

includes a pair of long *iv* and proclinate *oc* as well as 6 pairs of *paf*. Palpi dark brown, curved and slightly widened towards the tip.

Thorax black, with grey and olive pollinosity; *ac* totally wanting, $dc=2+3$, $ia=0+2$, $ph=1$ (outer wanting), $h=2$, $prs=1$, $n=2$, $sc=2+0$, $st=2:1$, one *pst* and *pp*. Prosternum and propleuron haired, alar declivity bare. Pro- and poststigma blackish. Wings slightly brownish tinged, veins brown, *r-m* dark clouded and relatively thick, costa with strikingly long marginal spinules in the basal half and also with a big costal spine, r_{4+5} dorsally with setae half-way to *r-m*, R_5 open, squamae brownish tinged like the wings. Legs dark brown, fore-tibia with two thin *ad* and one long submedian *pv*; mid-tibia with a submedian *ad* and *av* as well as 2 *pv*; hind-tibia with 2 *ad* and 2 *av*, claws and pulvilli long.

Abdomen one fourth longer than broad, densely olive pollinose, without a distinct pattern, only a darker median line is faintly indicated; long marginal bristles present, but no discal ones. Hypopygium (fig. 33) with slender cerci and parolobi.

Length : 6 mm.

Collection Musée du Congo : Mayumbe : Sumbi, 6.V.1926 (1 ♂ leg. A. COLLART).

Genus **HEMIPYRELLIA** TOWNSEND.

Hemipyrellia TOWNSEND, Ins. Ins. Mens., VI, 1918, p. 154. — MALLOCH, Ann. Mag. N. H., (9), XVII, 1926, p. 504, et (10), III, 1929, p. 273. — AUBERTIN, Proc. Zool. Soc. London, 1931, p. 499. — TOWNSEND, Man. Myiol., V, 1937, p. 149. — S. WHITE, AUBERTIN & SMART, Fa. Brit. India, Diptera, VI, 1940, p. 41.

Type species : *H. curriei* TOWNSEND from Liberia.

AUBERTIN (1931), in her revision of the genus, listed 8 species which are restricted to the Old World. They are, in general appearance, very similar to species of the genus *Lucilia* and have sometimes been classified as a subgenus of it. But the presence of a haired supraspiracular convexity is to be regarded as a feature important enough to justify the generic separation of *Hemipyrellia* from *Lucilia*. *Phumosia* and *Hemipyrellia* are the only caliphorid genera in the Ethiopian region with a long-haired supraspiracular convexity. In other respects, however, *Hemipyrellia* is more closely related to *Lucilia*, with which it shares all remaining generic features.

H. pulchra is said to be viviparous (S. WHITE, AUBERTIN & SMART, 1940) and to breed in human excrements or decomposing carcasses. The same behaviour is true for *H. fernandica*, the most common *Hemipyrellia* species in Africa South of the Sahara, and one which is also known to be a facultative cause of wound myiasis in domesticated animals (ZUMPT, 1951).

KEY TO THE SPECIES.

- 1 (2) Antennae with the third segment bright orange.

Body metallic bluish-green, strongly pollinose anteriorly and on the hypopleura, the hind margins of the abdominal segments sometimes appearing slightly banded; legs blackish or dark brown, fore femora dark metallic green. Eyes in ♂ almost contiguous, frons at the narrowest point measuring $\frac{1}{16}$ - $\frac{1}{19}$ of the eye-length, eyes in ♀ separated from each other by fully half the eye-length. Thorax with $ac=2+2$, $dc=3+3$, $ia=1+2-3$, $sc=4+1$, $st=1-2:1$. 7-9 mm. — Nigeria, Anglo-Egyptian Sudan, Port. E. Africa, India

1. *H. pulchra* (WIEDEMANN).

- 2 (1) Antennae with the third segment blackish brown 3

- 3 (4) Eyes in ♂ close together, width of frons at the narrowest point not greater than twice the diameter of the anterior ocellus, ♀ frons at vertex half as broad as the eye is long. The black bristles above the vibrissa almost reach the middle of the facial ridge.

