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Some new African Milichiidae (Diptera: Cyclorrhapha) having pronounced sexual dimorphism of the frons

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Enigmilichia dimorphica gen. et sp. nov. and *Milichia distinctipennis, fumicostata, savannaticola* and *sylvicola* spp. nov. are described from tropical Africa. These forms, though belonging to different subfamilies, exhibit a very similar sexual dimorphism in the shape and chaetotaxy of the frons. Such a dimorphism is unknown within the Milichioidea.

KEY WORDS:— Milichiidae – new taxa – sexual dimorphism – tropical Africa.

CONTENTS

INTRODUCTION

In January 1977 Dr R. A. Johnson reared a new species of Milichiidae from rotten yam tubers at Mokwa, Nigeria. This species is not referable to any described genus, but has affinities with the fossil *Pseudodesmometopa succineum* Hennig, a genus and species known only from a single female from Baltic amber, and exhibits a very marked sexual dimorphism in the shape and chaetotaxy of the frons. Some undescribed African species of the genus *Milichia* Meigen show a similar sexual dimorphism and are for convenience systematically treated here.

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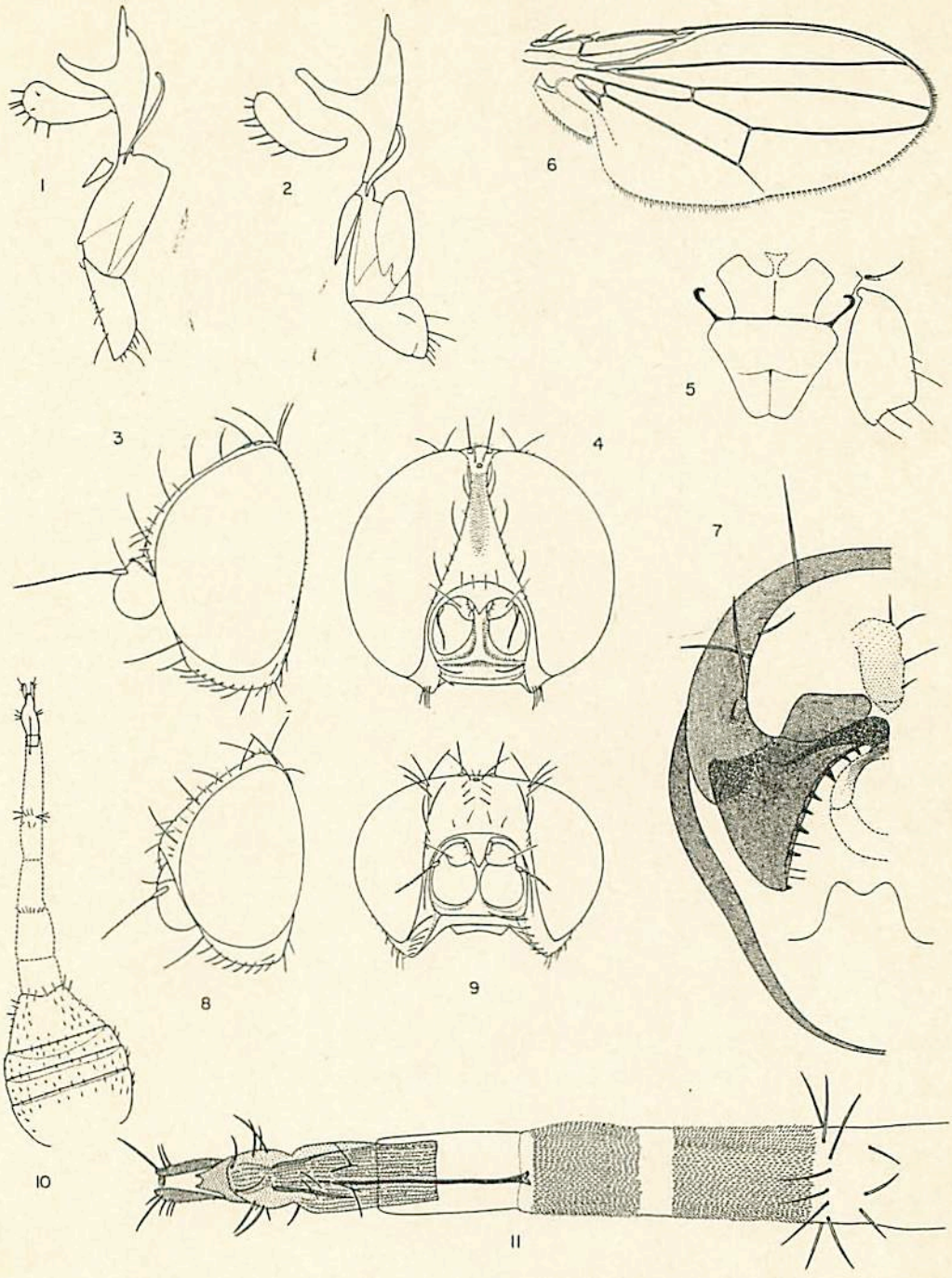
NOTES ON SEXUAL DIMORPHISM IN FRONTAL STRUCTURE AND CHAETOTAXY IN THE DIPTERA

