white lines such as are seen in *C. tipuliformis*; these are particularly evident in some specimens from Nairobi (*T. J. Anderson*).

Culex hortensis, Fic.

Culex hortensis, Ficalbi, *Bull. Soc. Ent. Ital.* xxi, p. 27 (1889).

Maillotia pilifera, Theo., *Mon. Cul.* iv, p. 274 (1907).

Prof. Ficalbi has kindly sent me some specimens of *C. hortensis*, which have enabled me to give the foregoing synonymy. Blanchard makes *C. hortensis* a synonym of *C. geniculatus*, Oliv., but I cannot accept this, as it seems to me that Olivier's original description clearly indicates *Ochlerotatus lateralis*, Mg.

Cyathomyia fusca (Theo.).

The genus *Cyathomyia* proposed by de Meijere (Ann. Jard. Bot. Buitenzorg, ser. 2, supp. iii, p. 921, 1910) is evidently the same as Theobald's *Protomelanoconion* (Mon. Cul. v, p. 462, 1910), though it appears that *C. jenseni*, Meij., and *P. fusca*, Theo., are distinct species. I learn from Prof. de Meijere that the part containing his description of *Cyathomyia* was published on 6th June, 1910, while the fifth volume of Theobald's Monograph did not appear till July, 1910. The more euphonious name *Cyathomyia* can therefore be substituted for *Protomelanoconion*; it is doubtful, however, whether the genus should be kept distinct from *Culex*.

Hodgesia sanguinis, Theo.

The British Museum series of this species contains two males; they very closely resemble the females, except in some tarsal modifications. The front tarsi are simple; the middle tarsi have the last joint bent backwards, but the fourth joint is without a tuft of scales; the hind tarsi have on their two last joints a fringe of long scales very much like that of *Eretmopodites chrysogaster*.

Hodgesia cyptopus, Theo.

Theobald's type is a male, not a female. The different tarsal characters (viz. :— a tuft of scales on the fourth joint of the middle tarsi, hind tarsi simple) will readily distinguish it from *H. sanguinis*.
