[Genus **AUCHMEROMYIA** BRAUER & BERGENSTAMM.]

Auchmeromyia BRAUER und BERGENSTAMM, Denkschr. Akad. Wiss. Wien, LVIII, 1891, p. 87; ROUBAUD, C. R. Acad. Sci., CLIII, 1911, p. 553; SURCOUF et GUYON, Bull. Mus. Nat. hist nat., 1912, p. 420; BEZZI, Ent Mitt., II, 1913, p. 71; ROUBAUD, Bull. Sci. Fr. Belg., (7), XLVII, 1913, p. 110; et Étud. Fa. Parasit. Afr. occ. franç., I, 1914, p. 30; MALLOCH, Ann. Mag. N. H., (10), III, 1929, p. 274; SÉGUY, Encycl. Ent., B 2, Dipt., VIII, 1935, p. 131; TOWNSEND, Man. Myiol., V, 1937, p. 68.
Type species : *M. luteola* FABRICIUS from Guinea.

Choeromyia ROUBAUD, C. R. Acad. Sci., CLIII, 1911, p. 553; SURCOUF et GUYON, Bull. Mus. Nat. hist. nat., 1912, p. 420; BEZZI, Ent. Mitt., II, 1913, p. 71; ROUBAUD, Bull. Sci. Fr. Belg., (7), XLVII, 1913, p. 118; et Étud. Fa. Parasit. Afr. occ. franç., I, 1914, p. 39; MALLOCH, Ann. Mag. N. H., III, 1929, p. 274; SÉGUY, Encycl. Ent., B 2, Dipt., VIII, 1935, p. 131; TOWNSEND, Man. Myiol., V, 1937, p. 72.
Type species : *C. choerophaga* ROUBAUD from Timbuktu.

ROUBAUD and PATTON have carried out extensive studies on this genus with respect to the systematics as well as the bionomics. The larvae are bloodsuckers and live in close association with man, the burrow-inhabiting ant bear (*Orycteropus afer* PALLAS) and the wart-hog (*Phacochoerus aethiopicus* PALLAS).

Four species belonging to this genus are known. They are characterized by a medium-sized (7-12 mm), predominantly yellow-brown coloured body, bare propleuron, thoracic squama, suprasquamal ridge and supraspiracular convexity, the always wanting outer *ph* and totally fused cerci; the phallosomes are reminiscent of those of *Hemigymnochaeta*.

Further generic features distinguishing *Auchmeromyia* from *Hemigymnochaeta*, which perhaps may represent the more primitive ancestral unit, are to be stated as follows :

Head in both sexes with bare, widely separated eyes and well developed *iv*, *ev* and *f*. In the female, additional one or two *fo* are present, but sometimes weak or indistinct. Parafrontalia densely setulose, parafacialia only setulose in the upper half. Arista dorsally and ventrally with long hairs. Facial ridge on the lower part with bristles, vibrissa and peristomal hairs normal.

Thorax with *ac*=2-3+3-4, *dc*=2+2-4, *ia*=1+2, outer *ph* wanting, *h*=3, *prs*=1, *n*=2, *sa*=3-4, *sc*=4-6+1, *st*=1 : 1, *pst* and *pp* present. Legs and wings as in *Hemigymnochaeta*, but thoracic squama broad. Abdomen without median discal bristles. The chaetotaxy, especially on the thorax, is extremely variable, even in the same species.

Auchmeromyia species are known only from the Ethiopian region.

KEY TO THE SPECIES

(after PATTON, comp. figs 92 et 93.)

♂♂

1 (2) Abdominal tergite III about 1 ½ times longer than tergite IV ..... 1. *A. luteola* (FABRICIUS).
2 (1) Abdominal tergite III of normal length 3
3 (4) Mesonotal black stripes not well marked, abdomen mainly yellow with few markings ..... 2. *A. boueti* (ROUBAUD).
4 (3) Mesonotal black stripes well marked and broad; abdomen better marked, especially tergites IV and V 5
5 (6) Posterior border of tergite IV straight ..... 3. *A. choerophaga* (ROUBAUD).
6 (5) Posterior border of tergite IV with a slight but distinct incision ..... 4. *A. bequaerti* ROUBAUD.

♀♀

1 (2) Abdominal tergite III about twice the length of IV ..... 1. *A. luteola* (FABRICIUS).
2 (1) Abdominal tergite III of normal length 3
3 (4) Abdominal tergite IV markedly incised on posterior border ..... 4. *A. bequaerti* ROUBAUD.
4 (3) Abdominal tergite IV not deeply incised, sometimes slightly so, as in *choerophaga* 5
5 (6) Last 3 tergites black or nearly so ... 3. *A. choerophaga* (ROUBAUD).
6 (5) Last 3 tergites mainly yellow with black markings ..... 2. *A. boueti* (ROUBAUD).

[1. — **Auchmeromyia luteola** (FABRICIUS).]

(Figs. 92, 93.)

Musca luteola FABRICIUS, Syst. Antl., 1805, p. 286; NEWSTEAD, DUTTON & TODD, Ann. Trop. Med. Parasit., I, 1907, p. 49, figs. 12-14; RODHAIN & BEQUAERT, Rev. Zool. Afr., II, 1913, p. 145, fig. 1; ROUBAUD, Bull. Sci. Fr. Belg., (7), XLVII, 1913, p. 122, figs.; et Étud. Fa. Parasit. Afr. occ. franç., I, 1914, p. 44, figs; PATTON, Ann. Trop. Med. Parasit., XXIX, 1935, p. 201, figs. 1-5; GARRETT-JONES, Bull. Ent. Res., XLI, 1915, p. 679.

Auchmeromyia tilhoi SURCOUF & GUYON, Bull. Mus. Nat. hist. nat., 1912, p. 423.

A. luteola is widespread in the Ethiopian region and a well known parasite in native huts. Man is the only host recorded up to now, but he most probably got the parasite from a burrowing animal which may still exist. The last paper on the distribution and biology of this fly was published by GARRETT-JONES. According to him, *A. luteola* is distributed over almost

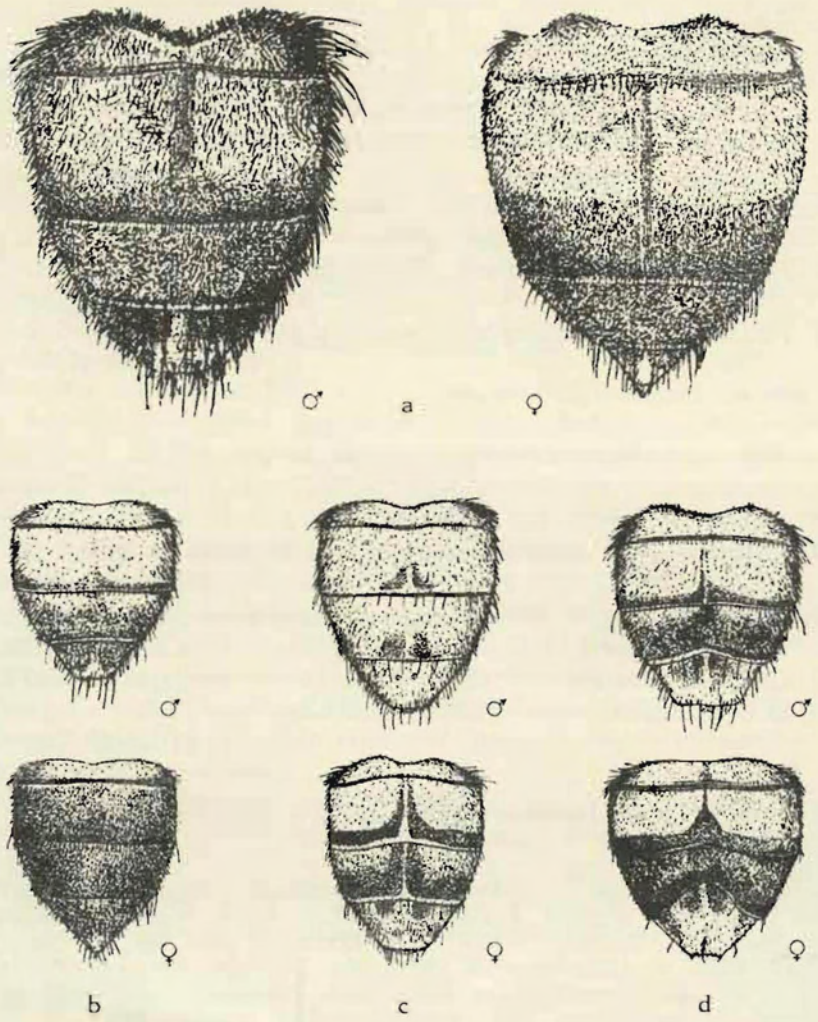


FIG. 92. — Abdomen of (a) *Auchmeromyia luteola* (FABRICIUS); (b) *A. choerophaga* (ROUBAUD); (c) *A. boueti* (ROUBAUD); (d) *A. bequaerti* ROUBAUD (after PATTON).

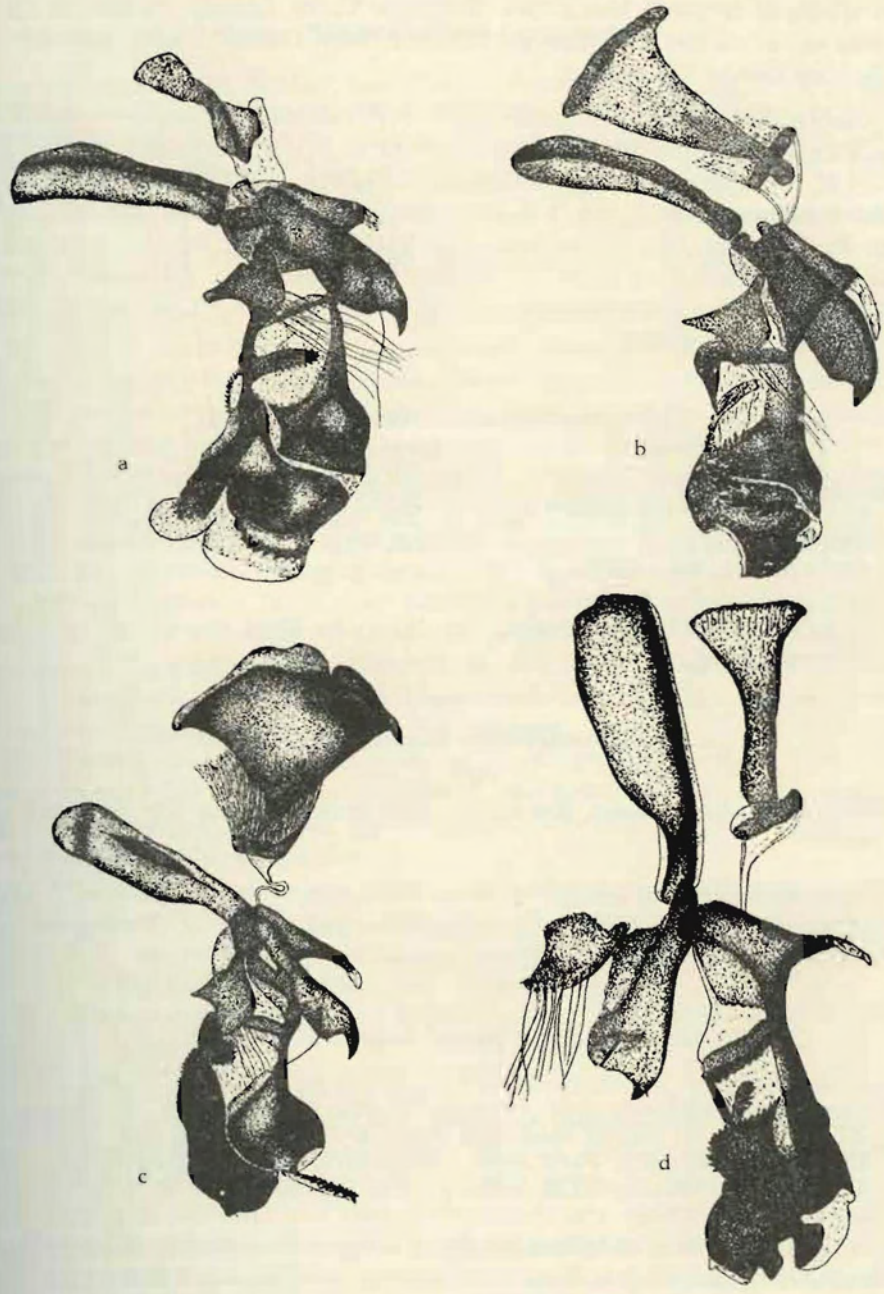


FIG. 93. — Phallosome of (a) *Auchmeromyia luteola* (FABRICIUS); (b) *A. choerophaga* (ROUBAUD); (c) *A. boueti* (ROUBAUD); (d) *A. bequaerti* ROUBAUD (after PATTON).

the whole of tropical Africa incl. the Cape Verde Islands, extending southwards as far as the N. Transvaal and the Natal Coast. I have received the following Congo material :

Collection Musée du Congo : [Terr. de Banningville, 1945 (1 ♀, leg. FAIN)]; [Kabinda, (2 ♂♂, leg. SCHWETZ)]; [Kivu : Mulungu, 25.VIII.1938 (1 ♂♀, leg. HENDRICKS)]; [Bukama, 4.VI.1911 (1 ♂♀, leg. BEQUAERT)]; [Mahagi-Niarembe, V.1935 (1 ♀, leg. CH. SCOPS)]; [Sandoa, 7.IV.1918 (1 ♂, leg. F. G. OVERLAET)]; [Élisabethville, VIII.1921 (1 ♀, leg. M. BEQUAERT)]; [Katanga : Kibimbi, 3.II.1911 (1 ♂, leg. L. BEOFUAERT)]; [Kwango : Dongo, 5.I.1940 (1 ♀, leg. VLEESCHOUWERS)]; [W. Ruwenzori, 2.300 m, 19.IV.1914 (1 ♂, leg. J. BEQUAERT)].

[2. — **Auchmeromyia boueti** (ROUBAUD).]

(Figs. 92, 93.)

Choeromyia boueti ROUBAUD, C. R. Acad. Sci., CLIII, 1911, p. 554; et Bull. Sci. Fr. Belg., (7), XLVII, 1913, p. 118, figs.; et Étud. Fa. Farasit. Afr. occ. franç., I, 1914, p. 40, figs.; PATTON, Ann. Trop. Med. Parasit., XXIX, 1935, p. 214, figs. 13-15.

I have seen a type specimen (♂) from the Haut-Sénégal (in collection Musée du Congo).

[3. — **Auchmeromyia choerophaga** (ROUBAUD).]

(Figs. 92, 93.)

Choeromyia choerophaga ROUBAUD, same references as for the foregoing species.

A. choerophaga is mainly a West African species, but I have received specimens also from Guar, Anglo-Egyptian Sudan (5 ♂♂, from wart-hog), and 1 ♂ from Otjimbombe, S. W. Africa, III.1923.

[4. — **Auchmeromyia bequaerti** ROUBAUD.]

(Figs. 92, 93.)

Auchmeromyia (*Choeromyia*) *bequaerti* ROUBAUD, Bull. Sci. Fr. Belg., (7), XLVII, 1913, p. 198; et Étud. Fa. Parasit. Afr. occ. franç., I, 1914, p. 41; BEQUAERT, Bull. Soc. Path. exot., VIII, 1915, p. 459, fig. 1; PATTON, Ann. Trop. Med. Parasit., XXIX, 1935, p. 205, figs. 6-9.

A. bequaerti was described from the Belgian Congo (Sankisia) and later found to be widespread in Eastern Africa and southwards to Zululand, where it is quite common near the burrows of wart-hogs and ant-bears.

Genus **CORDYLOBIA** GRUENBERG.

Cordylobia GRUENBERG, Sitzber, Ges. Naturf. Freunde Berlin, IX, 1903, p. 401; SURCOUF & GUYON, Bull. Mus. Nat. Hist. nat., 1907, p. 418; ROUBAUD, Bull. Sci. Fr. Belg., (7), XLVII, 1913, p. 110; et Étud. Fa. Parasit. Afr. occ. franç., I, 1914, pp. 31 et 118; MALLOCH, Ann. Mag. N. H., (10), III, 1929, p. 275; PATTON, Ann. Trop. Med. Parasit., XXX, 1936, p. 57; TOWNSEND, Man. Myiol., V, 1937, p. 73; FAIN, Rev. Zool. Bot. Afr., LVIII, 1953, p. 306.

Type species : *O. anthropophaga* BLANCHARD from Senegal.

PATTON has written a detailed paper on the genus *Cordylobia*, in which he united with it the formerly distinct genera *Stasisia* SURCOUF and *Neocordylobia* VILLENEUVE from the Ethiopian region, as well as *Booponus* ALDRICH and *Elephantoloemus* AUSTEN from the Oriental region. Later, GRUNIN described another dermal myiasis producing fly, *Pavlovskiomyia inexpectata* GRUNIN (1947) from the Far East which, in a second paper (1949), he also transferred to *Cordylobia* following PATTON's suggestion.