Sexual dimorphism in head structure is common in the Diptera. As in the Lepidoptera, it is common for the antenna of the male to be so constructed as to have a vastly greater surface area than that of the female (e.g. Culicidae), or rarely the opposite (*Ramuliseta*, Pyrgotidae). Mouthparts are often quite different between the two sexes, especially in those flies in which the female feeds on blood and the male on nectar. Otherwise sexual dimorphism manifests itself in the structure of sclerites, in chaetotaxy, dusting and the enlargement of eye facets. In certain acalyptrate families (Cyclorrhapha: Schizophora), such as Micropezidae, Diopsidae, Platystomatidae and Richardiidae, stalk-eyed species are represented, in which the frons is enormously widened. In these the width of the frons may be determined by sex or by the size of the individual insect, those larger individuals tending to have longer eye stalks in relation to their size than do smaller individuals. However, these are exceptions to the rule; elsewhere in the Diptera where sexual dimorphism in frons width occurs the frons of the female is invariably wider than that of the male. This is particularly noticeable in the Tabanidae (Orthorrhapha: Brachycera) and Pipunculidae (Cyclorrhapha: Aschiza), in both of which families the frons of the male is, with the exception of its extremities, invariably obliterated or nearly so. Two types of sexual dimorphism in frontal chaetotaxy exist; that in which a greatly reduced width of frons is incapable of accommodating a full complement of frontal bristles (commonly so in male Muscidae and Calliphoridae), and that in which the bristles are modified in one sex [e.g. the apically lanceolate anterior superior orbital bristle in the male of the mediterranean fruit fly, *Ceratitis capitata* Wiedemann (Tephritidae) and the minute ocellar bristles in the male of *Leucophenga perargentata* Bächli (Drosophilidae)]. Within the Cyclorrhapha: Schizophora it is common in families of the calyptrate Muscoidea (Muscidae, Anthomyiidae, Calliphoridae and Tachinidae) for the male to have the more anterior pairs of superior orbital bristles either absent or very weakly developed and reclinate, whereas in females of the same species they are strongly developed and proclinate.* However, many Tachinidae have such bristles strongly developed and proclinate in both sexes, whereas in closely related species their presence may be restricted to the female sex. In the acalyptrate superfamilies Milichioidea and Drosophiloidea it is common for the more anterior superior orbital bristle to be proclinate and the more posterior reclinate in both sexes, and also for a very minor dimorphism in frons width to exist between the sexes. Although a profound sexual dimorphism in frontal structure and its chaetotaxy occurs, though rarely, in the acalyptrates [see Hennig's 1968:2, figs 1–4 of *Holopticander papuanus* Hennig (Lauxaniidae) and 1952:605–606, figs 1–4 of *Ramuliseta plaumanni* Hennig (Pyrgotidae)], I know of no recorded case of such within the Milichioidea.

Enigmilichia gen. nov.

Orbital bristles in 2 pairs superior and 2 pairs inferior, in the female the more anterior superior orbital proclinate; ocellar, vertical and postvertical bristles well

* The terminology of frontal bristles varies with authors, the proclinate superior orbitals being referred to by van Emden (1954:3) as the proclinate orbital seta, and by Zumpt (1956:7) as the fronto-orbital bristles, and the reclinate superior orbital by the same authors respectively as the praevertical seta and the frontal bristle.