Colouring as in the foregoing species, but legs more brownish and fore-femora not glossy metallic. Chaetotaxy of thorax also as in *pulchra*. 7-9 mm. — Up to now, only known from the Madagascan region and the Seychelle Is., but perhaps still to be discovered in the Ethiopian region too

2. *H. brunnipes* (MACQUART).

- 4 (3) Eyes in ♂ widely separated, frons at the narrowest point $\frac{1}{7}$ - $\frac{1}{8}$ as broad as the eye is long, in ♀ at vertex almost half as broad. The black bristles above the vibrissa only cover one fourth to one third of the lower facial ridge.

Colouring and chaetotaxy as in *pulchra*. 5-10 mm. — A very common fly which is probably distributed all over the Ethiopian region, but has not yet been found elsewhere

3. *H. fernandica* (MACQUART).

[1. — *Hemipyrellia pulchra* (WIEDEMANN).]

(Fig. 34.)

Musca pulchra WIEDEMANN, Auss. Zweifl. Ins., II, 1830, p. 406; MALLOCH, Ann. Mag. N. H., (9), XVII, 1926, p. 505; AUBERTIN, Proc. Zool. Soc. London, 1931, p. 503, fig. 3; S. WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 44, fig. 18.

Lucilia ruficornis MACQUART, Mém. Soc. Nat. Sci. Agric. Arts Lille, 1847, p. 100, et Dipt. Exot. Suppl., II, 1847, p. 84.

Musca phellia WALKER, List. Dipt. Brit. Mus., IV, 1849, p. 884.

Somomyia pagodina BIGOT, Ann. Soc. ent. France, (5), VII, 1877, p. 40.

H. pulchra has only recently been recorded from the Ethiopian region. Even in the « Fauna of British India » (1940), only places in India are listed. The species is well characterized by its hypopygium (fig. 34) and easily separable from the other Ethiopian species, *H. fernandica*, by the bright orange 3rd antennal segment and the narrow frons in the male.

Collection S. A. Institute for Med. Research, Johannesburg : Maiduguri, Nigeria, IX.1942 (2 ♂♂).

Collection British Museum London : Wad Medani, Anglo-Egyptian Sudan, 21.II.1945 (1 ♂ ♀ leg. LEWIS).

Collection Zool. Museum Berlin : Chifumbasi, Port. E. Africa, IV.1905 (1 ♀ leg. W. TIESLER).

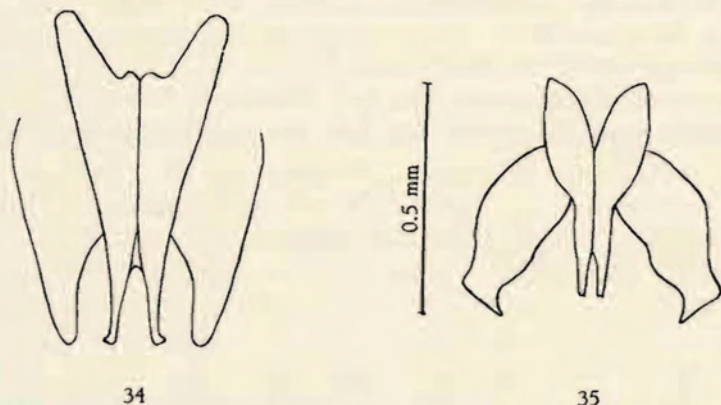


FIG. 34 — *Hemipyrellia pulchra* (WIEDEMANN). Cerci and paralobi in frontal view. Specimen from Wadi medani, Sudan.

FIG. 35 — *Hemipyrellia brunnipes* (MACQUART). Cerci and paralobi in frontal view. Specimen from Madagascar.

[2. — ***Hemipyrellia brunnipes*** (MACQUART).]

(Fig. 35.)

Lucilia brunnipes MACQUART, Mém. Soc. Sci. Agric. Arts Lille, 1843, p. 295, et Dipt. Exot., II, 1843, p. 138.

Lucilia argentipes MACQUART, Dipt. Exot. Suppl., IV, 1851, p. 246.