I do not believe that all these dermal myiasis producing species of *Calliphorini* represent a phylogenetic unit, but that some of them may have evolved separately from more primitive genera, like *Hemigymnochaeta* for instance. On the basis of their morphological features, including the structure of the phallosome, I suggest the retention of the genera *Stasisia* and *Neocordylobia*, but agree that *Elephantoloemus* should be united with *Booponus*. GRUNIN's description, furthermore, shows clearly that his *Pavlovskiomyia inexpectata* also belongs to this genus, which is characterized mainly by a short, strikingly thickened arista being hardly longer than the 3rd antennal segment, and which is provided with only very short hairs above and below.

Up to now, two species are known, *C. anthropophaga* (BLANCHARD) and *C. ruandae* FAIN. Both are very different, and I had previously intended to erect a new genus for *C. ruandae*. The structure of the hypopygium, however, influenced me to retain the present status.

The features common to them and of generic importance may be summarized as follows :

Head with bare eyes, with the frons narrow or broad, in the latter case, *ev* and *f* are also developed in the male sex. Parafrontalia and -facialia beset with setae in full extent, facial ridge with short bristles in the lower third to half, vibrissa and peristomal bristles normally developed.

Thorax yellow-brown and black, the chaetotaxy seems to be subject to considerable variability, even in the same specimen; as a rule, the following arrangement can be stated : *ac*=2-3+3-4, *dc*=2+4-5, *ia*=1+2-3, *ph*=3, *h*=3-4, *prs*=1, *n*=2, *sa*=5 (2 of them short and placed behind the anterior bristle), *pa*=2, scutellum with up to 7 pairs of marginals and one pair of discals. Pro- and poststigma yellow, *pp* and *pst* present, *st*=1 : 1. Propleuron bare, prosternum haired. Wings hyaline or brownish tinged, costal spine

wanting, r_{4+5} dorsally with setae half way to *r-m*, R_5 open. Thoracic squama bare dorsally, broadly truncate. Legs yellow-brown, fore-tibia with a row of short *ad* and one submedian *pv*; mid-tibia with one submedian *av* and *ad* and 2 median *pd*; hind-tibia with a dense row of fairly long *ad*, a relatively short *av* present or wanting, *pd* bristles not marked.

Abdomen yellow-brown, with black pattern, or almost totally black. Median discals wanting on tergites I-IV, present on V. Cerci free, phallosome reminiscent of those of *Hemigymnochaeta*.

The genus *Cordylobia* is known only from the Ethiopian region.

KEY TO THE SPECIES.

1 (2) Arista with the longest hairs exceeding 4 times its basal diameter; male with the frons at the narrowest point not broader than twice the diameter of the anterior ocellus, *ev* and *f* wanting; female with the frons at vertex measuring about 3/7 of eye-length, abdomen yellow-brown with black pattern ..... 1. *C. anthropophaga* (BLANCHARD).

2 (1) Arista with the longest hairs not exceeding twice the basal diameter; male with the frons at the narrowest point about 3/5 of eye-length, *ev* and *f* present; female with the frons at vertex almost 1/2 as wide as the eye is long, abdomen almost totally glossy black ..... 2. *C. ruandae* FAIN.

[1. — **Cordylobia anthropophaga** (BLANCHARD).]

(Fig. 94.)

Ochromyia anthropophaga BLANCHARD, Bull. Soc. Ent. France, LXII, 1893, p. 127; GRUENBERG, Sitzber. Ges. naturf, Freunde Berlin, 1903, p. 412, figs. 1-10; GEDOELST, Arch. Parasit., IX, 1905, p. 568, fig. 5; et Bull. Soc. Path. Exot., I, 1910, p. 597; ROUBAUD, C. R., Acad. Sci., XLIII, 1911, p. 786; RODHAIN et BEQUAERT, Rev. Zool. Afr., II, 1913, p. 149; ROUBAUD, Etud. Fa. Parasit. Afr. occ. franc., I, 1914, p. 118, figs.; BLACKLOCK et THOMPSON, Ann. Trop. Med. Parasit., XVII, 1923, p. 443, figs.; BEQUAERT, Havard. Exp., II, 1930, p. 772; SÉGUY, Encycl. Ent. B 2, Dipt., VIII, 1935, p. 131; PATTON, Ann. Trop. Med. Parasit., XXX, 1936, p. 58, figs.; BERTRAM, Ann. Trop. Med. Parasit., XXXII, 1938, p. 433, figs. 1 et 2; FAIN, Ann. Soc. Med. Trop., XXXIII, 1953, p. 611, figs.

Cordylobia grünbergi DOENITZ, Sitzber. Ges. Naturf. Freunde Berlin, 1905, p. 245, figs. 1-5; ROUBAUD, Etud. Fa. Parasit. Afr. occ. franc., I, 1914, p. 120.

Cordylobia murium DOENITZ, id. ibid., ROUBAUD, id. ibid.

C. anthropophaga is a well-known dermal parasite, in the larval stage, of man, monkeys, dogs, cats, rodents and various other animals (comp. ROUBAUD and BLACKLOCK et THOMPSON). Its life-history has often been studied and the larval stages have been described several times. BERTRAM compares the

3rd larval stage with that of *S. rodhaini* (GEDOELST) which also causes myiasis in man.

Both sexes are predominantly yellow-brown, the thorax shows a black pattern consisting of two, ill-defined longitudinal vittae covering the area between *ia* and *dc*, or they may be more or less extended to both sides. The abdomen is provided with black bands, which are also subject to some variability, but the abdomen in the female never becomes almost totally black as in *C. ruandae*. The parafacialia are beset with fine, dark, but not densely placed setae, the buccae have dense, but short black setae, postbuccae and occiput with longer yellow hairs. Head in male with *iv* and *oc*, in female also with *ev*, *f* and 2 *fo*. Third antennal segment almost twice as long as the second. Hypopygium see fig. 94.

Length : 6-12 mm.

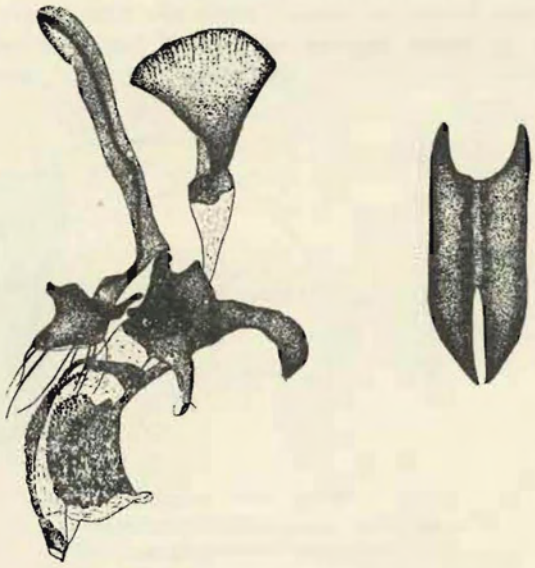


FIG. 94. — *Cordylobia anthropophaga* (BLANCHARD). Phallosome laterally and cerci in frontal view (after PATTON).

Distribution : Widely distributed in the Ethiopian region. In Southern Africa, it has been found as far southwards as Johannesburg, the Orange Free State, Natal and Swaziland.

Collection Musée du Congo : [Uvira : dans habitation, 1949 (1 ♂, leg. G. MARLIER)].

[2. — **Cordylobia ruandae** FAIN.]

(Fig. 95.)

Cordylobia ruandae FAIN, Ann. Soc. Belg. Med. Trop., XXXIII, 1953, p. 603, figs. 1-5.

Up to now, only a few specimens are known which were reared by Dr. A. FAIN from maggots in subcutaneous boils of the forest mouse, *Thamnomys surdaster* THOMAS and WROUGHTON. This rodent seems to be the only host.

C. ruandae is easily separable from *C. anthropophaga* by the features given in the key. It is interesting to note, that in both sexes the head bristles *iv*, *cv* and *f* are present but *fo* are wanting, even in the female. The body is glossy yellow-brown, provided with a black pattern which, in the male, is similar to that of *anthropophaga*. In the female, however, the abdomen is glossy black except the basal part of tergites I +II. Parafacialia are densely beset with black setae, postbuccae and the lower part of occiput show black hairs, the buccal setae are also longer than in *anthropophaga*. Third antennal segment about 2 ½ times as long as the second. The hypopygium (fig. 95) is very similar to that of *C. anthropophaga*.

Length : 7-10 mm.

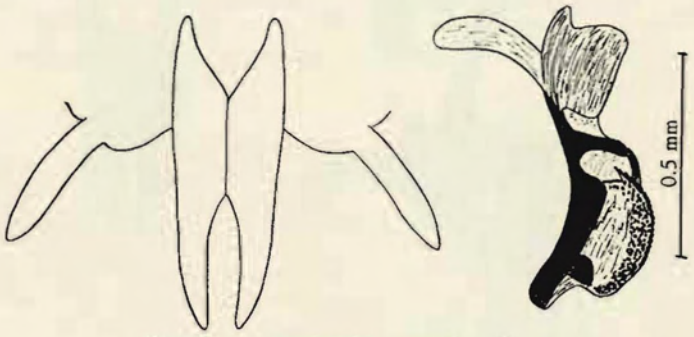


FIG. 95. — *Cordylobia ruandae* FAIN.
Cerci with paralobi and phallosome.
Paratype from Ruanda.

I have before me a paratypical pair from Musha, Ruanda, 1.400 m, and a further pair from the same place which Dr. FAIN has kindly presented to the S. A. Institute for Medical Research, Johannesburg.

[Genus **STASISIA** SURCOUF.]

Stasisia SURCOUF, Rev. Zool. Afr., III, 1914, p. 475; RODHAIN and BEQUAERT, Bull. Sci. Fr. Belg., (7), XLIX, 1916, p. 264; SÉGUY, Encycl. Ent. B 2, Dipt., VIII, 1935, p. 131; PATTON, Ann. Trop. Med. Parasit., XXX, 1936, p. 65; TOWNSEND, Man. Myiol., V, 1937, p. 86.

Type species : *C. rodhaini* GEDOELST from the Belgian Congo.

The reasons for keeping this genus distinct were discussed under *Cordylobia*. There is only one species known, the larval stages of which, like that of *Cordylobia anthropophaga* (BLANCHARD), cause dermal myiasis in man and various animals including antelopes (comp. RODHAIN and BEQUAERT, BERTRAM, FAIN).

[1. — **Stasisia rodhaini** (GEDOELST).]

(Fig. 96.)

Cordylobia rodhaini GEDOELST, Arch. Parasitol., XIII, 1910, p. 538, figs. 1-4; ROUBAUD, Etud. Fa. Parasit. Afr. occ. franc., I, 1914, p. 121; SURCOUF, Rev. Zool. Afr., III, 1914, p. 477; RODHAIN, C. R. Acad. Sci., CLXI, 1915, p. 323; RODHAIN and BEQUAERT, Bull. Sci. Fr. Belg., (7), XLIX, 1916, p. 265, figs.; BEQUAERT, Harvard Exp., II, 1930, p. 974; PATTON, Ann. Trop. Med. Parasit., XXX, 1936, p. 62; BERTRAM, Ann. Trop. Med. Parasit., XXXII, 1938, p. 431, figs. 1 and 2; FAIN, Rev. Zool. Afr., XLVIII, 1953, p. 306, figs. 1-4; et Ann. Soc. Belg. Med. Trop., XXXIII, 1953, p. 613, figs.

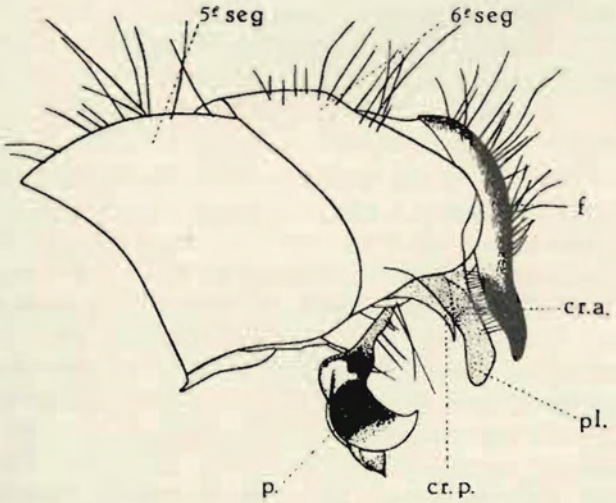


FIG. 96. — *Stasisia rodhaini* (GEDOELST).
Lateral view of hypopygium (after RODHAIN & BEQUAERT).
5e seg. = tergites 7+8; 6e seg. = epandrium; f. = cercus;
pl. = paralobus; cr.a. = ant. paramere; cr.p. = post. paramere;
p. = phallosome.

Adult specimens of *S. rodhaini* are rare in the collections, and I myself have only two females before me. According to RODHAIN and BEQUAERT, who gave a detailed description of this species, both sexes almost coincide in their external features. However, I found that my specimens show some differences from their description which seems to be based mainly on the male sex. I am therefore giving a short description based on my female specimens.

I have no doubt that the two specimens really belong to GEDOELST's species. In general appearance this fly is so striking and outstanding that there should not be any question about its status. Hypopygium, after RODHAIN and BEQUAERT, shown in fig. 96.

Female. — Frons at vertex measuring 3/7 of eye-length, widened to the antennal groove, frontal stripe subparallel, brown, parafrontalia with the upper part darkened, lower part, like the parafacialia, yellow brown and densely covered with a yellow toment. Ocellar triangle black, densely beset with hairs, of which one pair is a little thicker and longer than the others and evidently represent the *oc*; *iv* and *ev* developed, furthermore, the upper pair of *fo* is developed as short bristles, but *f* and the other pair of *fo* are wanting; row of *paf* complete and reaching the 2nd antennal segment. Parafrontalia and the upper half of parafacialia densely beset with black setae, the lower half is bare. Third antennal segment more or less blackened, about 2 ½ times as long as the second, arista with long hairs on both sides. Antennal groove strikingly deep, no median carina, facial ridge thick and in the lower half densely beset with short bristles. Bucca yellow-brown to orange, almost ⅓ as high as the eye is long, vibrissa and peristomal bristles normal, buccal hairs black and short, hairs on postbucca and occiput longer and yellow. Palpi and proboscis yellow-brown, the former relatively broad, with black bristles.

Thorax black-brown, partly yellow-brown, to a variable extent, densely covered with yellow toment. Distinct dorsal longitudinal vittae are not developed. Chaetotaxy : *ac*=2+4, *dc*=2+4, *ia*=1+3, *ph*=3, with a few longer hairs between them, *h*=3, *prs*=1, *n*=2, *sa* are increased up to 7, *pa*=2, scutellum with a great number of irregularly placed marginals and lateral discals. Prostigma yellow, 2 *pst* and *pp* each, *st*=1 : 1. Propleuron bare, prosternum and postalar declivity haired. Wings brownish tinged, veins at base yellow, then changing to black-brown, costal spine wanting, r_{4+5} terminally bent downwards, with a few hairs up to *r-m*, R_5 open, *m* bent up sigmoidally, squama yellow-brown, the lower broadly truncate, bare dorsally, halter yellow-brown. Legs predominantly black-brown, fore-tibia with short bristles only, mid-tibia with a short, but distinct submedian *ad* and two median *pv*, hind-tibia slightly bent, with a dense row of short *ad*, no further outstanding bristles.

Abdomen glossy black, without any dusting, but in the other specimen, which is probably not quite mature, shining red-brown. Hairs black and short, those of the posterior margins of the tergites also relatively short, all lying close to the ground.

Length : 12-13 mm, after RODHAIN and BEQUAERT, ranging from 11-14 mm in both sexes.

Distribution. — Generally noted as being restricted to the forest regions of equatorial Africa, particularly in the Belgian Congo. According to BERTRAM, however, this species seems to be widespread in tropical

Africa and reliable records are also known from the Gold Coast, Cameroons, French Equatorial Africa, Kenya, Tanganyika, S. Rhodesia and Angola. The two females before me were received from the following collections :

Collection Musée du Congo : [Mayidi, 1942 (1 ♀, leg. R. P. VAN EYEN)].

Collection S. A. Institute for Medical Research. Johannesburg : [Bwamba, Uganda (1 ♀)].

Genus **BENGALIA** ROBINEAU-DESVOIDY.

Bengalia ROBINEAU-DESVOIDY, Ess. Myiod., II, 1830, p. 425; SURCOUF and GUYON, Bull. Mus. Nat. Hist., 1912, p. 425; ROUBAUD, Bull. Sci. Fr. Belg., (7), XLVII, 1913, pp. 110 and 114; BEZZI, Ent. Mitt., II, 1913, p. 71; VILLENEUVE, Bull. Soc. Ent. Fr., 1913, p. 151; ROUBAUD, Étud. Fa. Parasit. Afr. occ. fr., I, 1914, p. 30; TOWNSEND, Ins. Ins. Mens., IV, 1916, p. 6; MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 392; et Ann. Mag. N. H., (10), III, 1929, p. 273; TOWNSEND, Man. Myiol., V, 1937, p. 70; S. WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 83.
Type species : *B. labiata* ROBINEAU-DESVOIDY from Bengal.