Figures 1–11. Fig. 1, *Desmometopa* sp., female, mouthparts in profile; Figs 2–11, ***Enigmilichia dimorphica*** **gen. et sp. nov.** Fig. 2, Male, mouthparts in profile; Fig. 3, male, head in profile; Fig. 4, male, head from in front; Fig. 5, male, pro- and mesosternum, left fore coxa and propleural bristle, from beneath; Fig. 6, male, wing; Fig. 7, male, right side of terminalia from beneath, inset on same scale apical medial keel of pregenital (5th) sternite; Fig. 8, female, head in profile; Fig. 9, female, head from in front; Fig. 10, female, abdomen from above; Fig. 11, female, apical half of ovipositor from above.

developed; labellum pad-like, short; labrum long, as long as the stipes; thoracic chaetotaxy: 1 humeral, 1 posthumeral, 2 notopleural, 1 supra-alar, 2 postalar, 1 prescutellar dorsocentral, 2 scutellar marginal, 1 propleural, 1 upper sternopleural, eight rows intradorsocentral setulae, 1 enlarged prescutellar acrostical; mid-tibia with 1 strong apical ventral bristle that is nearly half as long as basitarsus; subcosta apically fused with R_1; R_{4+5} and M convergent apically.

Type and only species: *E. dimorphica* sp. nov.

Remarks

Enigmilichia belongs to the Madizinae, but has some characters normally associated with the Milichiinae, these being the very narrow jowls, and in the female the lie of the superior orbital bristles (directed forwards and backwards, rather than outwards over the eye). From *Pseudodesmometopa* it further differs in having only a single weak supra-alar bristle, rather than two which are stronger, in having the subcosta apically merging into R_1, rather than meeting the costa, and in having R_{4+5} and M convergent apically, rather than parallel. The structure of the prosternum is similar to that of *Desmometopa* as figured by Speight (1969:350, fig. 49) but it is more widely joined to the mesosternum.

In adult mouthpart structure *E. dimorphica* (Fig. 2) is similar to *P. succineum,* having the labrum long and the labellum short and pad-like. This is a very different shape of proboscis from that of *Desmometopa* (Fig. 1), in which the labrum is very short and the labellum long. The stipes of the type of *P. succineum* is not visible in Hennig's figure of the head (1971: 10, fig. 12), but in *E. dimorphica* it is shorter and more robust than it is in *Desmometopa*. The apex of the ovipositor is similar in structure and chaetotaxy to that of *P. succineum* (Hennig, 1971 : 15, fig. 18), but quite unlike that of *Desmometopa m-nigrum* Zetterstedt as figured by Hennig (1971: 15, fig. 21).

Enigmilichia dimorphica sp. nov. ♂♀
(Figs 2–15)

A black species with some yellow marking on the legs, heavily brown dusted, with all hairs and bristles black.

Male. Head (Figs 3, 4) 1.09 times as wide as thorax, the ratio of width: height: length being 1.61: 1.50: 1; frons, apart from ocellar prominence, greyish dusted, appearing silvery in some lights, at narrowest part 0.10, at widest part 0.37 times width of head; interfrontal setulae absent, though four proclinate hairs present on anterior margin of frons; all orbital bristles reclinate, becoming progressively shorter and weaker posteriorly; lunule pale, dirty yellowish white; jowls 0.09 times height of eye; eye with a few scattered and very short hairs, the facets adjacent to frons larger, where seven in line occupy 0.5 mm, becoming progressively smaller posteriorly, where the smallest are half the diameter; base of third antennal segment reddish on inner side. Thorax chocolate brown dusted, becoming somewhat greyish on lower half of sternopleuron; bristle on upper margin of sternopleuron preceded by two short hairs. Wing (Fig. 6) greyish hyaline with yellowish brown veins and an even distribution of microtrichia over the entire membrane; haltere black. Legs with all tarsi and apices of fore and mid-tibiae dirty yellow; fore and mid-femora with a row of long but weak posteroventral setae. Abdomen less heavily dusted than the thorax, the fifth

tergite appearing greyish dusted when viewed obliquely; tergites with marginal bristles laterally situated and with scattered short hairs; sternites quadrate, the fifth (the pregenital) with a distinct median apical prominence, which is apically emarginate (Fig. 7 inset); lateral membrane of praeabdomen ridged and covered in anteriorly-directed scale-like pointed spicules; terminalia (Fig. 7), the inner edge of surstylus with a row of strong toothlike projections. Length about 2.5 mm, of wing 1.9 mm.