Lucilia madagascariensis MACQUART, Mém. Soc. Sci. Agric. Arts Lille, 1851, p. 219, et Dipt. Exot. Suppl., IV, 1851, p. 246; VILLENEUVE, Rev. Zool. Afric., IV, 1916, p. 205.

Lucilia borbonensis MACQUART, Mém. Soc. Sci. Agric. Arts Lille, 1851, p. 220, et Dipt. Exot. Suppl., IV, 1851, p. 247.

Hemipyrellia cyanea AUBERTIN (nec FABRICIUS), Proc. Zool. Soc. Lond., 1931, p. 501, fig. 2; VAN EMDEN, Ruwenzori, Exp. 1934-1935, II, n° 6, 1951, p. 701.

Hemipyrellia pseudofabriciana ENDERLEIN, Sitzber. Ges. naturf. Fr. Berlin, 1935, p. 246.

The separation of the females of this species and of *fernandica* is difficult, but the males are easily recognizable by the width of the frons and the structure of the hypopygium (fig. 35).

In the collections of the S. African Institute for Medical Research and the Zool. Museum of Berlin, there are several specimens from different localities on Madagascar and from the Seychelle Is.

3. — **Hemipyrellia fernandica** (MACQUART).

(Fig. 36.)

Lucilia fernandica MACQUART, Mém. Soc. Sci. Agric. Arts Lille, 1855, p. 132, et Dipt. Exot. Suppl., V, 1855, p. 112; AUBERTIN, Proc. Zool. Soc. London, 1931, p. 500, fig. 1; PATTON & CUSHING, Ann. Trop. Med. Parasit., XXVIII, 1934, p. 118.

Lucilia taeniops BIGOT, Ann. Soc. ent. France, (3), VII, 1859, p. 542.

Lucilia assiniensis BIGOT, Ann. Soc. ent. France, 1891, p. 380.

Hemipyrellia curriei TOWNSEND, Ins. Ins. Mens., VI, 1918, p. 154.

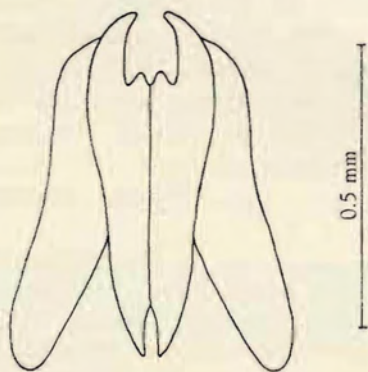


FIG. 36. — *Hemipyrellia fernandica* (MACQUART).
Cerci and paralobi in frontal view.
Specimen from Yaoundé, Cameroons.

H. fernandica is a very common fly in the Ethiopian region and, if the generic characters are carefully checked, it cannot be placed in any other genus. But on account of its superficial similarity to *Lucilia sericata* and *L. cuprina*, it is often, especially by non-dipterists, taken for one of these species. The shape of the hypopygium (fig. 36) is quite characteristic.

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

Mission H. Damas : Bugazia, lac Édouard, rive Ouest, 915 m, 13-16.V.1935 (2 ♀ ♀); riv. Ondo, afl. Rutshuru, 1.000-1.200 m, 30.VII.1935 (1 ♀).

Collection L. LIPPENS : Sud lac Édouard, cp. Rwindi, 1.000 m, 25.IV.1936 (1 ♀).