Ochromyia MACQUART, Suit. BUFFON, II, 1835, p. 248; ROUBAUD, Bull. Sci. Fr. Belg., (7), XLVII, 1913, p. 110; et Étud. Fa. Parasit. Afr. occ. fr., I, 1914, p. 31; TOWNSEND, Man. Myiol., V, 1937, p. 79.
Type species : *M. jejuna* FABRICIUS from Bengal.

Anisomyia WALKER, Proc. Linn. Soc. London, IV, 1860, p. 135; TOWNSEND, Man. Myiol., V, 1937, p. 67.
Type species : *M. favillavea* WALKER from Celebes.

Homodexia BIGOT, Bull. Soc. Ent. Fr, 1885, p. 26; TOWNSEND, Ins. Ins. Mens., IV, 1916, p. 7; et Man. Myiol., V, 1937, p. 79.
Type species : *H. obscuripennis* BIGOT from Ceylon.

Parabengalia ROUBAUD, Bull. Soc. Fr. Belg., (7), XLVII, 1913, p. 114; TOWNSEND, Man. Myiol., V, 1937, p. 79.
Type species : *M. jejuna* FABRICIUS from Bengal.

Eubengalia TOWNSEND, Phil. Jl. Sci., XXIX, 1926, p. 529; et Man. Myiol., V, 1937, p. 75.
Type species : *B. depressa* TOWNSEND nec WALKER.

Large flies of a general velvety-brown colour and more or less distinctly darkened hind abdominal margins. With respect to general appearance, they are sometimes confused with *Auchmeromyia* and *Cordylobia*.

Head with the eyes bare, widely separated in both sexes, frons at the narrowest point almost half as broad as the eye is long, in the male only a little narrower than in the female. Bristles in the female fully developed, in the male, the two *fo* are wanting. Parafacialia setulose in full extent. Antennal groove without, or with only a rudimentary carina; arista with long hairs on both sides. Clypeus in the Ethiopian species of normal shape, not strikingly projecting as in some Oriental species. Proboscis very stout, with some long hairs on its upper surface.

Thorax with *ac*=0+1, *dc*=2+4 (first 2 post *dc* weaker), *ia*=0+2, *ph*=1 (outer wanting), *h*=2-3, *prs*=1, *n*=2, *sa*=2-4, *pa*=2, *sc*=3-4+1-2, *st*=1 : 1. *pp* usually 2, *pst* mostly 1, but sometimes accompanied by more or less strong additional hairs. Propleura bare, suprasquamal ridge, supra-spiracular convexity without long and erect hairs, postalar declivity haired. Wings with R_5 open, r_1 bare, r_{1+5} setulose at base and for varying distances up to *r-m*, squama bare on the disc, large and truncate. Legs markedly different in both sexes. In the male, the first tibia is mostly armed with a comb of stout spinules on the upper half of the inner side and also the 2nd femur shows a similar comb in the apical ventral half. Furthermore, the hind and middle tibiae are provided with a tuft of long hairs in some species. The corresponding females lack these features, but on the other hand, the ventral side of the hind femur is often provided with strong bristles, whereas the males only have hairs there.

Abdomen intermediate between the *Calliphora*- and *Rhiniini*-type; 5th sternite in the male with an apical plate of characteristic shape. Hypopygium with free cerci and big paralobi composed of two parts, the upper one being small and hairless, the lower sometimes very large and provided with hairs; phallosome without spinus, theca and phallus well developed, vesicae mostly large and denticulate, phallus with additional processi of different shape which are important for separating the species.

It is necessary to discuss briefly the synonymy of some species. The two species named *gaillardi* SURCOUF and GUYON (1912) and *depressa* WALKER (1857) have been confused and redescribed under several names. The type of WALKER's *depressa*, a single female, is conserved in the British Museum. The late Major AUSTEN was asked by VILLENEUVE to check this specimen (cf. VILLENEUVE 1913) but unfortunately identified it as a species known at that time as *spurca* BRAUER and BERGENSTAMM. VILLENEUVE, therefore, synonymized *depressa* WALKER (1857)=*spurca* BRAUER and BERGENSTAMM (1895)=*gaillardi* SURCOUF and GUYON (1912). But one year later, VILLENEUVE (1914) corrected this statement in a foot-note, because SURCOUF himself had checked the type of *depressa* in the meantime and recognized that *depressa* was not identical with *spurca* BRAUER and BERGENSTAMM, or with *gaillardi* SURCOUF and GUYON. It was a distinct species conspecific with *limbata* BIGOT (1887) and *unicalcarata* VILLENEUVE (1931). To this list of synonyms I add with a ? also *tibiaria* VILLENEUVE (1926), a poorly described form, the type of which I could not examine.

TOWNSEND (1931, 1937) seems to have overlooked VILLENEUVE's footnote when the synonymized *depressa* WALKER with *spurca auct.* MALLOCH (1927), however, correctly identified *depressa* WALKER having had it checked once more by the late Mr. EDWARDS.

B. spurca BRAUER and BERGENSTAMM (1895) is a nomen nudum as confirmed by Dr. F. VAN EMDEN and Mr. H. OLDROYD at the British Museum. The first valid description of this fly is given by SURCOUF and GUYON (1912) as *gaillardi*. I think that according to the description and the drawing of the hypopygium,

depressa SURCOUF and GUYON (nec WALKER), published in the same paper, is also conspecific with *gaillardi*. *B. floccosa* WULP (1884) is conspecific with *B. mercenaria* SÉGUY (1933). This opinion is supported by a male specimen in the S. Afr. Museum, Cape Town, identified by VILLENEUVE as this species. *B. peuhi* is, up to now, referred to BRAUER and BERGENSTAMM (1891) but they never really described this species, mentioning it as an nom. nud. only. The first valid description is that by VILLENEUVE (1914).

Bengalia species are known only from the Ethiopian, Madagascan and Oriental regions. The adults are often found sitting on plants, usually in the shade, and often enter houses where they are sometimes mistaken for *Cordylobia anthropophaga* or *Auchmeromyia luteola*. They are, however, quite harmless to man, feeding on other insects carried by ants. The fly watches the walking ants and suddenly jumps at the food and impales it with its proboscis, dragging it away from the ant's grip.

Bengalia depressa, as shown by ALTSON (1932), deposits the eggs in the moist soil near mating termites. The larvae hatch after a few hours or up to 2 days and are predacious on the sexual forms of termites of which only fragments of the skeleton are left. Pupation takes place in 9-10 days, the flies hatch after a further 11-12 days.

KEY TO THE SPECIES.

1 (4) Last abdominal tergite without median discal bristles 2

2 (3) Pteropleura with a few black stout bristles on upper margin, the fine hairs pale. Palpi very slender.

Only the female sex is known. The male should be easily recognizable by the stout pteropleural bristles. 12-14 mm. — French and Belg. Congo, Liberia ..... 1. *B. aliena* MALLOCH.

3 (2) Pteropleura without stout bristles on upper margin, with hairs only, all of which are black. Palpi rather stout.

Also of this species only the female sex is briefly described. 11 mm. — Kenya ..... 2. *B. africana* MALLOCH.

4 (1) Last abdominal tergite with at least one pair of median discal bristles 5

5 (22) Hind-tibia without postero-dorsal bristles 6

6 (15) Males 7

7 (8) Hind-tibia on the ventral side with short hairs only which do not surpass the tibial diameter.

Pteropleura with pale hairs only, rarely a few black ones among them. Fourth abdominal tergite with one pair of apicals placed close together. Apical plate projecting into a pair of tapered horns. 10-12 mm. — Ethiopian region ..... 3. *B. spinifemorata* VILLENEUVE.

8 (7) Hind-tibia on the ventral side with long hairs surpassing the tibial diameter 9

9 (12) Hind-tibia with long hairs on the postero-ventral as well as the antero-ventral edge 10

10 (11) Apical plate with truncate posterior edges.
With respect to the outer features, very similar to the following species. 11-14 mm. — West and Central Africa .....
4. *B. gaillardi* SURCOUF and GUYON.

11 (10) Apical plate with pointed posterior edges.
Pteropleura with black hairs near the root of the wing, lower hairs pale. Fourth abdominal tergite with one pair of widely separated apical bristles. 9-13 mm. — Central, East and Southern Africa ..... 5. *B. floccosa* (WULP).

12 (9) Hind-tibia with long hairs on the antero-ventral edge only, the postero-ventral edge with short hairs 13

13 (14) Apical plate a little longer than broad, with a small, almost circular notch posteriorly.
Mostly darker coloured than the following species, but otherwise similar to it. 10-12 mm. — N. and S. Rhodesia, S. Africa ..... 6. *B. cuthbertsoni* n. sp.

14 (13) Apical plate broader than long, with a wide posterior emargination.
Normally lighter coloured than *B. cuthbertsoni*. 9-13 mm. — Central, East and Southern Africa .....
7. *B. depressa* WALKER.

15 (6) Females 16

16 (17) Abdominal sternites, except the first, with very stout marginal spines ..... 4. *B. gaillardi* SURCOUF and GUYON.

17 (16) Abdominal sternites without stout spines, with hairs and bristles only 18

18 (19) Pteropleural hairs pale also in the upper part, very rarely a few blackish ones near the root of the wing. Fourth abdominal tergite with a pair of apicals placed close together, separated from each other by a distance not, or very little more than half of that between the discals on the 5th tergite ..... 3. *B. spinifemorata* VILLENEUVE.

19 (18) Some of the hairs on upper portion of pteropleura blackish. The pair of apical bristles on 4th abdominal tergite separated by a distance almost as great as that between the discals on tergite V... 20

20 (21) Second abdominal sternite with a pair of strong median marginal bristles ..... 5. *B. floccosa* (WULP).
6. *B. cuthbertsoni* n. sp.

21 (20) Second abdominal sternite without a pair of strong median marginal bristles ..... 7. *B. depressa* WALKER.

22 (5) Hind-tibia with one or more distinct postero-dorsal bristles. (Only the female of *B. peuhi* is known up to now, which keys out here) 23

23 (24) Apical plate about twice as broad as long, without posterior emargination.
8-9 mm. — French Congo ..... 8. *B. minor* MALLOCH.

24 (23) Apical plate almost as long as broad 25

25 (26) Apical plate with a deep notch.
9 mm. — French Sudan ..... 9. *B. lepineyi* SÉGUY.

26 (25) Apical plate more or less quadrangular, posterior margin at most slightly emarginated.
Hypopygium reddish or black, 5th abdominal tergite with 1-3 pairs of discals. 12-14 mm. — Ethiopian region .....
10. *B. peuhi* VILLENEUVE.

[1. — **Bengalia aliena** MALLOCH.]

Bengalia (*Ochromyia*) *aliena* MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 407.

This species was based on a single female from Ndjoli, Gabon, and I have also received only a few female specimens, so that the male of this probably rare species remains to be discovered.

The female, however, is well characterized by the stout bristles on the upper pteropleuron, a feature which does not occur in any other *Bengalia* species of the Ethiopian fauna. Legs yellow, fore-tibia with 3 *ad* and one submedian *pv*, the lower part and the tarsus ventrally densely beset with short and thick hairs arranged as in a brush; mid-femur with 3 strong *ad*, mid-tibia with 2 *pd*, 1 *ad* and 1 *v*; hind-tibia and tarsus with brush-like hairs as on the fore-leg, the tibia with 2 *ad* and *av*, *pd* not developed. Abdomen with more or less distinct abdominal bands, 4th tergite with a pair of strong median marginals, the last tergite with a row of marginal bristles, discals not present on any tergite. Sternites with black marginal bristles and yellow hairs.

Collection Musée du Congo : [Ubangi : Nouv.-Anvers, 11.VIII. 1947 (1 ♀, leg. M. POLL)]; [Bambesa, 20.IX.1953 (1 ♀, leg. H. J. BRÉDO)]; [Libenge, 1933 (2 ♀♀ leg. J. VAN GILS)].

Collection American Museum, New York : [Robertsport, Liberia, 25.IV.1943 (1 ♀ leg. F. M. SNYDER)].

[2. — **Bengalia africana** MALLOCH.]

Bengalia (*Ochromyia*) *africana* MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 407.

This species, based on a single female from the Masai Reserve, Kenya, has remained unknown to me. The author compares it with *B. aliena* and places it in his key with those species which have no discal bristles on the last tergite. He describes it as follows : « A smaller and darker species than the above, with the pteropleural armature consisting of black hairs which are rather stiff above, but not in the form of stout bristles as in *aliena*. As in the latter the labrum is not distinctly protruded, and is in the form of a narrow rounded band of chitin, but the palpi are broader at apices than in that species, and practically all of the hairs on the pleura are black. The apex of third visible tergite has the two central bristles much shorter than usual, but the specimen is not exactly normal, so that this character may not be invariable; and the fourth tergite is slightly notched at apex in centre, which is not the case in *aliena* ».

I first wanted to refer the new *B. cuthbertsoni* to this species and have also labelled specimens of *B. cuthbertsoni* as *B. africana*. The wanting discals, however, suggest that *B. africana* should be regarded as a doubtful species and CUTHBERTSON's species described as new.

3. — **Bengalia spinifemorata** VILLENEUVE.

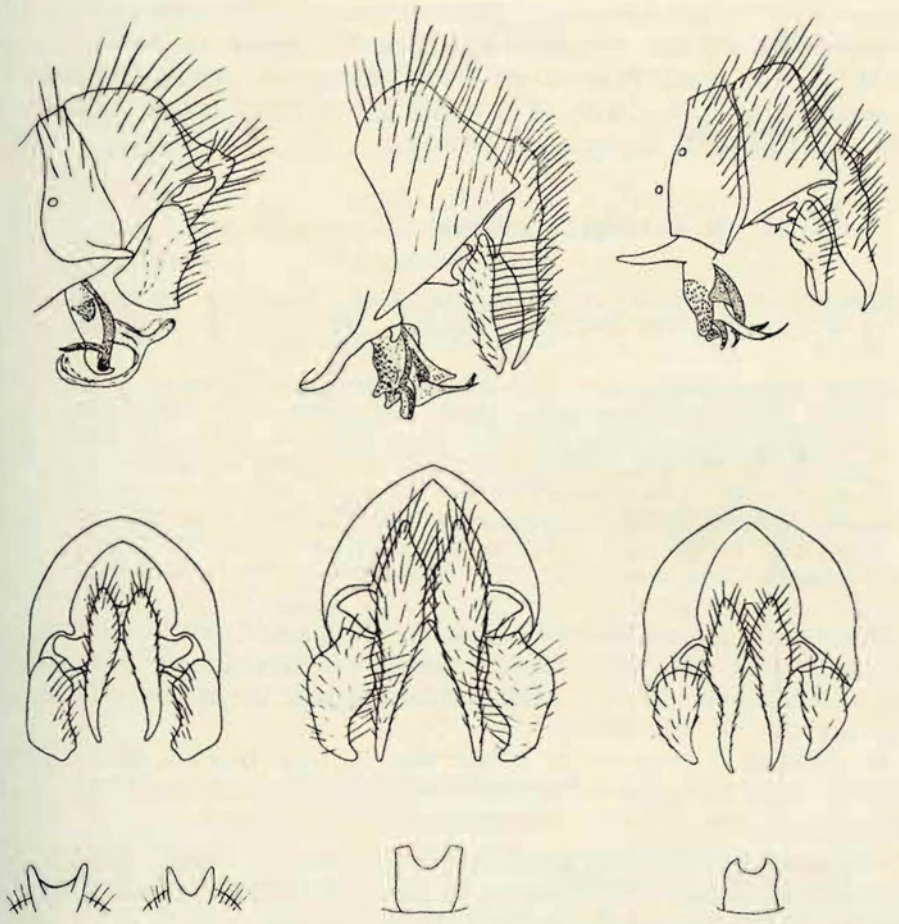
(Fig. 97.)

Bengalia spinifemorata VILLENEUVE, Bull. Soc. Ent. Fr., 1913, p. 153; et Bull. Soc. Ent. Fr., 1914, p. 253; MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 410, fig. 12; et ibid., (10), IV, 1929, p. 119; CUTHBERTSON, Proc. Rhod. Sci. Ass., XXXII, 1933, p. 93.

B. spinifemorata is easily recognizable by the features given in the key. The hypopygium is of a very complicated structure (fig. 97) and, when mounted dry, it partly shrinks and becomes distorted showing sometimes a very unusual appearance. I thought for some time that there were two species mixed under the name *spinifemorata*, but have now come to the conclusion that there is really only one, the hypopygium of which is subject to a slight variability.

B. spinifemorata probably occurs all over the Ethiopian region and is recorded, or I have seen it, from Nigeria, the Belgian Congo, Uganda, Abyssinia, Tanganyika, Nyasaland, N. and S. Rhodesia, Transvaal, Natal and Cape Province. From the Belgian Congo, the following specimens are before me :

Collection Musée du Congo : [Élisabethville, III.1925 (1 ♂♀, leg. CH. SEYDEL); X.1926 (2 ♂♂, 1 ♀, leg. M. BEQUAERT); XII.1934 (1 ♂, leg. P. QUARRÉ)]; [Katanga : Kakinga, II.1931 (2 ♂♂, leg. H. J. BRÉDO)];



97 98 99

FIG. 97. — *Bengalia spinifemorata* VILLENEUVE. Hypopygium in frontal and in lateral view, two apical plates to show variability. Specimen from Natal.