Female resembling male except for characters of the head and postabdomen, which are: head (Figs 8, 9) as wide as thorax; frons brown dusted, almost parallel-sided, at narrowest part 0.35 times width of head, with orbital bristles more equal in length, the more anterior superior orbital proclinate and the more posterior reclinate, and with interfrontal setulae present; eye facets small, of uniform size; jowls 0.11 times height of eye; abdomen (Figs 10, 11) with ovipositor long, bearing two bands of fine anteriorly directed spicules. Spermathecae were not visible in the material examined, though this was hardly mature at the time of death, which took place two to three days after emergence.

Puparium brown, subshining, ovoid, 2.75 mm in length, 1.0 mm in greatest width; anterior spiracle (Fig. 13); posterior spiracles (Figs 14, 15); cephalopharyngeal skeleton (Fig. 12). In general appearance the puparium resembles that of *Milichiella lacteipennis* Loew as figured by Bohart & Gressitt (1951:pl. 12), except that the anterior spiracles are more laterally, rather than forwardly, directed, and the cuticle between them is convex and bears four strong corrugations. On the same plate Bohart & Gressitt figure the puparium of *Desmometopa tarsalis* Loew, in which both anterior and posterior spiracles are much larger and have longer bases.

Material: Holotype ♂ N. NIGERIA: Niger State, Mokwa, .em. 21.i.1977 ex rotten yam tuber (R. A. Johnson); Paratypes, 29♂, 9♀ and 4 pupae, same data as holotype; 2♂ M.W. State, Udo Forest Reserve, 11.iv.1975 (J. T. Medler). Holotype and paratypes deposited in British Museum (Natural History), London; paratypes in U.S. National Museum, Washington, D.C., Muséum National d'Histoire Naturelle, Paris and Institute for Agricultural Research, Samaru.

KEY TO SPECIES OF *MILICHIA* HAVING MALES WITH NARROW FRONS

1. Wing heavily dark brown fumose with a hyaline tip *distinctipennis* sp. nov.
— Wing either hyaline or if at all fumose with brown clouding only adjacent to fore margin 2
2. Wing membrane between costa and R_{2+3} rather heavily brown fumose, contrasting with the (at most) slightly fumose membrane elsewhere. Humerus, notopleuron and pleura heavily pale grey dusted, contrasting with the subshining mesonotum. Dorsum of scutellum silvery dusted when viewed obliquely. Dorsum of tergites 2–4 in the male strongly silver dusted when viewed obliquely. Tergite 5 of female dusted . . . . . *fumicostata* sp. nov.
— Wing membrane nowhere more than slightly brownish tinged. Mesonotum and pleura both subshining through weak dust. No sclerite silver dusted. Tergite 5 of female completely undusted . . . 3