Collection Musée du Congo : Kivu : Kisenyi., 925 m, IV.1923 (2 ♀ ♀ leg. VAN SACEGHEM); [Rwankwi, IV.1948 (2 ♀ ♀ leg. J. V. LEROY)]; [Wan, XII.1921 (1 ♀ leg. VAN SACEGHEM)]; [Ituri : Kilo, 1930 (1 ♀ leg. G. DU SOLEIL)]; [Bunia, II.1934 (3 ♀ ♀ leg. J. V. LEROY)]; [Sankuru : Kondue (3 ♀ ♀ leg. E. LUJA)]; [Komi, 8.II.1930 (7 ♂ ♂, 2 ♀ ♀ leg. J. GHESQUIÈRE)]; [Uele : Moto, 1920 (1 ♀ leg. L. BURGEON)]; [Dinglia, 1935 (1 ♂ leg. J. V. LEROY)]; [Bambesa, 30.X.1937 (4 ♂ ♂, 18 ♀ ♀ leg. J. V. LEROY)]; [Katanga : Luilu, XII.1925 (1 ♂ leg. CH. SEYDEL)]; [lac Albert : Kasenyi, 15.V.1935 (2 ♂ ♂, 10 ♀ ♀ leg. H. J. BRÉDO)]; [Urundi : Rumonge, 1934 (1 ♀ leg. A. LESTRADE)]; [Kanyinya, 1.500 m, 1947 (leg. DAMES DE MARIE)]; [Bas-Congo : Mangembo, 1932 (1 ♀ leg. ZWOLAKOWSKI)]; [Kwango : Dongo, 5.I.1940 (1 ♂ ♀ leg. VLEESCHOUWERS)]; [Kikwit, XII.1920 (leg. P. VANDERIJST)]; [Wamba, 1936 (1 ♂ leg. DEGOTTE)]; [Léopoldville, X.1941 (1 ♂, 3 ♀ ♀ leg. J. LEPERSONNE)]; [Albertville, 18.III.1936 (2 ♀ ♀ leg. G. HOESLI)]; [Jadotville, 1948 (5 ♀ ♀ leg. R. M. M. ADELAIDE)]; [Coquilhatville, 1945 (1 ♀ leg. P. HULSTAERT)]; [Rutshuru, 20.III.1936 (1 ♂, 2 ♀ ♀ leg. L. LIPPENS)]; [Barumbu, VIII.1923 (8 ♀ ♀ leg. J. GHESQUIÈRE)]; [Kasai (1 ♀ leg. L. ACHTEN)]; [Port-Francqui, X.1937 (4 ♀ ♀ leg. MME GILLARDIN)]; [Nyangwe, IV-V.1918 (1 ♂ ♀ leg. R. MAYNÉ)]; [Élisabethville, 31.I.1930 (5 ♂ ♂, 11 ♀ ♀ leg. M. BEQUAERT)]; [Uvira, habitation, VIII-XII.1949 (8 ♂ ♂, 18 ♀ ♀, leg. G. MARLIER)]; [Eala, X.1929 (1 ♂, 6 ♀ ♀ leg. H. J. BRÉDO)]; [Kisantu, 1927 (1 ♂ ♀ leg. R. P. VANDERYST)]; [Gabon : Libreville, 1-12.I.1931 (1 ♀ leg. A. TINANT)]; [île de San THOMÉ, (1 ♀ leg. DE SAEGER)].

Collection S. A. Institute for Med. Research, Johannesburg : Much material is recorded in the card-register or present in the collection from all four provinces of the Union of S. Africa, from S. W. Africa, Bechuanaland, S. Rhodesia and Port. E. Africa.

Collection Zool. Museum Berlin : [Nkolentangan, Span. Guinea, 14.XI.1907 (1 ♀ leg. G. TESSMANN)]; [Uam-Gebiet, S. O. Kamerun, 21.V.1914 (1 ♂, 2 ♀ ♀ leg. G. TESSMANN)]; [Chifumbasi, Port. O. Afrika, IV.1905 (5 ♂ ♂ leg. W. TIESLER)]; [Alcu-Benito Gebiet, Span. Guinea, 1-15.IX.1906 (1 ♀ leg. G. TESSMANN)]; [Langenberg, Nyassa See, 19-30.III.1898 (1 ♂, 3 ♀ ♀ leg. FUELLEBORN)]; [Dodoma, D. O. Afrika, (2 ♀ ♀ leg. BRANDES)]; [Gelo-Fluss, O. Sudan (2 ♀ ♀ leg. O. NEUMANN)]; [Bibundi, Kamerun, 18-30.X.1904 (1 ♀ leg. G. TESSMANN)]; [Bismarckburg, Togo, 8-13.III.1893 (1 ♂, 2 ♀ ♀ leg. L. CONRADT)]; [Misahoehe, Togo, 10.IV.1894 (1 ♂ leg. E. BAUMANN)].