FIG. 98. — *Bengalia gaillardi* SURCOUF & GUYON. Hypopygium in lateral and in frontal view, apical plate. Specimen from S.W. Africa.

FIG. 99. — *Bengalia floccosa* (WULP). Hypopygium in lateral and in frontal view, apical plate. Specimen from Natal.

[Katanga : La Panda, IX.1920 (1 ♀, leg. M. BEQUAERT)]; [Katanga : Kimilolo, XI.1920 (1 ♀, leg. M. BEQUAERT)]; [Thysville; 1929 (1 ♂, leg. M. DIDIER)]; Rutshuru, VI.1930 (1 ♂, leg. L. LIPPENS); [W. Kivu : Mulungu près Shabunda, 1939 (1 ♂, leg. HAUTMANN)]; [Kwandruma, VI.1937 (1 ♀, leg. H. J. BRÉDO)]; [Niotha, VII.1937 (1 ♀, leg. H. J. BRÉDO)]; [Jadotville, 1948 (1 ♀, leg. R. M. M. ADELAÏDE)]; [Lac Albert : Mahasi, VII.1937 (1 ♀, leg. H. GHESQUIÈRE)]; [Kibali-Ituri : Kilo, IV.1931 (3 ♀♀, leg. G. DU SOLEIL)]; [Ruanda : Astrida, III.1939 (1 ♀, leg. A. LESTRADE)].

4. — **Bengalia gaillardi** SURCOUF & GUYON.

(Fig. 98.)

Bengalia gaillardi SURCOUF and GUYON, Bull. Mus. Nat. Hist. nat., 1912, p. 427; VILLENEUVE, Bull. Soc. Ent. Fr., 1914, p. 253; TOWNSEND, Man. Myiol., V, 1937, p. 80.

Bengalia spurca BRAUER and BERGENSTAMM, Denkschr. K. Akad. Wiss. Wien, LVIII, 1891, p. 420; et Sitzb. Akad. Wiss. Wien, (1), CIV, 1895, p. 597 (*nom. nud.*); VILLENEUVE, Bull. Soc. Ent. Fr., 1914, p. 253; MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 410, fig. 14; et (10), IV, 1929, p. 119 (syn. nov.).

Bengalia depressa SURCOUF and GUYON (*nec* WALKER), Bull. Mus. Nat. Hist. nat., 1912, p. 425, fig. 1; VILLENEUVE, Bull. Soc. Ent. Fr., 1913, p. 348; TOWNSEND, Ann. Mag. N. H., (10), VIII, 1931, p. 371 (syn. nov.).

The female sex of this species is easily recognizable by the stout spines on the abdominal sternites whereas the male is very similar to *B. floccosa* and distinguishable from it mainly by the shape of the apical plate and the hypopygium (fig. 98).

B. gaillardi is recorded, or I have seen it, from Gambia, Sierra Leone, Liberia, Togo, Ivory Coast, Nigeria, Uganda, Tanganyika and S. W. Africa. From the Belgian Congo, I received the following material :

Collection Musée du Congo : [Uele : Yakuluku, 25.III.1914 (1 ♂, leg. RODHAIN)]; [Uele : Buta, II.1938 (1 ♀, leg. J. VRYDAGH)]; [Uele : Bambesa, XII.1933 (2 ♂♂, leg. H. J. BRÉDO); X.1933 (3 ♂♂, 2 ♀♀, leg. J. LEROY)]; Rutshuru, 10.V.1936 (1 ♀, leg. L. LIPPENS); [Lac Albert : Kasenyi, 15.V.1935 (1 ♀, leg. H. J. BRÉDO); VII.1937 (1 ♀, H. J. BRÉDO)].

[5. — **Bengalia floccosa** (WULP).]

(Fig. 99.)

Calliphora floccosa VAN DER WULP, C. R. Ent. Soc. Belg., XXVIII, 1884, p. 292; VILLENEUVE, Bull. Soc. Ent. Fr., 1914, p. 254; TOWNSEND, Man. Myiol., V, 1937, p. 80.

Ochromyia crassirostris KARSCH, Berl. Ent. Ztschr., XXXI, 1887, p. 377 (syn. nov.).

Bengalia mercanaria SÉGUY, Mem. Est. Mus. Zool. Univ. Coimbra, I, n° 67, 1933, p. 78; et encycl. Ent. Dipt., VIII, 1935, p. 133, fig. 3 (syn. nov.).

The hypopygium (fig. 99) is extremely similar to that of *B. cuthbertsoni*; the apical plate, however, has a broader semi-circular emargination and the hind-tibia in the male shows long hairs on both ventral edges. In *B. cuthbertsoni*, the incision of the apical plate is narrower and almost circular, and the hind-tibia of the male has long hairs only on the antero-ventral edge. I was not able to find satisfactory separating features for the females.

Collection Musée du Congo : [Lulua : R. Gashila, 5.X.1925 (1 ♂, leg. G. F. OVERLAET)]; [Lomami : Kambaye, X.1930 (1 ♂, leg. P. QUARRÉ)].

Collection Zool. Museum, Berlin : [Usambara, Tanganyika (1 ♂ ♀, leg. C. W. SCHMIDT, types of *O. crassirostris* KARSCH)]; [Langenburg, Tanganyika, 1898 (1 ♂, leg. FUELLEBORN)].

Collection S. African Museum, Cape Town : [Durban, Natal, XI.1915 (1 ♂, *floccosa* det. VILLENEUVE)].

Dept. of Research and Specialist Services, Salisbury : CUTHBERTSON's collection, restricted to S. Rhodesia, contains specimens from Darwin, Yumba, Salisbury and the Melsetter Distr.

Collection Museum für Naturkunde, Stuttgart : [Kware nr. Moshi, Tanganyika, I.1952 (1 ♂, leg. E. LINDNER)].

Collection S. A. Institute for Medical Research, Johannesburg : [Port. E. Africa : Maputo, IX.1950 and IV.1951 (3 ♂♂, 1 ♀, leg. T. S. DIAS)]; [Fontainhas, 1949 (2 ♂♂)]; [Natal : Mseleni, 6.II.1936 (1 ♂, leg. B. DE MEILLON)]; [Warner Beach (1 ♂, leg. J. MUSPRATT)]; [Pondoland, XI.1952 (1 ♂, leg. J. MUSPRATT)].

[6. — **Bengalia cuthbertsoni** n. sp.]

(Fig. 100.)

In the collection of the late Mr. CUTHBERTSON, now preserved in Salisbury, I found a number of *Bengalia* specimens, closely related to *B. floccosa* and *B. depressa*. The hypopygium is quite similar to those of these two species, but the apical plate shows a very narrow, almost circular emargination. The hind-tibia of the male has long hairs only on the antero-ventral edge, as in *B. depressa*. The female sex is, as far as I could determine, not separable from *B. floccosa*.

Male. — Frons at the narrowest point 5/12-1/3 of eye-length, slightly widened posteriorly. Colour of head brown to yellow. Chaetotaxy : 1 *iv*, 1 *ev*, 1 *f*, *fo* wanting, *paf* reach the middle of the 2nd antennal segment; parafrontalia and parafacialia beset with fine and short black hairs, buccae with pale hairs, 1/7-1/5 as high as the eye is long. Eyes long oval, facets small. Third antennal segment more or less darkened, about 3 times as long as the second, arista with long hairs above and below. Vibrissa long, a row of long black bristles on the peristome and some shorter

ones on the vibrissarium. Palpi yellow, proboscis red-brown, sometimes blackened basally.

Thorax brown, on the dorsum mostly strikingly blackened, olive-brown dusted, the margins of the scutellum reddish brown. Pteropleura with pale hairs below and black ones near the root of the wing. Chaetotaxy : *ac*=0+1, *dc*=2+4, *ia*=0+2, *ph*=1, *h*=2-3, *prs*=1, *n*=2, *sa*=2-3, *sc*=3+1. Prostigma yellow, 1 *pst* and 2 *pp*. Propleura bare, prosternum with pale hairs posteriorly. Wings hyaline, veins light-brown, halters yellow. Legs yellow-brown, femora more or less darkened, fore-femur with a row of long ventral bristles, fore-tibia with a strongly reduced basal comb, the spinules thicker, but not longer than the surrounding hairs, one long submedian *pv* and 3-4 *ad*; mid-femur with a comb of 6-10 spines, 6-8 long bristles on the basal half of the inner side, mid-tibia on the inner side of the apical half with dense hairs which partly reach the tibial diameter, one long submedian *ad*, one *av*, and 2 *pv* bristles; hind-femur on the ventral side with two rows of bristly hairs, tibia on the apical half of the antero-ventral edge with some long hairs, 2-3 *ad* and one submedian *av*.

Abdomen reddish brown, whitish dusted, the hind margins of the tergites and also the middle-line broadly darkened; fifth tergite as in *B. depressa* with one pair of widely separated discals; apical plate of the fifth sternite a little longer than broad, with a circular notch posteriorly. Hypopygium (fig. 100) black, cerci a little more slender than in *B. depressa*, phallosome very similar to this species.

Female. — There is one specimen before me which undoubtedly belongs to this species. The frons is broadest at vertex measuring here almost half of the eye-length. Towards the antennal groove it gradually widens. Buccae about ¼ as high as the eye is long. The legs are totally yellow-brown, tibiae and femora without combs and without tufted hairs. Second abdominal sternite with a pair of strong median marginal bristles. As far as I am aware it is not separable from *B. floccosa*.

Length : 10-12 mm.

EXPLANATION OF FIGURES 100 TO 104.

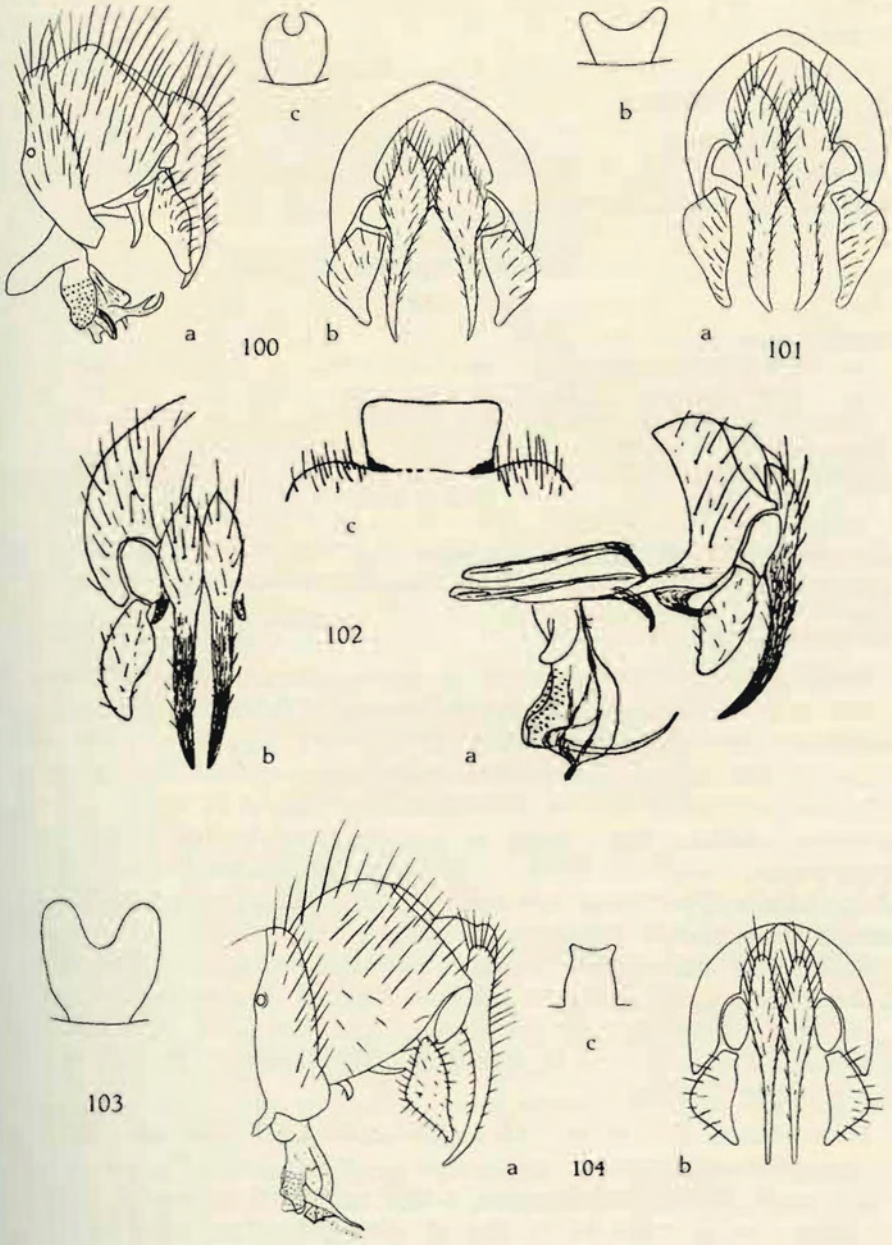
FIG. 100. — *Bengalia cuthbertsoni* n. sp. Hypopygium in lateral and in frontal view, apical plate. Paratype from S. Rhodesia.

FIG. 101. — *Bengalia depressa* WALKER. Cerci and paralobi in frontal view, apical plate. Specimen from Natal.

FIG. 102. — *Bengalia minor* MALLOCH. Hypopygium in frontal and in lateral view, apical plate (after MALLOCH). Type specimen from the French Congo.

FIG. 103. — *Bengalia lepineyi* SÉGUY. Apical plate of type specimen from the French Sudan (after SÉGUY).

FIG. 104. — *Bengalia peuhi* VILLENEUVE. Hypopygium in lateral and in frontal view, apical plate. Specimen from Transvaal.



FIGS. 100 TO 104.

Dept. of Research and Specialist Services, Salisbury :

Holotype : [Balla-Balla, S. Rhodesia, 29.XII.1932 (1 ♂, leg. A. CUTHBERTSON)].

Paratypes : [Balla-Balla, S. Rhodesia, XII.1932, I and III, 1933 (5 ♂♂, 1 ♀, leg. A. CUTHBERTSON)].

Collection S. A. Institute for Med. Research, Johannesburg : [Ndola, N. Rhodesia, XII.1950 (1 ♂)]; [Pretoria, Transvaal, 7.I.1951 (1 ♂, leg. F. ZUMPT)].

7. — **Bengalia depressa** WALKER.

(Fig. 101.)

Bengalia depressa WALKER, Trans. Ent. Soc. Lond., IV, 1857, p. 211; SURCOUF and GUYON, Bull. Mus. Nat. Hist. nat., 1912, p. 425, fig. 1; VILLENEUVE, Bull. Soc. Ent. Fr., 1913, p. 348; MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 410, fig. 16; et ibid., (10), IV, 1929, pp. 119 et 335; ALSTON, Proc. Ent. Soc. Lond., 1932, p. 36.

Ochromyia limbata BIGOT, Bull. Soc. Zool. Fr., XII, 1887, p. 609; BEZZI, Ann. Mus. Civ. Genova, (2), XII, p. 189; et Bull. Soc. Ent. Ital., XXXIX, 1908, p. 76.

Bengalia unicalcarata VILLENEUVE, Bull. Soc. Ent. Fr., 1913, p. 348; et Bull. Soc. Ent. Fr., 1914, p. 254; MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 410.

? *Bengalia tibiaria* VILLENEUVE, Rev. Zool. Afr., XIV, 1926, p. 69 (syn. nov.).

Judging from the structure of the hypopygium, *B. depressa* is closely related to *B. cuthbertsoni* and also *B. floccosa*. The apical plate, however, is broader than long and widely emarginated (fig. 101). This feature, in combination with the long hairs on the antero-ventral edge of the hind-tibia, makes it relatively easy to separate the male of *B. depressa* from the two other species. The females are distinguished by me by the wanting strong median marginal bristles on the second abdominal sternite. Whether this feature is always constant and not due to an overlapping variability, remains to be proved.

B. depressa seems to be distributed over Central, East and South Africa. In the collection of the S. Afr. Institute for Med. Research, Johannesburg, it is well represented by specimens from the Cape Province, Natal, Swaziland, Transvaal and S. Rhodesia. The Congo material comes from the following localities :

Mission G. F. DE WITTE : [Uele : Buta, 450 m, 11.IV.1935 (1 ♂)].

Collection Musée du Congo : Vitshumbi, 925 m, 15.IV.1936 (1 ♀, leg. L. LIPPENS); [Bambesa, 9-16.V.1938 (3 ♀♀, leg. P. HENRARD)]; [Albertville, 1-20.I.1919 (1 ♀, leg. R. MAYNÉ)]; [Lac Albert : Kasenyi, 15.V.1935 (1 ♀, leg. H. J. BRÉDO)]; [Haut-Uele : Mauda, III.1925 (1 ♀, leg. H. SCHOUTEDEN)]; [Lomani : Lulua, 1934 (2 ♀♀, leg. BOUVIER)]: [Urundi : Bumonge, 1934 (1 ♂, leg. A. LESTRADE)]; [Urundi : Rugari, 1918 (1 ♀, leg. DAMES DE MARIE)]; [Ruanda : Kibungu, 1937 (1 ♀, leg. R. VERHUIST)].