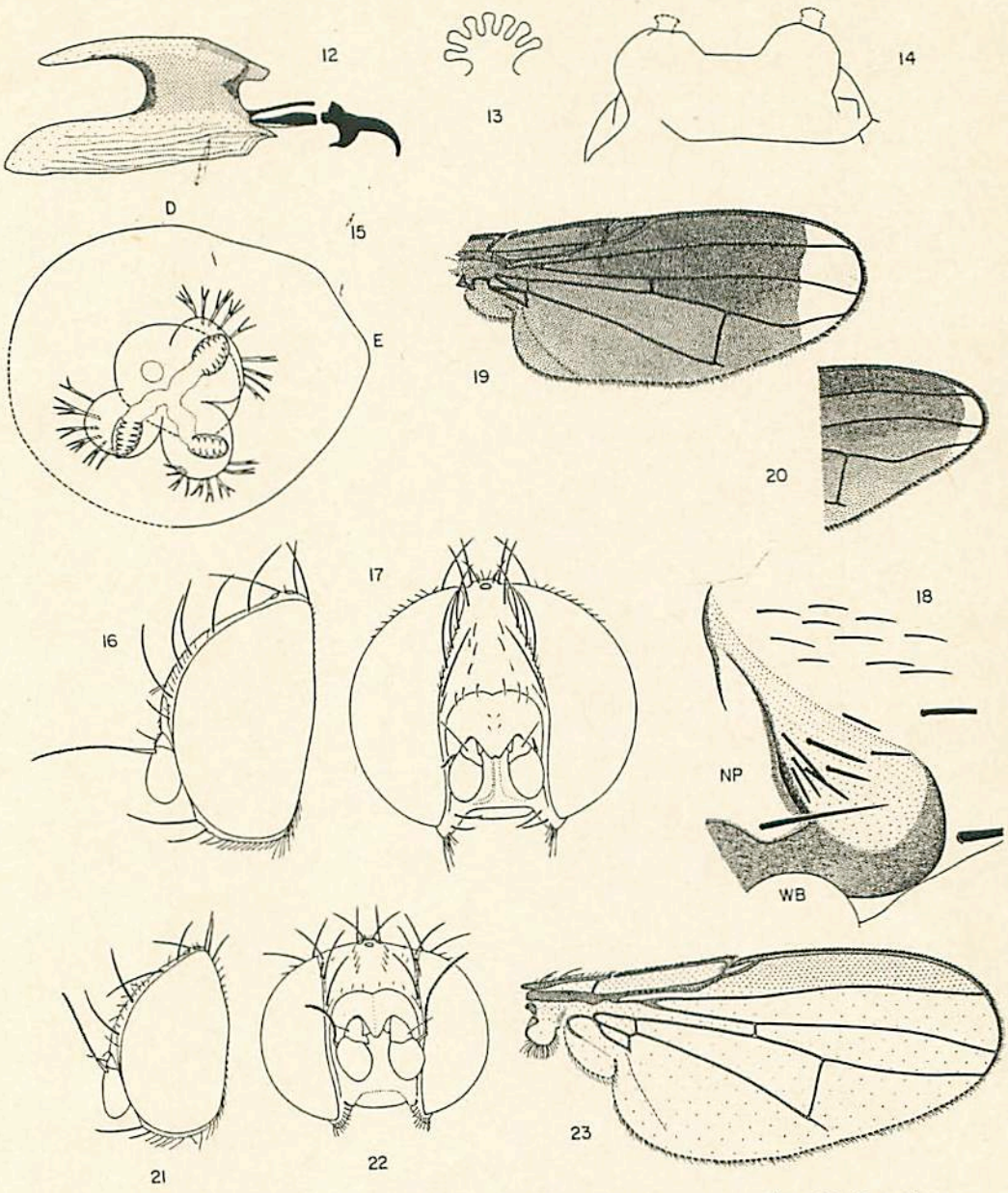
3. Haltere in both sexes with a yellow knob. Abdomen black throughout in both sexes. Mesonotum more grey-brown dusted . *savannaticola* sp. nov.
— Haltere black throughout in male, in female with a yellow knob. Tergite 2 noticeably dirty yellow in male, in female less noticeably so. Mesonotum more coal-black dusted . . . . . *sylvicola* sp. nov.

Milichia distinctipennis sp. nov.♂♀
(Figs 16–22)

A black species with wing infuscate except apically, and base of abdomen yellow marked.

Male. All bristles black, all hairs black apart from the squamal fringe. Head (Figs 16, 17) and appendages black, heavily dark grey dusted, in some lights the frons appearing matt black and the lunule, facialia and jowls somewhat silvery; frons constricted, at anterior ocellus 0.17 and at fore margin 0.44 times width of head; jowls 0.04 times height of eye; four long inferior orbital bristles, which become progressively shorter posteriorly; one long superior orbital; ocellars, postverticals and internal vertical bristles long, but external vertical bristle minute; eyes sparsely short haired with facets subequal; palpi simple, rodlike, with short erect bristles. Thorax black, brownish dusted on mesonotum and scutellum, grey dusted on pleura; chaetotaxy: 1 humeral, 1 posthumeral, 2 notopleural, of which the more posterior (Fig. 18) is less than half as long as the more anterior, 2 postsutural dorsocentrals, 1 prescutellar acrostical, 1 supra-alar, 2 postalar, 2 scutellar, 1 propleural, 1 upper sternopleural preceded by a few short hairs, mesonotal setulae in about eight rows between more anterior pair of dorsocentrals, a group of short robust bristles situated in suture just above posterior notopleural bristle. Wing (Fig. 20) dark brown fumose with dark veins and tip hyaline and microtrichia evenly distributed over surface; wing margin between apices of M_{1+2} and M_{3+4} slightly concave, the apical half of the ultimate section of M_{1+2} strongly converging with R_{4+5}; squama yellow with fringe hairs yellow; haltere with stem black and knob yellow. Legs black, faintly grey dusted, with tarsi dirty yellow and somewhat infuscate apically; mid-femur with a row of long posteroventral bristles. Abdomen black, subshining through faint grey dust and with tergites clothed with dense short setae except on pale markings, which are devoid of them; tergite 2 yellow on all but a narrow basal and apical band and on the rim formed by its curvature onto the ventral surface of the abdomen, on this dark lateral line with numerous fine erect sinuate hairs; tergite 3 with similar markings and chaetotaxy, but the yellow markings are confined to the basal half and marginal bristles are present; tergites 4 and 5 with marginal bristles. Length about 3.75 mm, of wing 3.65 mm.