[8. — **Bengalia minor** MALLOCH.]

(Fig. 102.)

Bengalia (Ochromyia) minor MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 408, fig. 10.

I have not seen this species, known from two males from Yélimené, French Congo. The hypopygium (fig. 102) is very similar to that of *B. peuhi*, but the apical plate of the 5th sternite is about twice as broad as long, without a marginal notch.

As further characteristic features MALLOCH mentioned that the « fore tibia has no distinct short spine on the ventral surface in one of the specimens, but in the other there are a few quite inconspicuous black spines present basad of the middle, and in neither specimen is there a distinct hollowing out of the tibia ».

[9. — **Bengalia lepineyi** SÉGUY.]

(Fig. 103.)

Bengalia lepineyi SÉGUY, Encycl. Ent. B II, Dipt., VIII, 1935, p. 135, fig. 3.

This species is only known in the male sex and compared by the author with *B. minor* with respect to colour and chaetotaxis. Fore-tibia with at least 2 thick spines in the basal half of the inner side; hind femur with several rows of short bristles, those of the postero-ventral margin stronger and longer, hind-tibia with long hairs on both edges of the inner side. Fifth sternite with rounded posterior edges and a deep notch (fig. 103). The type-locality is Sokolo, Western French Sudan.

[10. — **Bengalia peuhi** VILLENEUVE.]

(Fig. 104.)

Auchmeromyia peuhi BRAUER and BERGENSTAMM, Denkschr. K. Akad. Wiss. Wien, LVIII, 1891, pp. 420 et 436 (nom. nud.).

Bengalia peuhi VILLENEUVE, Bull. Soc. Ent. Fr., 1914, p. 253; MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 408, fig. 11; SÉGUY, Encycl. Ent., II, Dipt., VIII, 1935, p. 134, fig. 3; ALTSON, Proc. Ent. Soc. Lond., VII, 1932, p. 36.

B. peuhi is variable in some respects so that I first thought that I was dealing with two different species, the one having a yellow-brown hypopygium in the male and a row of discal bristles on the last tergite in both sexes, the other a black hypopygium and two discals only. But the study of further specimens reveals that there are transitional specimens in this respect, some having, for instance, on the one side of the tergite, one discal bristle, on the other 2-3. The shape of the hypopygium is identical, the apical plate only showing a slight variability (fig. 104). I therefore came to the conclusion that I was dealing with one species only.

Characteristic features of *B. peuhi*, are, in the male, the well-developed comb of the fore-tibia, the postero-dorsal bristles of the hind tibia, and the apical plate not having a deep notch as in *B. lepineyi*. The females of *B.*

lepineyi and *B. minor* are not yet known, so that *peuhi*-♀, up to now, keys out among the Ethiopian species, by the presence of discal bristles on the 5th tergite and of *pd* bristles on the hind-tibia, features which will also apply to the females of the other two species.

B. peuhi is not represented in the material from the Belgian Congo, and does not seem to have been recorded from this part of Africa. I have seen specimens from the Gold Coast, Nigeria, Anglo-Egyptian Sudan, S. Rhodesia, Bechuanaland, S. W. Africa, Port. E. Africa and Transvaal. It is also recorded from Nyasaland, Kenya, Abyssinia and Somaliland.

DOUBTFUL OR WRONGLY PLACED GENERA OF *CALLIPHORINI*.

The following genera have been placed by various authors in the *Calliphorini* :

[Genus **BEQUAERTIANA** CURRAN.]

Bequaertiana CURRAN, Amer. Mus. Nov., 340, 1929, p. 14; TOWNSEND, Man. Myiol., VI, 1938, p. 186.

Type species : *B. argyriventris* CURRAN from Liberia.

Dr. H. C. CURRAN, American Museum of Nat. History, New York, was kind enough to send me the type species. It certainly does not belong to the *Calyptrata*, but to an acalyptrate family near the *Lonchaeidae*.

[Genus **BRITEA** CURRAN.]

Britea CURRAN, Bull. Ent. Res., XVIII, 1927, p. 127; TOWNSEND, Man. Myiol., VI, 1938, p. 219.

Type species : *B. tachinoides* CURRAN from Kenya.

Dr. H. C. CURRAN kindly sent me the type species of this genus too. I would place it in the *Tachinidae*, whereas Dr. F. VAN EMDEN, Commonwealth Institute of Entomology, is of the opinion (by letter) that it belongs to the *Rhiniphorinae* and regards *Britea* as a synonym of *Styloneuria* BRAUER and BERGENSTAMM (Musc. Schiz. II, 1891, p. 61).

[Genus **KENIA** MALLOCH.]

Kenia MALLOCH, Ann. Mag. N. H., (9), XX, 1927, p. 387, et ibid., (10), III, 1929, p. 275; et ibid., (10), IV, 1929, p. 113; TOWNSEND, Ann. Mag. N. H., (10), VIII, 1931, p. 372; et Man. Myiol., V, 1937, p. 78; ZUMPT, J. Ent. Soc. S. Africa, XVI, 1953, p. 187.

Type species : *K. flavida* MALLOCH from Kenya.

I have already referred to the status of this genus and expressed the opinion that it probably does not belong to the *Calliphorini*, but perhaps to the *Tachinidae*.

[Genus **ONESIHOPLISA** VILLENEUVE.]

Onesihoplisa VILLENEUVE, Bull. Ann. Soc. Ent. Belg., LXVI, 1926, p. 269; TOWNSEND, Man. Myiol., V, 1937, p. 160.
Type species : *O. umbrosa* VILLENEUVE from Belg. Congo.

This genus was based on *O. umbrosa* VILLENEUVE from Stanleyville. No further specimens or species of this genus have been recorded up to now. Superficially, *O. umbrosa* must be similar to the *Adichosina* species, but the arista is only short pilose, the hairs being hardly longer than the base of the arista. TOWNSEND, who may have seen the type, gives the following generic description :

« Length 6 mm. Very narrowed, metallic violet green to cupreous. Head as wide as high, frontal profile gently sloped and nearly as long as facial, clypeus moderately depressed and 2 ⅓ times as long as wide, epistoma but little elongate and nearly full width, facialia bare, haustellum little over ½ head height, palpi cylindric, antennal axis ¾ head height and well above eye middle, third antennal joint about 4 times second, arista long pubescent nearly to the tip, male vertex nearly ⅓ head and front equibroad, inner vertical bristles straight, 2 proclinate fronto-orbital bristles in male and frontalia nearly twice parafrontal width, parafacialia bare, cheeks ¼ eye-length. Lateral postscutellar plates setose; squamopleura, prosternum, propleura, postalar wall and tympanic pit bare; greater ampulla small and not raised. Three postsutural bristles, 2 sternopleural bristles, 3 lateral scutellar bristles, long decussate apical scutellar bristles, 1 small discal scutellar bristle. Apical cell widely open little before wing tip, third longitudinal vein bristles only at base, small crossvein somewhat inside tip of first longitudinal vein and straight, hind crossvein its length from cubitulus, latter a broadly arcuate obtuse angle, squamae small and subovate. Male claws long and pubescent. Male abdomen ovoconic, marginal rows of bristles on last two segments but open in middle on third segment. Male hypopygium very large, its first segment short and second not very long, fifth sternite lobes very large and broad. »

[Genus **PERISTASISEA** VILLENEUVE.]

Peristasisea VILLENEUVE, Bull. Ann. Soc. Ent. Belg., LXXIV, 1934, p. 187.
Type species : *P. luteola* VILLENEUVE from E. Africa.

This genus was evidently overlooked by TOWNSEND when compiling his Manual of Myiology. It was based on *P. luteola* VILLENEUVE, represented by 1 ♂ and 2 ♀♀ from E. Africa, probably Nyasaland. The author compares this species with *Paratricyclea* (= *Phumosia*) with respect to its general appearance, but says that the sternites are elongated and completely free. Prosternum and propleura are bare, but it is not mentioned

whether the supraspiracular convexity is haired or short pilose. The thoracic squama is described as being narrow and bare dorsally. A strange fact is that both sexes are said to be holoptic.

P. luteola is a totally red-yellow species. It has 3 post *dc*, 2 post *ac* and 2 post *ia*, last *ph* wanting, *st*=1 : 1. Abdominal tergites with marginal bristles only. Length : 7-8 mm.

This genus may be related to *Auchmeromyia* or *Hemigymnochaeta*.

CHRYSOMYIINI.

In the Ethiopian region, only the genus *Chrysomyia* is represented. The question has been raised (cf. HOLDAWAY, 1933) whether *C. albiceps* (WIEDEMANN), with respect to the outstanding structure of its hypopygium and the morphology of the larva, should be listed in a separate genus, for which BEZZI (1927) proposed the name *Achoetandrus*. The features mentioned above are really of such importance that a generic separation would be justified. On the other hand, *C. albiceps* is a species of great economic importance and for a long time has been known in literature on applied entomology only under the name *Chrysomyia*, so that most probably a change of name would cause great confusion. I therefore prefer to retain the old name, at least until an agreement has been reached among the applied entomologists to recognize generally the genus *Achoetandrus*.

Whether the *Chrysomyiini* genera of the New World (cf. HALL, 1948) are partly congeneric with *Chrysomyia*, must be decided by American authors.

Genus **CHRYSOMYIA** ROBINEAU-DESVOIDY

Chrysomyia ROBINEAU-DESVOIDY, Ess. Myod., II, 1830, p. 444. — RONDANI, Arch. Zool. Mod., III, 1864, p. 27. — SÉGUY, Encycl. Ent. Dipt., IV, 1927, p. 8. — HOLDAWAY, Bull. Ent. Res., XXIV, 1933, p. 556. — TOWNSEND, Man. Myiol., V, 1937, p. 124. — S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 135. — SÉGUY, Encycl. Ent., A XXI, 1941, p. 17. — HALL, Blowflies N. America, 1948, p. 103.

Type species : *C. regalis* ROBINEAU-DESVOIDY from South Africa.

Compsomyia RONDANI, Ann. Mus. Genova, VII, 1875, p. 425. — TOWNSEND, Man. Myiol., V, 1937, p. 126. — S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 135.

Type species : *M. dux* ESCHSCHOLTZ from E. India.

Pycnosoma BRAUER and BERGENSTAMM, Denkschr. Akad. Wiss. Wien, LVI, 1894, p. 623. — SÉGUY, Encycl. Ent. Dipt., IV, 1927, p. 8; et ibid., 1928, pp. 103 et 114; et Encycl. Ent., A IX, 1928, p. 145. — TOWNSEND, Man. Myiol., V, 1937, p. 124.

Type species : *M. marginalis* WIEDEMANN from Africa.

Paracompsomyia HOUGH, Proc. Acad. Nat. Sci. Phil., L, 1898, p. 184. — TOWNSEND, Man. Myiol., V, 1937, p. 124.

Type species : *P. nigripennis* HOUGH from Somaliland.

Psilostoma SURCOUF, Arch. Mus. Hist. Nat. Paris, (5), VI, 1914, p. 58. — SÉGUY, Encycl. Ent. Dipt., IV, 1927, p. 3. — TOWNSEND, Man. Myiol., V, 1937, p. 130. — S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 135.

Type species : *O. incisuralis* MACQUART from Australia.

Microcalliphora TOWNSEND, Proc. U. S. Nat. Mus., XLIX, 1916, p. 618. — SÉGUY, Encycl. Ent. Dipt., IV, 1927, p. 1. — HOLDAWAY, Bull. Ent. Res., XXIV, 1933, p. 558. — TOWNSEND, Man. Myiol., V, 1937, p. 129. — S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 135.

Type species : *L. varipes* MACQUART from Australia.

Achoetandrus (*Chrysomyia* subg.) BEZZI, Bull. Ent. Res., XVII, 1927, p. 235. — HOLDAWAY, Bull. Ent. Res., XXIV, 1933, p. 558. — TOWNSEND, Man. Myiol., V, 1937, p. 122. — S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 175.

Type species : *M. albiceps* WIEDEMANN from the Cape.

Compsomyia SÉGUY (nec RONDANI), Encycl. Ent. Dipt., IV, 1927, p. 8, et 1928, p. 114; et Encycl. Ent., A IX, 1928, p. 144. — HOLDAWAY, Bull. Ent. Res., XXIV, 1933, p. 557.

Type species : *M. albiceps* WIEDEMANN from the Cape.

Somomyia SÉGUY (nec RONDANI), Encycl. Ent. Dipt., IV, 1927, p. 8, et 1928, p. 114; et Encycl. Ent., A IX, 1928, p. 145. — HOLDAWAY, Bull. Ent. Res., XXIV, 1933, p. 557.

Type species : *C. bezziana* VILLENEUVE from Africa.

Cyaneosomyia SÉGUY, Encycl. Ent. Dipt., 1928, p. 112. — S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 135.

Type species : *C. phaonis* SÉGUY from China.

Pycnosomops TOWNSEND, Ent. News, XLV, 1934, p. 277; et Man. Myiol., V, 1937, p. 131. — S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 135.

Type species : *M. putoria* WIEDEMANN from Sierra Leone.

Head in male with the eyes touching or separated by up to one third of eye-length, bare, upper facets almost equal to lower ones, or they are greatly enlarged and more or less distinctly demarcated. The females are always dichoptic and the facets uniform. With respect to the chaetotaxy of the male, *oc* may be reduced, *iv* is always present, *ev* and *f* sometimes. In the female the chaetotaxy is complete, or the 2 *fo* may be wanting as in the other sex. Parafacialia beset with hairs at least in the upper part. Arista with long hairs on both sides.

Thorax, like the abdomen, metallic green, coppery or blue, with black pattern, *ac*=0+1-2, *dc*=0-3+2-5, *ia*=0-1+1-2, *ph*=0-1, but outer always wanting, *h*=2-3, *prs*=1, *n*=2, *sa*=3, *pa*=2, *sc*=3-6+2-3, *st*=1 : 1. *pp* always present, *pst* sometimes wanting; propleuron, prosternum and post-

alar declivity hairy, as well as the pre-alar knob. Supraspiracular convexity bare, suprasquamal ridge without tufted hairs. Wings hyaline or with the outer margin broadly infuscated, subcostal sclerite bare, stem-vein dorsally with a row of hairs, r_1 bare, r_{4+5} with hairs in the basal part, R_5 open. Thoracic squama broad and truncate, dorsally with erect hairs. Legs without outstanding features.

Abdomen of *Calliphora*-type, 5th sternite emarginated. Postabdomen in the male showing 3 free segments, the first very narrow, hypopygium typically shaped in each species with a phallosome of great multiplicity, which induced HOLDAWAY (1933) to propose a splitting of the genus *Chrysomyia* of the Old World into 3 distinct units.

The bionomics of several species which are important as myiasis-producing « blow-flies » have been studied by several authors, for instance *Chrysomyia albiceps* (WIEDEMANN) by SMIT (1931) and CUTHBERTSON (1933), *C. bezziana* VILLENEUVE by CUTHBERTSON (1933, 1934), *C. chloropyga* (WIEDEMANN) by SMIT (1931) and CUTHBERTSON (1938), *C. marginalis* (WIEDEMANN) by CUTHBERTSON (1938). The maggot of *C. albiceps* is armed with fleshy processes terminating in a brush of spinules which give the larva a characteristic and outstanding appearance. *C. bezziana* is an obligatory producer of wound-myiasis in man and animal, *C. albiceps*, *C. chloropyga*, *C. inclinata* and *C. marginalis* are known to cause facultatively traumatic myiasis (cf. ZUMPT, 1951).

KEY TO THE SPECIES.

1 (2) Prothoracic spiracle black to dark brown.

Body metallic green or blue, abdominal tergites with narrow dark bands along posterior margins. Only base of wing infuscated. Eyes of male almost touching, upper facets enlarged, transitional in size to the lower ones; in female, frons at vertex measuring about ⅗ of eye-length. Face yellow, frontal stripe red-brown, parafrontalia blackish, antennae orange. Acrostichals 0+1-2, *dc*=2+3-5, *ia*=0-1+2. 8-12 mm. — Ethiopian and Oriental regions ... 1. *C. bezziana* VILLENEUVE.

2 (1) Prothoracic spiracle white or yellow 3

3 (6) Bucca with a sharply demarcated, glossy black or reddish brown, undusted spot. Presutural *dc* wanting. Wing margin broadly infuscated 4

4 (5) Frons in male at the narrowest point less than ⅓, in female about ½ of eye-length.

Body dark green or blue, mesonotum with a more or less distinct, ⊥-like dark pattern in front of suture, abdomen broadly banded. Frons, antennae and face black, the latter yellowish pollinose. Acrostichals 0+1-2, *dc*=0+1-2, *ia*=0+1-2. 7-11 mm. — Tanganyika, Kenya, Belg. Congo .....
2. *C. polymita* VILLENEUVE.

5 (4) Frons in male at the narrowest point about ½, in female ⅝ of eye-length.

Body a little more slender than in the foregoing species, in other main features, except the hypopygium, similar to it. 7-10 mm. — Tanganyika ..... 3. *C. vanemdeni* ZUMPT.

6 (3) Bucca without sharply demarcated glossy spot, but sometimes more or less shining under the pollinosity. Presutural *dc* present. Wing margin infuscated or hyaline 7

7 (8) Eyes in male touching, with sharply demarcated and strikingly large upper facets; female frons at vertex measuring about 7/11 of eye-length, totally orange.

Body blue or bluish green, abdomen with black bands. Wing margin normally broadly infuscated, rarely hyaline. Face and antennae in both sexes bright yellow or orange. Acrostichals 0+1, *dc*=2-3+2-3, *ia*=0+1. 7-13 mm. — Ethiopian region and India west of the Indus .....
5. *C. marginalis* (WIEDEMANN).

8 (7) Eyes in male touching or widely separated, but never with strikingly large or sharply demarcated upper facets; frons of female at least darkened in the upper part 9

9 (12) Face bright yellow or orange, antennae with the third segment sometimes partly infuscated. Wing margin blackish, prostigmatic bristle always present 10

10 (11) Eyes in male touching; in female separated at vertex for about ½ of eye-length, but frons strikingly narrowed to the antennal groove, measuring about ⅖ of eye-length at the narrowest point, totally bluish-black coloured.

Body blue or dark green, abdominal tergites with dark bands. Acrostichals 0+1, *dc*=3+4, *ia*=0-1+2. 6-12 mm. — Ethiopian region ..... 5. *C. inclinata* WALKER.

11 (10) Eyes in male widely separated, frons at the narrowest point measuring about ½ of eye-length; female with the frons subparallel, width at vertex about ⅝ of eye-length, upper part black, lower reddish coloured.

Colouring as in the foregoing species; presutural *ia* always absent. 8-11 mm. — Ethiopian region .....
4. *C. laxifrons* VILLENEUVE.

12 (9) Face and frons blackish in ground colour, antennae blackish too or at least black-brown. If the buccae are yellowish, then the wing-margin is hyaline and the prostigmatic bristle normally absent 13

13 (20) Prostigmatic bristle present. Male with *ev* present or absent ... 14

14 (15) Body predominantly dark blue, mesonotum in front of suture with a black ⅃⌊-shaped pattern. Wings infuscated at base only.
Eyes in male almost touching or separated from each other by a distance up to $\frac{1}{10}$ of eye-length, frontal width at vertex in female measuring almost $\frac{1}{2}$ of eye-length. Acrostichals =0+1, *dc*=2-3+2-4, presutural *ia* wanting. 6-10 mm. — Widespread in S. Africa, locally in East and Central Africa, probably absent from West Africa ..... 7. *C. chloropyga* (WIEDEMANN) f. *typica*.

15 (14) Body mostly green, rarely coppery or bluish, mesonotum without a distinct ⅃⌊-shaped pattern 16

16 (17) Wing margin infuscated.
Morphologically not to be distinguished from the foregoing form. — Locally in West- and Central Africa ..... 7. *C. chloropyga* f. *taeniata* (BIGOT).

17 (16) Wing with only the base infuscated 18

18 (19) Male frons without *ev*, buccae in both sexes black.
A green form of *C. chloropyga* with reduced mesonotal pattern. — Everywhere in the Ethiopian region, but predominantly in the tropical zone. Also known from Madagascar ..... 7. *C. chloropyga* f. *putoria* (WIEDEMANN).

19 (18) Male frons with a well developed *ev*, buccae totally or for the greater part yellowish. See following species.

20 (13) Prostigmatic bristle wanting. Male frons with *ev* present.
Body green, sometimes bluish, without markings on presutural mesonotum; abdominal bands relatively broad. Eyes in male separated by $\frac{1}{8}$-$\frac{1}{12}$ of eye-length. Buccae yellow to orange, sometimes partly darkened. Acrostichals 0+1, *dc*=2-3+2-3, *ia*=0+1. 6-10 mm. — Widespread in the tropical and subtropical parts of the Old World ..... 8. *C. albiceps* (WIEDEMANN).

[1. — **Chrysomyia bezziana** VILLENEUVE.]

(Fig. 105.)

Chrysomyia bezziana VILLENEUVE, Rev. Zool. Afr., III, 1914, p. 430; ROUBAUD, Ét. Fa. Parasit. Afr. occ. fr., I, 1914, p. 20, pl. IV; PATTON, Ind. J. Med. Res., VIII, 1920, p. 17, pl. III; et id., ibid., IX, 1922, p. 654; SÉGUY, Encycl. Ent. Dipt., IV, 1927, p. 13, figs.; CUTHBERTSON, Proc. Rhod. Sci. Ass., XXXII, 1933, p. 95, figs.; et Min. Agric. Salisbury, Bull., 917, 1934, 4 pp., 4 plts.; S. WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 140, fig. 66.

A species of great medical and veterinary importance, the larvae obligatorily causing wound myiasis. A closely related species is *C. megacephala* (FABRICIUS) of the Oriental region, the larvae of which, however, normally develop in carcasses and are only occasionally found as facultative wound

parasites. For separation of these two species see S. WHITE, AUBERTIN and SMART (1940). The hypopygium of *C. bezziana* is quite characteristic (fig. 105) and absolutely distinct from that of *C. megacephala*.

C.bezziana is probably to be found in almost all parts of tropical Africa, but the imagines are not commonly represented in the collections. The area of distribution evidently does not extend further southwards than S. Rhodesia, N. Transvaal and Bechuanaland.

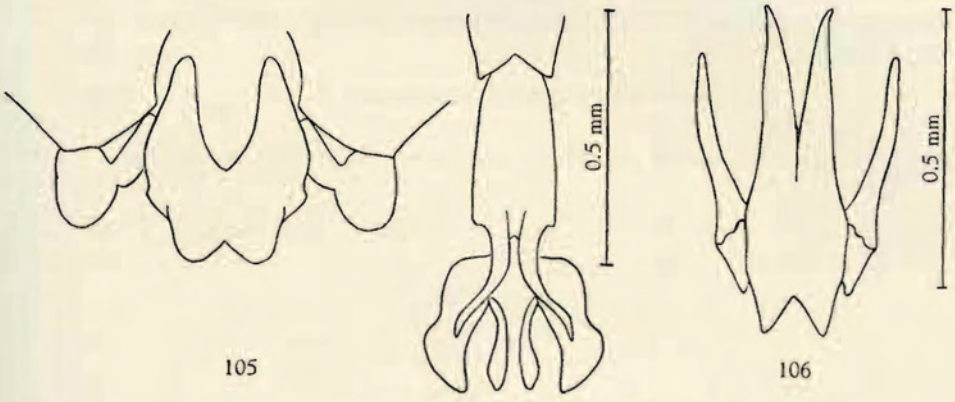


FIG. 105. — *Chrysomyia bezziana* VILLENEUVE. Cerci with paralobi and phallosome in frontal view. Specimen from S. Rhodesia.

FIG. 106. — *Chrysomia polymita* VILLENEUVE. Cerci with paralobi in frontal view (after ZUMPT). Holotype from N.W. Tanganyika.

There are no specimens represented in the material from the Belgian Congo but *C. bezziana* is known from this part of Africa. One ♂ in the collection of the S. African Institute for Med. Research, Johannesburg, was found at Tolwe, Transvaal, IX.1940.

2. — **Chrysomyia polymita** VILLENEUVE.

(Fig. 106.)

Chrysomyia polymita VILLENEUVE, Bull. Soc. Ent. Fr., 1914, p. 177; CURRAN, Bull. Amer. Mus. N. H., LVII, 1928, p. 369; SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 106, figs. 30-31; ZUMPT, J. Ent. Soc. S. Africa, XVI, 1953, p. 181, fig. 2.

Chrysomyia atrifrons MALLOCH, Ann. Mag. N. H., (9), XVI, 1925, p. 98; ? SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 115; ZUMPT, J. Ent. Soc. S. Africa, XVI, 1953, p. 181.

C. polymita is a Central African species probably being restricted to the higher mountains like its related species *C. vanemdeni* ZUMPT. These two species are easily separable from each other by the features given in the key, and they are also quite distinct with respect to the hypopygia (cf. figs. 106 and 107).

Mission G. F. DE WITTE : Tshamugussa (Bweza), 2.250 m, 10.VIII.1934 (3 ♂♂); vers mont Kamatembe, 2.300 m, 7-23.I.1935 (5 ♂♂, 9 ♀♀); Kilondo (près Gando), 2.000 m, 7-23.I.1935 (1 ♀).

Collection Musée du Congo : [N. E. Kivu : La Mutura, III.1928 (1 ♀, leg. C. SEYDEL)].

Collection Museum Wien : [N. W. Tanganyika (1 ♂♀, leg. GRAUER, types of *polymita* VILLENEUVE)].

Collection S. A. Institute for Med. Research, Johannesburg : [S. E. edge of Kenia Forest (1 ♂♀, paratypes of *atrifrons* MALLOCH)].

[3. — **Chrysomyia vanemdeni** ZUMPT.]

(Fig. 107.)

Chrysomyia vanemdeni ZUMPT J., Ent. Soc. S. Africa, XVI, 1953, p. 181, fig. 1.

Only known from Mufindi, 3.000 m, Southern Highlands of Tanganyika, and from the Kibo, 2.800 m.

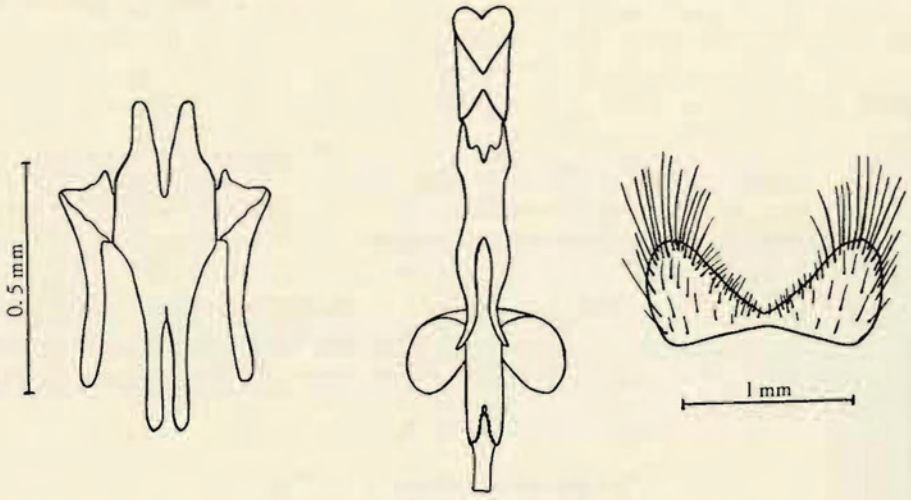


FIG. 107. — *Chrysomyia vanemdeni* ZUMPT.
Cerci with paralobi, phallosome and 5th. sternite in frontal view (after ZUMPT). Paratype from Mufindi, Tanganyika.

4. — **Chrysomyia laxifrons** VILLENEUVE.

(Fig. 108.)

Chrysomyia laxifrons VILLENEUVE, Bull. Soc. Ent. France, 1914, p. 178, fig. 2; CURRAN, Bull. Amer. Mus. N. H., LVII, 1928, p. 369; ? SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 115.

This species is well characterized by its outer features as well as by the shape of the hypopygium (fig. 108). It is widely spread over the Ethiopian region, but evidently belongs to the rarer species.

Mission G. F. DE WITTE : Vers mont Kamatembe, 2.300 m, 7-23.I.1935 (1 ♀).

Collection HACKARS : W. Ruwenzori, 1.200-1.500 m, III.1937 (1 ♀).

Collection Musée du Congo : [Kivu : Katana, 1933 (1 ♀, leg. DE WULF)]; [Lulua : Kapanga, XI.1928 (1 ♀, leg. WALKER)]; Rutshuru, 12.V.1936 (1 ♀, leg. L. LIPPENS); [Élisabethville, XI.1911 (1 ♂♀, leg. MISS. AGRIC.)]; [Haut Uele : Moto, 1920 (1 ♂♀, leg. L. BURGEON)]; [Uele : Nepoko (1 ♀, leg. HENRION)]; [Ukaika, XII.1910 (1 ♂, 2 ♀♀, leg. GRAUER, type-locality)].

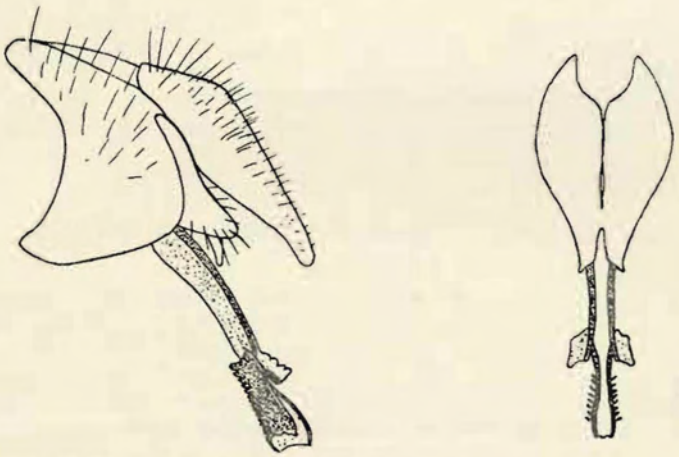


FIG. 108. — *Chrysomyia laxifrons* VILLENEUVE.
Hypopygium in lateral and frontal view.
Specimen from S. Rhodesia.

Collection British Museum, London : [Katanta, S. Leone, 19.IV.1912 (1 ♂, leg. SIMPSON)]; [Mt. Ufiome, Tanganyika, 1.VI.1930 (1 ♀)].

Collection Zool. Museum, Berlin : [Togo : Misahoehe, 10.IV.1894 (1 ♀, leg. E. BAUMANN)]; [S. Kamerun : Bipindi, (1 ♀, leg. G. ZENKER)]; [Span. Guinea : Alcu Benito, 16-31.VII.1906 (1 ♀, leg. G. TESSMANN)]; [O. Sudan : Gelo Fluss, (1 ♂♀, leg. O. NEUMANN)].

Collection S. A. Institute for Med. Research, Johannesburg : [Tanganyika : Aruscha, 30.VI.1931 (1 ♂, leg. F. ZIMMER)]; [S. Rhodesia : Chirinda Forest, XI.1930 (1 ♀, leg. A. CUTHBERTSON)]; [Transvaal : Tzaneen, I.1953 (1 ♀, leg. B. DE MEILLON)]; [Waterval Onder, 28.II.1952 (1 ♀, leg. H. PATERSON)]; [Pretoriuskop, Kruger Park, 5.III.1952 (1 ♀)].

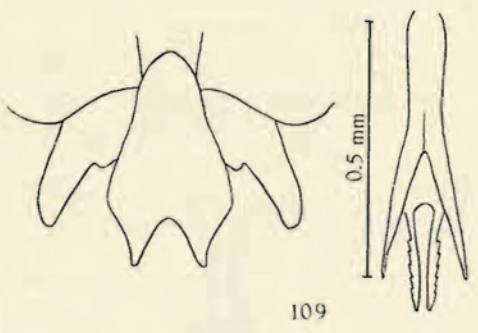
5. — **Chrysomyia inclinata** WALKER.

(Fig. 109.)

Chrysomyia inclinata WALKER, Trans. Ent. Soc. Lond., 1860, p. 311; CURRAN, Bull. Amer. N. H., LVII, 1928, p. 369.

Chrysomyia tellinii BEZZI, Bull. Soc. Ent. Ital., XXXIX, 1908, p. 82; VILLENEUVE, Bull. Soc. Ent. Fr., 1914, p. 179; MALLOCH, Ann. Mag. N. H., (9), XVI, 1925, p. 97; VILLENEUVE, Bull. Soc. Ent. Fr., 1926, p. 40; SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 110.

Chrysomyia roubaudi SÉGUY, Bull. Soc. Ent. Fr., 1925, p. 304; VILLENEUVE, Bull. Soc. Ent. Fr., 1926, p. 40; SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 110, figs. 41-42.



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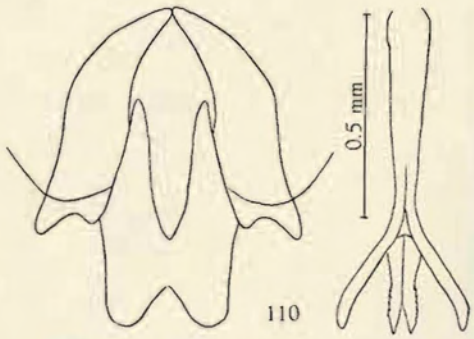

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FIG. 109. — *Chrysomyia inclinata* WALKER. Cerci with paralobi and phallosome in frontal view. Specimen from Monga, Belgian Congo.

FIG. 110. — *Chrysomyia marginalis* (WIEDEMANN). Cerci with paralobi and phallosome in frontal view. Specimen from Transvaal.