Female resembling male, differing from it in the following respects: only two pairs of strong inferior orbital bristles; two pairs strong superior orbitals, of which the more anterior is proclinate (Figs 21, 22); frons almost parallel-sided, at anterior ocellus 0.36 times width of head; external vertical bristle as long and strong as the internal; wing margin (Fig. 19) less concave between apices of M_{1+2} and M_{3+4} and more broadly hyaline apically, the apices of R_{4+5} and M_{1+2} slightly less convergent; pale abdominal markings less clear, well-defined or extensive, usually obliterated on tergite 3; laterally-situated fine hairs absent from tergite 3 and on tergite 2 shorter and less erect and sinuate.



Figures 12–23. Figs 12–15, *Enigmilichia dimorphica* gen. et sp. nov. Fig. 12, Puparium, cephalopharyngeal skeleton in profile; Fig. 13, puparium, anterior spiracle; Fig. 14, puparium, posterior extremity from above; Fig. 15, puparium, posterior spiracle from behind (D denotes 'dorsal', E 'external'). Figs 16–22, *Milichia distinctipennis* sp. nov. Fig. 16, Male, head in profile; Fig. 17, male, head from in front; Fig. 18, female, setal group in mesonotal suture in profile (NP denotes 'notopleuron', WB 'wing base'); Fig. 19, female, wing; Fig. 20, male, apex of wing; Fig. 21, female, head in profile; Fig. 22, female, head from in front; Fig. 23, *Milichia fumicostata* sp. nov. female, wing.

Variation. The above description is based on the holotype and females from the same series. A great deal of variation exists in the other material that is available of this species, variation sometimes being apparent between specimens from the same series and taking the following forms. (a) *Size*: Much of the material from Congo, Cameroun and Nigeria is, irrespective of sex, of a smaller size, wing length being as little as 2.50 mm. (b) *The degree of infuscation of the wing*: In smaller specimens the wing is noticeably less infuscate in all but the costal, subcostal and marginal cells and the apical spot is consequently less striking. In the paratype from Isheri, which is mature, the infuscation is so weak as to render the apical spot hardly discernible. (c) *Coloration*: In smaller specimens it is usual for the squamal fringe to be considerably darker, but intermediates occur. (d) *Chaetotaxy*: The sutural group of short robust bristles is not always as distinctive as it is in the holotype, the bristles often being weaker and fewer in number, especially in smaller individuals. The most posterior inferior orbital bristle is rarely absent in some males. In two male paratypes (Ilaro Forest and Congo) the external vertical bristle is strongly developed and as long as the internal. The former of these two specimens may be an intersex, as, though frontal chaetotaxy, wing and abdomen are all typically male, the shape of the frons is intermediate between that of the two sexes. (e) *Mesonotal dusting*: In smaller specimens the mesonotal dusting is usually less heavy and darker in hue. A less adequate material might appear to contain two species, but after careful comparison of variation in this rich material I do not feel justified in regarding it as anything more than a single very variable species.

Material. Holotype ♂ UGANDA: Entebbe, i.1935 (T. H. E. Jackson). Paratypes, 2♂ 9♀ same data as holotype; 1♀ Kalungi Swamp, 12.xi.1934 (F. W. Edwards); 1♀ Budongo Forest, 7–8.ii.1935 (F. W. Edwards); 1♂ 2♀ Kawanda, 19.ii.1946 (H. S. Darling); 1♂ Mpanga Forest, 10.iii.1958 (J. Bowden); 7♂ 11♀ REP. POP. CONGO: Pool Forêt de Mandiélé, 600 m, 6.x.1975 (L. Matile); 6♂ 3♀ CAMEROUN: Ebolowa-Nkuemvone, Champs semenciers, 22.viii.1967 (L.Matile); 1♀ same locality and collector, 1.viii.1967; 3♀ Yaoundé-N'Kolbisson, 30.vii. 1967 (L. Matile); 4♀ same locality and collector, 9.viii. 1967; 1♂ Vallée du Soo, Forêt marècageuse, 22.viii.1967 (L. Matile); 1♀ Villa Carde, Borots du Nyong, 4.viii.1967 (L. Matile); 1♀ Kumba, 28.x.1949 (H. Oldroyd); 1♀ NIGERIA: Lagos, Ikoyi Park, 9–19.i.1973 (J. C. Deeming); 1♂ Ikoyi, 4.i.1974 (M. A. Cornes); 1♀ Lagos, Isheri, 26.v.1974 (M. A. Cornes); 1♂ Lagos, 4 m N.W. of Agege, 4.v.1975 (M. A. Cornes); 2♂ same locality and collector, 30.xii.1973; 2♀ Ilaro Forest, 23.xii.1973 (J. Riley); 2♂ same locality and date, ant-associated (M. A. Cornes); 3♂ ditto but 2.xii.1973; 1♂ 2♀ Ilaro Forest, 11.xi.1973 (M. A. Cornes); 1♂ ditto but 5.i.1974; 1♀ Ibadan, 13–24.vi.1977 (J. C. Deeming); 1♂ Ile-Ife, 20.vii.1969 (J. T. Medler); 1♂ near Mokwa, Zugurma, 26.xii.1971 (J. C. Deeming); 3♀ (GHANA): Ashanti, Obuasi, caught on dead tree, 4.vii.1907 (W. M. Graham); 1♀ ditto, caught in bush, 14.vii.1907; 1♀ ditto but 7.viii.1907. Holotype and paratypes in British Museum (Nat. Hist.), London, paratypes in Muséum National d'Histoire Naturelle, Paris, U.S. National Museum, Washington, D.C. and Institute for Agricultural Research, Samaru.

Remarks

From the description it might be assumed that I have misidentified the orbital bristles, of which the male has four inferior and one superior and the female two

inferior and two superior. My reason for concluding that this is their identity is that in the male the anterior four orbital bristles have their bases very close to the eye margin (Fig. 17), whereas the most posterior does not. In other Milichiinae and Cyclorrhapha in general a proclinate bristle on the upper orbit can be identified as the anterior superior orbital, hence its identity in the female.

Milichia fumicostata sp. nov. ♂♀
(Fig. 23)

A black species, lightly brown dusted, with knob of haltere, tibiae, tarsi and base of abdomen dirty yellow and squamal fringe pale, the face, jowls, lunule, humerus, notopleuron and pleura heavily grey dusted, the dorsum of the scutellum lightly and in the male tergites 2–4 strongly silver dusted, the silver dusting being most evident when the sclerites are viewed obliquely, and the wing hyaline but heavily brownish fumose between costa and R_{2+3}

Male. Head structure and chaetotaxy similar to that of *M. distinctipennis,* except that frons slightly less than three times as wide at base of antenna as at ocelli, and lunule at midline slightly less than half as long as wide. Thorax as in *M. distinctipennis,* except that there are ten rows of mesonotal setulae between the more anterior pair of dorsocentral bristles, there are two upper sternopleural bristles and the setulae of the mesonotal suture are not enlarged. Wing see Fig. 23. Abdomen with dorsal surface of tergites 2–4 dirty yellow in ground colour, except for the shoulders of tergite 2, which are black; tergites 2–3 with a single preapical row of short hairs and with fine sinuate hairs laterally; tergite 4 with two to three erratic preapical rows of short hairs; tergite 5 black, lightly dusted, covered with short hairs and with a sparse apical row of longer, stronger hairs. Length about 2.4 mm, of wing 2.8 mm.

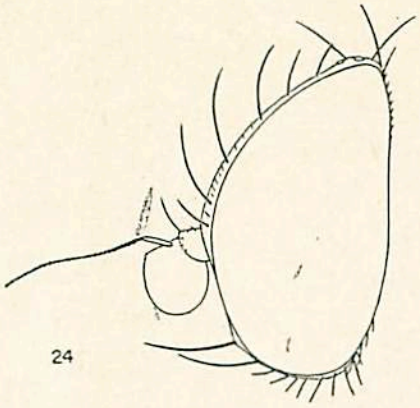
Female differing from male in frontal structure and chaetotaxy in the same way as the sexes of *M. distinctipennis* differ from one another; frons 0.38 times width of head; abdomen narrower, black on all but tergite 2; tergites 3–5 uniformly covered in short hairs; tergites lacking laterally-situated fine sinuate hairs.