Recognizable without difficulty by the features given in the key. SÉGUY, in his revision of the *Chrysomyiini* (1928), does not mention this species, but listed as distinct species, *C. tellinii* and *C. roubaudi*. Both had already been synonymized with *C. inclinata* by VILLENEUVE in 1926. The features given by SÉGUY lie within the intraspecific variability. Also the shape of the cerci and paralobi is slightly variable, but the hypopygium (fig. 109) is nevertheless quite distinct from those of the other species.

Mission G. F. DE WITTE : Vers mont Kamatembe, 2.300 m, 7-23.I.1935 (2 ♂♂, 3 ♀♀); Nyasheke (volc. Nyamuragira), 1.820 m, 14-26.VI.1935 (1 ♀); [Uele : Monga, 450 m, 18.IV-8.V.1935 (1 ♂)].

Mission H. DAMAS : Lac Édouard W. Bugazia, 925 m, 13-16.V.1935 (1 ♀).

Collection Musée du Congo : [Lulua : Kapanga, VIII.1932 (1 ♂ ♀, leg. F. G. OVERLAET)]; [Bambesa, 11-14.V.1938 (4 ♀ ♀, leg. P. HENRARD)];

[Équateur : Flandria, IX.1935 (1 ♀, leg. J. GHESQUIÈRE)]; [Kibali Ituri : Kilo, 18.X.1930 (3 ♀♀, leg. G. DU SOLEIL)]; [N. Lac Kivu : Rwankwi, IV.1918 (2 ♀♀, leg. J. V. LEROY)]; [Terr. de Banningville, riv. Bas-Kwango, IV.1945 (1 ♀, leg. FAIN)]; [Stanleyville, 1927 (1 ♀, leg. A. HENRION)].

Collection Zool. Museum, Berlin : [Togo : Misahoehe, 10.IV.1894 (2 ♀♀, leg. E. BAUMANN)]; [Kamerun : Barombi (9 ♀♀, leg. PREUSS)]; [Buea, 900-1.200 m, 11.X.1910 (2 ♀♀, leg. HINTZ)].

Collection S. A. Institute for Med. Research, Johannesburg : Transvaal : White River, 6.III.1953 (1 ♂, leg. H. PATERSON); Natal : Durban, VII.1903 (1 ♂, leg. G. BURN); [Harding, II.1951, (1 ♀, leg. J. MUSPRATT)]; [Hluhluwe, 18.I.1950 (1 ♀, leg. F. ZUMPT)]; [Cape Province : Grahamstown, 7.I.1954 (1 ♀, leg. F. ZUMPT)]; [Mazeppa Bay, IV.1951 (1 ♀, leg. J. MUSPRATT)]; [Pt. St. John's (2 ♂♂, leg. H. PATERSON)].

I have seen this species furthermore from Sierra Leone, Liberia, Gold Coast, Nigeria, Tanganyika, S. Rhodesia and Port. E. Africa.

6. — **Chrysomyia marginalis** (WIEDEMANN).

(Fig. 110.)

Musca marginalis WIEDEMANN, Ausser. Zweifl. Ins., II, 1830, p. 395; AUSTEN, Ann. Mag. N. H., (7), XVII, 1906, p. 302; VILLENEUVE, Rev. Zool. Afr., III, 1913, p. 436; CURRAN, Bull. Amer. Mus. N. H., LVII, 1928, p. 369; CUTHBERTSON, Proc. Rhod. Sci. Ass., XXXII, 1933, p. 101, pl. III; PATTON and CUSHING, Ann. Trop. Med. Parasit., XXVIII, 1934, p. 124, figs. 1-2; S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 137, fig. 63.

Chrysomyia regalis ROBINEAU-DESVOIDY, Ess. Myod., II, 1930, p. 449; S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 137.

Phumosia tessellata BIGOT, Ann. Soc. Ent. France, (5), VIII, 1878, p. 31; S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 137.

Paracompsomyia nigripennis HOUGH, Proc. Acad. Philad., 1898, p. 184; ADAMS, Kansas Univ. Sci. Bull., III, 1905, p. 203; AUSTEN, Ann. Mag. N. H., (7), XVII, 1906, p. 302.

A very common fly throughout the whole Ethiopian region. Its area of distribution also includes Southern Arabia, India west of the Indus, and Madagascar.

C. marginalis, recorded as an occasional causal agent of traumatic myiasis (cf. ZUMPT, 1951), is well characterized by its outer features as well as the structure of the hypopygium (fig. 110). Very rarely there are specimens which lack the infuscation of the wing.

I have seen material from almost all parts of Africa south of the Sahara. The specimens before me from the Belgian Congo were collected in the following localities.

Mission H. DAMAS : Lac Édouard W., Bugazia, 925 m, 13-16.V.1935 (1 ♀).

Collection L. LIPPENS : Sud lac Édouard, Kamande, 925 m, 8.IV.1936 (69 ♂♂, 89 ♀♀).

Collection Musée du Congo : [Lulua : Kapanga, VIII.1932 (1 ♂, leg. G. F. OVERLAET)]; [Katwe, 1935, (1 ♂, 5 ♀♀, leg. MARLIER)]; [Ituri : Bunia, II.1934 (1 ♂, 5 ♀♀, leg. J. V. LEROY)]; [Kivu : Katana, 1933 (1 ♂, leg. DE WULF)]; [Kibali-Ituri : Kasenyi, 15.V.1935 (3 ♀♀, leg. H. J. BRÉDO)]; [Moyen Kwilu : Leverville, I.1914 (1 ♀, leg. P. VANDERIJST)]; [Kwango : Dongo 5.I.1940 (1 ♀, leg. VLEESCHOUWERS)]; Kamande, 22.IX.1935 (1 ♀, leg. L. LIPPENS); [Ruanda, Lac Mohasi, IV.1934 (1 ♂, leg. H. HEGH)].

7. — **Chrysomyia chloropyga** (WIEDEMANN).

f. **typica.**

Musca chloropyga WIEDEMANN, Zool. Mag., II, 1818, p. 44; et Ausser. Zweifl. Ins., II, 1830, p. 400; VILLENEUVE, Rev. Zool. Afr., III, 1914, p. 436; MALLOCH; Ann. Mag. N. H., (9), XVI, 1925, p. 99; SÉGUY, Encycl, Ent. Dipt., IV, 1928, p. 104, figs. 26-27; CURRAN, Bull. Amer. Mus. N. H., LVII, 1928, p. 369; SMIT, 17th Rep. Dir. Vet. Serv. Onderst., 1931, p. 308, figs.; CUTHBERTSON, Proc. Rhod. Sci. Ass., XXXII, 1933, p. 99, figs.; PATTON and CUSHING, Ann. Trop. Med. Parasit., XXVIII, 1934, p. 128, figs. 3-4; CUTHBERTSON, Proc. Rhod. Sci. Ass., XXXVI, 1938, p. 56.

Somomyia anchorata BIGOT, Ann. Soc. Ent. France, (5), VII, 1877, p. 48; VILLENEUVE, Rev. Zool. Afr., III, 1913, p. 149.

Somomyia barbigera BIGOT, Bull. Soc. Zool. France, XXII, 1887, p. 597; VILLENEUVE, Rev. Zool. Afr., III, 1913, p. 149.

Paracompsomyia houghi ADAMS, Kansas Univ. Sci. Bull., III, 1905, p. 201; AUSTEN, Ann. Mag. N. H., (7), XVII, 1906, p. 301.

f. **putoria** (WIEDEMANN).

(Fig. 111.)

Musca putoria WIEDEMANN, Ausser. Zweifl. Ins., II, 1830, p. 403; VILLENEUVE, Bull. Soc. Ent. France, 1913, p. 367; et Rev. Zool. Afr., III, 1914, p. 440; MALLOCH, Ann. Mag. N. H., (9), XVI, 1925, p. 99; SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 106, figs. 32-36; CURRAN, Bull. Amer. Mus. N. H., LVII, 1928, p. 369; HOLDAWAY, Bull. Ent Res., XXIV, 1933, p. 550; ZUMPT, Mem. Inst. Sci. Madagascar, A V, 1951, p. 67.

Somomyia punctifera BIGOT, Ann. Soc. Ent. France, (5), VII, 1877, p. 256; AUBERTIN, Linn. Soc. J. Zool., XXXVIII, 1933, p. 430.

Pycnosoma putoria var. *adoxa* SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 109 (syn. nov.).

Pycnosoma putoria var. *cyanea* SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 109 (syn. nov.).

Pycnosoma putoria var. *pulchra* SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 110 (syn. nov.).

f. **taeniata** (BIGOT).

Somomyia taeniata BIGOT, Ann. Soc. Ent. France, (5), VII, 1877, p. 36.

Chrysomyia megacephala var. *costata* VILLENEUVE, Bull. Soc. Ent. France, 1914, p. 180; SÉGUY, Encycl. Ent. Dipt., IV, 1928, p. 108, fig. 33; CURRAN, Bull. Amer. Mus. N. H., LVII, 1928, p. 369.

Chrysomyia nigriceps SÉGUY, (nec. PATTON), Bull. Soc. Ent. France, 1925, p. 303; VILLENEUVE, Bull. Soc. Ent. France, 1926, p. 40.

Chrysomyia trygaea SÉGUY, Bull. Soc. Ent. France, 1926, p. 87; et Encycl. Ent. Dipt., IV, 1928, p. 111, figs. 37-40.

Chrysomyia sensua CURRAN, Amer. Mus. Nov., 246, 1927, p. 5; et Bull. Amer. Mus. N. H., LVII, 1928, p. 369 (syn. nov.).

? *Chrysomyia epanalepsis* SÉGUY, Mem. L'I. F. A. N., n° 19, 1952, p. 163 (syn. nov.).

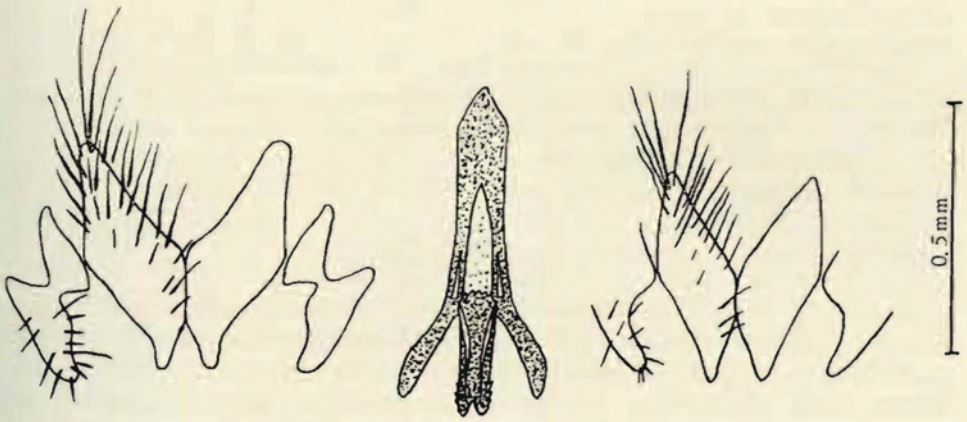


FIG. 111. — *Chrysomyia chloropyga* (WIEDEMANN) f. *putoria*.
Cerci with paralobi and phallosome (left) of a specimen from Lac Kivu; right, cerci with paralobi of a specimen from Yaoundé, Cameroons. There is a slight variability to be stadet.

This common species, distributed all over the Ethiopian region, shows a great variability with respect to the body-colour as well as in certain morphological features, including, to a certain degree, the shape of the cerci. However, the basal plan of the hypopygial structure (fig. 111) is quite distinct, compared with other *Chrysomyia* species, and on the other hand, the stated variability is perfectly transitional, even in specimens from the same locality.

This is true too, for instance, for the width of the male frons and for the colouring of the body which probably depends on some as yet unknown ecological factors. The typical form is mainly dark blue and shows a black, _||_ shaped pattern on the mesonotum; its wings are infuscated at base only. This form predominates in the southern parts of Africa, but it also occurs

at some higher altitudes of the tropics. A green form, in general appearance somewhat similar to *C. albiceps* (WIEDEMANN), is *putoria* WIEDEMANN, mostly listed as a distinct species. It generally replaces the *f. typica* in the tropical region, but is also found locally in Southern Africa. The genitalia of *putoria* are identical with those of *chloropyga* s. str. (also comp. VAN EMDEN, 1953), and I have also seen specimens which are transitional with respect to colouring. I therefore see no reason why these two forms should be kept as distinct species. They cannot even be regarded as true subspecies, because their areas of distribution overlap widely, and I have found localities near Johannesburg where they occur in the same place but at different seasons. We have, unfortunately, not yet found the time to examine this interesting fact experimentally in the laboratory. This will be done sometime in the future and will prove whether these forms are genetically isolated and whether the colouring is genetically fixed as a constant feature or dependent on phenological factors.

The third colour-form is *taeniata* BIGOT. It is similar to *putoria*, but the wing margin is infuscated as in *C. marginalis* (WIEDEMANN), *C. inclinata* WALKER a.o. species. Transitional specimens are still more common and evident here than in *chloropyga* s. str. and f. *putoria*, so that it is frequently difficult to decide whether the wing margin is distinctly infuscated or is to be regarded as hyaline. This form only occurs in the tropics, very often mixed with typical *putoria* in the same population.

Dr. F. VAN EMDEN, Commonwealth Institute of Entomology, London, has opposed this species concept (by letter) and recently broached the question once more at the International Congress of Entomology in Amsterdam (VAN EMDEN, 1953). Discussing the taxonomic value of the male genitalia of diptera, he says that there are groups in which the genitalia are of great value and really represent the only feature for separating the species, but that there are others in which they are almost similar and not useful for taxonomic purposes, e. g. in *C. chloropyga* and *C. putoria*.

It is a well-known fact, that not only in the diptera, but also in other orders of insects, there are groups in which the genitalia are of no use to the taxonomist, at least up to now. But I think that every morphological feature, including the hypoygium, must be weighted or valued according to the group in which it is used by the taxonomist. A feature like the position of a bristle, or the colour of the integument, or of hairs and toment, may be of great taxonomic value in one group, whereas it is quite useless in another one. The hypopygium is no exception in this respect. But when in a given group, for instance in *Chrysomyia* and *Sarcophaga*, the majority of the species are well characterized by the structure of the hypopygium, it is at least suspicious when a few species among them have identical hypopygia. Furthermore, when the other features used for separating them are transitional, or appear irregularly in different populations, the con-

clusion in my opinion, can only be that we are not dealing with distinct species, but with intraspecific units.

Chrysomyia chloropyga f. *typica* (WIEDEMANN).

Mission G. F. DE WITTE : Kilondo (près Gandjo), 2.000 m, 7-23.I.1935 (1 ♀); vers mont Kamatembe, 2.300 m, 7-23.I.1935 (5 ♀♀); Rutshuru, 1.285 m, 7.VI.1935 (1 ♀).

Mission H. DAMAS : Lac Mokoto, Kishale, 1.470 m, (1 ♂♀).

Collection Musée du Congo : [Ituri : Blukwa, 4.II.1929 (1 ♂, leg. A. COLLART)]; Kivu : Kisenyi, 1924 (1 ♂, leg. VAN SACEGHEM); [Katanga : Ditanto, X.1925 (1 ♀, leg. C. SEYDEL)]; [Léopoldville, 28.XII.1925 (1 ♀, leg. R. P. HULSTAERT)].

Chrysomyia chloropyga f. *taeniata* (BIGOT).

Mission G. F. DE WITTE : [Uele : Monga, 450 m, 18.IV-8.V.1935 (1 ♂♀)].

Collection HACKARS : W. Ruwenzori, 1.200-1.500 m, III.1937 (1 ♂).

Collection Musée du Congo : [Kwango : Monkona, 25.IX.1939 (5 ♀♀, leg. VLEESCHOUWERS)]; [Bambesa, XI.1933 (1 ♂, leg. H. J. BRÉDO)]; [Chambi, X.1933 (1 ♂, leg. DE WULF)]; [Rwankwi, IV.1948 (2 ♂♂, 2 ♀♀, leg. J. V. LEROY)]; [Kivu : Katana, 1933 (1 ♂♀, leg. DE WULF)]; [Mayumbe : Yumbi, 5.V.1926 (1 ♂♀, leg. A. COLLART)]; [Mayumbe : Luvu, 22.X.1923 (1 ♂, leg. A. COLLART)]; [Mongbwatu (Kilo), VIII.1937 (2 ♂♂, 1 ♀, leg. SCHEITZ)]; [Lulua : Kapanga, XI.1933 (1 ♂, leg. G. F. OVERLAET)]; Rutshuru, 12.V.1936 (12 ♂♂, 3 ♀♀, leg. L. LIPPENS); [Urundi : Kanyinya, 1946 (1 ♂, leg. DAMES DE MARIE)]; Stanleyville, 4.IV.1915 (1 ♀, leg. Exp. LANG-CHAPIN, paratype of *sensua*).

Chrysomyia chloropyga f. *putoria* (WIEDEMANN).

This extremely common form is represented in several hundred specimens from various localities all over the Belgian Congo, including the Parc National Albert.

8. — **Chrysomyia albiceps** (WIEDEMANN).

(Figs. 112, 113.)

Musca albiceps WIEDEMANN, Zool. Mag., III, 1819, p. 38; et Auss. Zweifl. Ins., II, 1830, p. 404; MACQUART, Dipt. Exot., III, 1843, p. 139, fig.; MALLOCH, Ann. Mag. N. H., (9), XVI, 1925, p. 99; SÉGUY, Encycl. Ent. Dipt., IV, 1927, p. 9; CURRAN, Bull. Amer. Mus. N. H., LVII, 1928, p. 369; TOWNSEND, Ann. Mag. N. H., (10), VIII, 1931, p. 374; SMIT, 17th Rep. Dir. Vet. Serv. Onderst., 1931, p. 310, figs.; HOLDAWAY, Bull. Ent. Res., XXIV, 1933, p. 549, figs.; CUTHBERTSON, Proc. Rhod. Sci. Ass., XXXII, 1933, p. 94, figs.; PATTON, Ann. Trop. Med. Parasit., XXVIII, 1934, p. 217, figs. 1-4; S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 143, fig. 68; SÉGUY, Encycl. Ent., A XXI, 1941, p. 18, fig. 13.

Musca bibula WEIDEMANN, Auss. Zweifl. Ins., II, 1830, p. 672; S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 143.

Musca clara WALKER, List. Dipt., IV, 1949, p. 870; S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 143.

Musca emoda WALKER, List. Dipt., IV, 1849, p. 872; S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 143.

Musca himella WALKER, List. Dipt., IV, 1849, p. 876; S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 143.

Lucilia arcuata MACQUART, Mem. Soc. Sci. Lille, 1850, p. 220; et Dipt. Exot. Suppl., IV, 1850, p. 247; S.-WHITE, AUBERTIN and SMART, Dipt., VI, 1940, p. 143.

Lucilia testaceifacies MACQUART, Dipt. Exot. Suppl., IV, 1850, p. 247; S.-WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 143.

Somomyia nubiana BIGOT, Ann. Soc. Ent. France, (5), VII, 1877, p. 38; AUBERTIN, Linn. Soc. J. Zool., XXXVIII, 1933, p. 429.

Paracompsomyia verticalis ADAMS, Kans. Univ. Sci. Bull., III, 1905, p. 202; CURRAN, Bull. Amer. Mus. N. H., LVII, 1928, p. 369; CUTHBERTSON, Proc. Rhod. Sci. Ass., XXXII, 1937, p. 95.

Chrysomyia cupronitens (RONDANI) VILLENEUVE, Bull. Soc. Ent. France, 1913, p. 367.

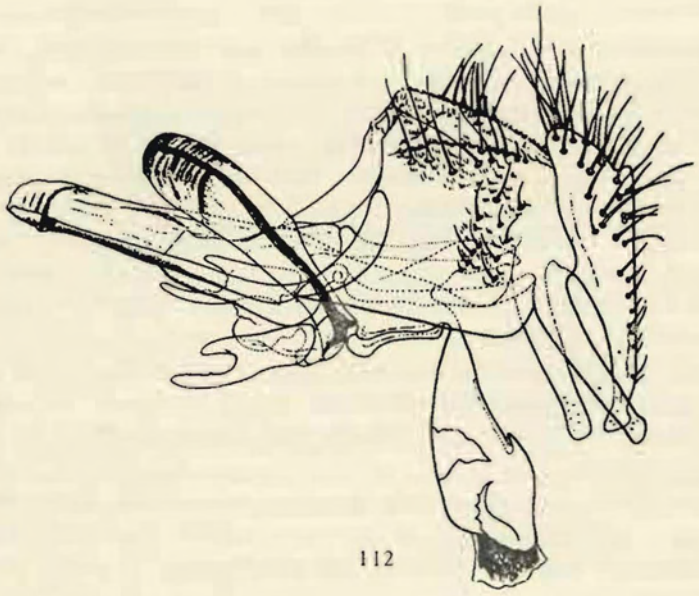
Compsomyia albiceps var. *flaviceps* (RONDANI) SÉGUY, Encycl. Ent. Dipt., IV, 1927, p. 11, fig. 13; et Encycl. Ent., A IX, 1928, p. 142, figs.; et Encycl. Ent., A XXI, 1941, p. 18.

Compsomyia albiceps var. *mascarenhasi* SÉGUY, Encycl. Ent. Dipt., IV, 1927, p. 11 (syn. nov.).

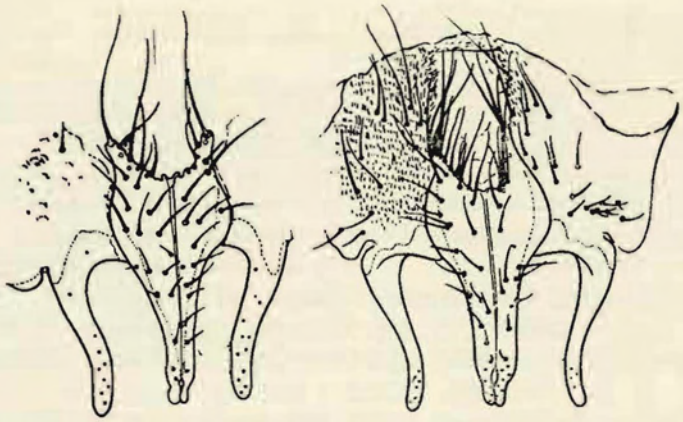
Chrysomyia albiceps var. *indica* PATTON and CUSHING, Ann. Trop. Med. Parasit., XXVIII, 1934, p. 221, fig. 5 (syn. nov.).

C. albiceps is another common species in the Ethiopian region. It is also found in the Mediterraneum, in Madagascar and in India. In the remaining Oriental region and in Australia, it is replaced by *C. rufifacies* (MACQUART), which is mostly considered as a distinct species and mainly separated from *C. albiceps* by a well developed prostigmatic bristle. HOLDAWAY (1933) has published a paper on the status of these two species and mentioned further features for distinguishing these two forms. I have seen a great number of specimens of *albiceps* from the Ethiopian and Palaearctic regions and found that none of HOLDAWAY's features is constant. There are occasional specimens of *albiceps* in Africa, which have, like *rufifacies*, a prostigmatic bristle sometimes asymmetrically developed. The other features mentioned by HOLDAWAY as typical for *rufifacies* also appear here and there in specimens of *albiceps*, determined by the lacking prostigmatic bristles. It can only be said that the features said to be characteristic for *albiceps* and *rufifacies* predominate in the Western or respectively Eastern part of the Old World.

The last deciding feature would be the hypopygium, which is figured and described from both species by HOLDAWAY (figs. 112 and 113). His



112



113

FIG. 112. — *Chrysomyia albiceps* (WIEDEMANN). Hypopygium in lateral view (after HOLDAWAY).

FIG. 113. — *Chrysomyia albiceps* (WIEDEMANN) and ssp. *rufifacies* (MACQUART). Cerci with paralobi in frontal view (after HOLDAWAY).

drawings show clearly that there are no differences of taxonomic importance between these two species; those he mentions lie within the intraspecific variability which is quite pronounced in other species of *Chrysomyia* too.

I can, therefore, only agree with PATTON and CUSHING (1934), who suggested the conspecificity of these two forms. They listed *rufifacies* as a variation and added another one, var. *indica*, which is intermediate between these two, basing their conclusions on the predominance of certain morphological features. But I do not believe that this solution is satisfactory. There are certainly several strains in *albiceps*, but we do not yet know enough about this matter. When the intraspecific variability is carefully studied, using the offspring of single females and specimens from different localities, it will perhaps be possible to get a better idea of the subspecific classification of *C. albiceps*.

At present I should consider *rufifacies* at most as a subspecies of *albiceps*. The synonyms of *rufifacies* are not listed above, but may be taken from HOLDAWAY (1933) and S.-WHITE, AUBERTIN and SMART (1940).

The hypopygium of this species is quite outstanding in its structure, the aedeagus being stout and short with the harpes closely applied to it. Still more unique is the morphology of the larva which has given rise to the question (see above) whether it would not be advisable to list *C. albiceps* in a separate genus.

Mission H. DAMAS : Ngoma (lac Biuniu), 1.500 m, 3-20.IV.1935 (1 ♀).

Collection L. LIPPENS : Sud lac Édouard, Kamande, 925 m, 13-16.V.1925 (1 ♂, 7 ♀♀).

Collection Musée du Congo : [Ituri : Bunia, II.1934 (4 ♂♂, 4 ♀♀, leg. J. V. LEROY)]; [Lulua : Kapanga, 3.XII.1932 (1 ♂, leg. G. F. OVERLAET)]; [Kivu : Katana, 1933 (1 ♂♀, leg. DE WULF)]; [Sankuru : Komi, XII.1930 (2 ♀♀, leg. J. GHESQUIÈRE)]; [Élisabethville, 6.IX.1923 (2 ♀♀, leg. C. SEYDEL)]; [Katanga : La Panda, IX.1920 (1 ♀, leg. M. BEQUAERT)]; [Katanga : Mwema, VII.1927 (2 ♀♀, leg. A. BAYET)]; [Katanga : Nyonga, V.1925 (1 ♀, leg. G. F. DE WITTE)]; [Kasenyi, 22.VIII.1925 (2 ♀♀, leg. H. J. BRÉDO)]; [Katwe, 1935 (2 ♀♀, leg. MARLIER)]; [Rwankwi, IV.1948 (1 ♀, leg. J. V. LEROY)]; [Lubumbashi, 1934 (1 ♀, leg. C. SEYDEL)]; [Kalina, XII.1946 (1 ♀, leg. E. DARTEVELLE)]; [Kasai : Bumba, 18.III.1940 (1 ♀, leg. J. J. DEHEYN)]; [Sankuru : Kondue (1 ♀, leg. E. LUJA)]; [Ruanda : Lac Mohasi, IV.1934 (1 ♀, leg. H. HEGH)].

LITERATURE

mentioned in the general text.

ALTSON, A. M., 1932, On the feeding habits and breeding of *Ochromyia (Bengalia) depressa* R.-D., and *O. peuhi* B. B. (*Proc. Ent. Soc. Lond.*, VII, pp. 36-40).

AUBERTIN, D., 1931, Revision of the genus *Hemipyrellia Tns. (Diptera, Calliphoridae)* (*Proc. Zool. Soc. Lond.*, 1931, pp. 497-509).

— 1933, Revision of the genus *Lucilia* R.-D. *(Diptera, Calliphoridae)* (*Linn. Soc. J. Zool.*, XXXVIII, pp. 389-436).

CUTHBERTSON, A., 1933, The habits and life-histories of some diptera in Southern Rhodesia (*Proc. Rhod. Sci. Ass.*, XXXII, pp. 81-111).

— 1934, Screw-worm. A pest of ranch cattle in Southern Rhodesia *(Min. Agric., Salisbury Bull.*, 911, 12 p.).

— 1938, Biological notes on some diptera in Southern Rhodesia (*Trans. Rhod. Sci. Ass.*, XXXVI, pp. 115-130).

VAN EMDEN, F., 1953, The male genitalia of diptera and their taxonomic value (*Trans. IXth Int. Congr. Ent.*, II, pp. 22-25).

— 1954, *Diptera Cyclorrhapha. Calyptrata* (I). Section (a). *Tachinidae* and *Calliphoridae* (*Handb. for the Identification of British Insects, Diptera*, 133 p.).

GRUNIN, K. Y., 1947, A subcutaneous parasite of the muskdeer. *Pavlovskiomyia inexpectata* gen. n., sp. n. (*Diptera, Calliphoridae*) (*Parasit. Sborn.*, Moskow, IX, pp. 183-190 [in Russian]).

— 1949, A representative of the genus *Cordylobia* GRUENB. *(Diptera, Calliphoridae)* in the U.S.S.R. (*Ent. Obozr.*, Moscow, XXX, pp. 440-442 [in Russian]).

HALL, D. G., 1948, The blowflies of North America (*Thomas Say Found.*, Washington, 477 p.).

HARDY, G. H., 1937, Notes on the genus *Calliphora (Diptera)* (*Proc. Linn. Soc. N. S. Wales*, LXII, pp. 17-26).

— 1947, Notes on Australian *Muscoidea*. VI. *Calliphora* in Australia and New Zealand (*Proc. Roy. Soc. Queensland*, LVII, pp. 53-56).

HEIKERTINGER, F., 1937, Einige grundsaetzliche Bemerkungen zum Kennwortsystem (Col. Rdschau, 23, p. 35).

HENNIG, W., 1952, Die Larvenformen der Dipteren. III. (*Akademie-Verlag*, Berlin, VII + 628 p.).

HOLDAWAY, F. G., 1933, The synonymy and distribution of *Chrysomyia rufifacies* (MACQUART), an Australian sheep blowfly (*Bull. Ent. Res.*, XXIV, pp. 549-560).

HOLDHAUS, K., 1929, Die geographische Verbreitung der Insekten (SCHROEDER'S *Handb. Ent.*, II, pp. 592-1056).

KANO, R. and K. SATO, 1951, Notes on the flies of medical importance in Japan. V. Classification of Japanese female blowflies by the characters of tergites and sternites (*Jap. J. Exp. Med.*, XXI, pp. 229-241).

MESNIL, L., 1944, *Larvaevoridae (Tachininae)* (LINDNER, *Fliegen d. Pal. Region*, CLI, pp. 1-48).

OLDROYD, H., 1949, Introduction and key to families (*Handb. for the Identification of British Insects, Diptera*, 49 p.).

PATTON, W. S. et A. M. EVANS, 1929, Insects, ticks, mites and venemous animals of medical and veterinary importance. I. (*H. R. Grubb*, Croyden, X + 786 p.).

PORTER, A., 1924, Notes on some insect larvae that may occur in man in South Africa (*Rep. S. Afr. A., Adv. Sci.*, XXI, pp. 373-377).

SÉGUY, E., 1928, Études sur les mouches parasites. I. Conopides, Oestrides et Calliphorines de l'Europe occidentale (*Encycl. Ent.*, A, IX, 251 p.)

— 1935, Caractères particuliers des Calliphorines (*Encycl. Ent. Dipt.*, VIII, pp. 121-150).

— 1941, Études sur les mouches parasites. II. Calliphorides, Calliphorines (suite), Sarcophagines et Rhinophorines de l'Europe occidentale et méridionale (*Encycl. Ent.*, A, XXI, 436 p.).

— 1950, La biologie des diptères (*Encycl. Ent.*, A, XXVI, 609 p.).

SENIOR WHITE, AUBERTIN and SMART, 1940, *Calliphoridae* (*Fa. Brit. India, Dipt.*, VI, 288 p.).

SMIT, B., 1931, A study of the sheep blow-flies of South Africa (*XVIIth Rep. Dir. Vet. Serv. Onderstepoort*, pt. 1, pp. 299-421).

THOMAS, H. T., 1951, Some species of the blow-fly genera *Chrysomyia* R.-D., *Lucilia* R.-D., *Hemipyrellia* TNSD. and *Calliphora* R.-D. from south eastern Szechuan, China (*Proc. Zool. Soc. Lond.*, CXXI, pp. 147-200).

TOWNSEND, C. H. T., 1935, Manual of Myiology. II (Sao Paulo, 289 p.).

— 1937, Manual of Myiology. V (Sao Paulo, 232 p.).

— 1938, Manual of Myiology. VI (Sao Paulo, 242 p.).

WATERHOUSE, D. F. and PARAMONOV, S. J., 1950, The status of the two species of *Lucilia (Diptera, Calliphoridae)* attacking sheep in Australia (*Austral. J. Sci. Res.*, B, III, pp. 310-336).

ZUMPT, F. and HEINZ, H. J., 1950, Studies on the sexual armature of *Diptera*. II. A contribution to the study of the morphology and homology of the male terminalia of *Calliphora* and *Sarcophaga* (Dipt., *Calliphoridæ*) (*Ent. Mon. Mag.*, LXXXVI, pp. 207-216).

ZUMPT, F., 1951, Myiasis in man and animals in Africa (*S. A. Jl. Clin. Sci.*, II, pp. 38-69).

— 1952, Remarks on the classification of the Ethiopian *Sarcophaginae* with description of new genera and species (*Proc.R. Ent. Soc. Lond.*, B, XXI, pp. 1-18).

ZUMPT, F. and PATTERSON, P. M., 1952, Flies visiting human faeces and carcasses in Johannesburg (*S. A. Jl. Clin. Sci.*, III, pp. 92-106).

ZUMPT, F., 1953, A preliminary contribution to the taxonomy of the genera *Hemigymnochæta* and *Tricyclea (Diptera, Calliphoridae)* (*Trans. R. Ent. Soc. Lond.*, CIV, pp. 481-520).

— 1954, *Phumosia schoutedeni* n. sp., with remarks on the status of the genus *Phumosia* R.-D. *(Diptera, Calliphoridae)* (*Ann. Mus. Congo, Tervuren*, Zool., I, pp. 574-577).

— 1955, The width of frons as a variable feature in the Calliphorinae (Diptera), with descriptions of two new species. (*J. Ent. Soc. S. Africa*, XVIII, pp. 50-59).

INDEX.

1. GENUS.

2. SPECIES.

CONTENTS