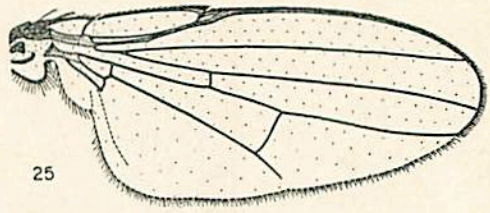
Material. Holotype ♂ NYASALAND: Cholo, 21.iv.1918 (R. C. Wood). Paratypes, 3♂ same data as holotype; 1♀ Mlanje, 31.iii.1914 (J. B. Davey); 2♀ (TANZANIA): Ngerengere-Ufer, Baumschatten in Gesellschaft tanzend, 18.iii.1914 (collector unknown). Holotype and paratypes in British Museum (Nat. Hist.), London.

Milichia savannaticola sp. nov. ♂♀
(Figs 24–25)

A black species, lightly grey to brown dusted, with all hairs and bristles black apart from the hind basitarsal scopula, which is yellow, the haltere knob yellow and the tarsi dirty yellow with apical half somewhat infuscate.

Male. Frons similar to that described for *M. distinctipennis,* except that the two most posterior pairs of orbital bristles (Fig. 24) are very short and width at ocelli is 0.10 and at level of antenna 0.40 times width of head; dull dark brown dusted, the face and lunule more greyish; jowls very narrow, almost linear; eye with very sparse short hairs, the facets slightly larger adjacent to frons; external vertical bristle, though weak, quite half as long as internal vertical; palpus curved, rod-





Figures 24–25. *Milichia savannaticola* sp. nov. Fig. 24, Male, head in profile; Fig. 25, male, wing.

like with short erect bristles. Thorax subshining through weak dust, the mesonotum and scutellum more brownish, the pleura more greyish dusted; thoracic chaetotaxy as described for *M. distinctipennis,* but two humeral bristles, of which the upper is upcurved, and about ten rows of setulae between the more anterior pair of dorsocentral bristles and mesonotal suture bears only two to three weak setulae. Wing (Fig. 25) faintly brownish hyaline with brown veins and evenly distributed microtrichia; squamal fringe black. Abdomen very weakly dusted; tergites clothed in scattered setulae apart from base of tergite 2; tergites 2–3 with fine sinuate hairs laterally; tergite 5 longer than tergite 2 and longer than tergites 3–4 together. Length about 2.3 mm, of wing 2.2 mm.

Female differing from male,as do the sexes of *M. distinctipennis*; tergite 5 slightly shorter than 3–4 together and completely undusted.

Material. Holotype ♂ N. NIGERIA: Zaria, Samaru, with *Camponotus acvapimensis* on psyllid nymph colony on *Piliostigma* leaf, 11.vii.1973 (J. C. Deeming). Paratypes, 2♂ 3♀ same data as holotype; 2♂ 4♀ Samaru, feeding on honeydew of *Udinia catori* colony on *Cussonia barteri,* 22.vi.1979 (J. C. Deeming). Holotype and paratypes in British Museum (Nat. Hist.), London, paratypes in U.S. National Museum, Washington, D.C., Muséum National d'Histoire Naturelle, Paris and Institute for Agricultural Research, Samaru.

Milichia sylvicola sp. nov. ♂♀

Differing from *M. savannaticola* only in that mesonotum is more matt coal-black dusted, the tarsi are almost entirely infuscate, though the hind basitarsal scopula remains yellow, the wing is slightly more heavily brownish tinged, in the male the haltere is completely black, the frons at ocelli slightly narrower and tergite 2 dirty yellow on all but shoulders, the female abdomen sometimes faintly yellow towards base.

Material. Holotype ♂ NIGERIA: Lagos State, 4 miles N.W. of Agege, 30.xii.1973 (M. A. Cornes). Paratypes, 1♂ 1♀ Lagos, Isheri: 19.v.1974 (these and the following all coll. M. A. Cornes); 1♂ ditto but 26.v.1974; 1♂ W. State, Ilaro Forest, 11.xi.1973; 3♂ 4♀ ditto but 5.i.1974; 2♀ ditto but 13.i.1974; 1♂ 2♀ ditto but 10.ii.1974; 1♂ 4♀ ditto but 13.x.1974; 1♂ ditto but ant associated and

2.xii.1973; 2♀ ditto but 23.xii.1973; 1♀ Ibadan, 30.xi.1976 (J. C. Deeming); 1♂ ditto but 13–24.vi.1977. Holotype and paratypes in British Museum (Nat. Hist.), London, paratypes in Muséum National d'Histoire Naturelle, Paris, U.S. National Museum, Washington, D.C., Institute for Agricultural Research, Samaru and Cornes/Riley collection, Lagos.

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