Collection American Museum New York : [Robertsport, Liberia, XII.1943 (several ♂ ♂ and ♀ ♀)].

Genus **LUCILIA** ROBINEAU-DESVOIDY.

Lucilia ROBINEAU-DESVOIDY, Ess. Myod., II, 1830, p. 452; MALLOCH, Ann. Mag. N. H., (9), XVII, 1936, p. 503 et (10), III, 1929, p. 273; SÉGUY, Encycl. Ent. A IX, 1928, p. 145 et A XXI, 1941, p. 26; AUBERTIN, Linn. Soc. J. Zool., XXXVIII, 1933, p. 395; TOWNSEND, Man. Myiol., V, 1937, p. 151; S. WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 46; WATERHOUSE and PARAMONOV, Austr. J. Sci. Res., III B, 1950, p. 311; HALL, Blowflies N. America, 1948, p. 223.

Type species : *M. caesar* LINNÉ from Sweden.

Phaenicia ROBINEAU-DESVOIDY, Hist. Nat. Dipt. Paris, II, 1863, p. 750; MALLOCH, Ann. Mag. N. H., (9), XVII, 1926, p. 504; TOWNSEND, Man. Myiol., V, 1937, p. 162; HALL, Blowflies N. America, 1948, p. 231.

Type species : *M. sericata* MEIGEN from Germany.

Phumonesia VILLENEUVE, Bull. Soc. Ent. France, 1914, p. 307; MALLOCH, Ann. Mag. N. H., (10), III, 1929, p. 273; TOWNSEND, Man. Myiol., V, 1937, p. 164.

Type species : *P. infernalis* VILLENEUVE from Tanganyika.

BufoLucilia TOWNSEND, Proc. U. S. Nat. Mus., LVI, 1919, p. 542 et Man. Myiol., V, 1937, p. 140; HALL, Blowflies N. America, 1948, p. 215.

Type species : *L. bufonivora* MONIEZ from France.

Caesariceps ROHDENDORF, Rev. Zool. russe, VI, 1926, p. 93; TOWNSEND, Man. Myiol., V, 1937, p. 141.

Type species : *L. flavipennis* KRAMER nec. MACQUART from France.

DasyLucilia ROHDENDORF, Rev. Zool. russe, VI, 1926, p. 93; TOWNSEND, Man. Myiol., V, 1937, p. 141.

Type species : *L. pilosiventris* KRAMER from Germany.

Roubaudiella SÉGUY, Bull. Soc. Path. exot., XVIII, 1925, p. 735; TOWNSEND, Man. Myiol., V, 1937, p. 170.

Type species : *R. caerulea* SÉGUY from French Congo.

Luciliella MALLOCH, Ann. Mag. N. H., (9), XVII, 1926, p. 507; TOWNSEND, Man. Myiol., V, 1937, p. 152.

Type species : *L. fumicosta* MALLOCH from Phillipine Is.

Viridinsula SHANNON, Proc. Ent. Soc. Wash., XXVIII, 1926, p. 131; TOWNSEND, Man. Myiol., V, 1937, p. 175.

Type species : *L. pioniæ* WALKER from Galapagos Is.

Chaetophaenicia ENDERLEIN, Tierwelt Mitteleurop., VI, 3, 1936, p. 211 (syn. nov.).

Type species : *L. silvarum* MEIGEN from Germany.

AUBERTIN (1933), in an excellent revision of this genus on a worldwide basis, has given drawings of the terminalia of each species. An additional paper which should be mentioned, is one by WATERHOUSE and PARAMONOV (1950) which deals with the detailed taxonomy of *L. sericata* (MEIGEN) and *L. cuprina* (WIEDEMANN), the most important species from an economic point of view. The genus *Lucilia*, as defined by AUBERTIN, is easily separable in both sexes from the remaining Calliphorid genera.

The generic features may be summarized as follows :

Head in male with the eyes always bare, upper facets rarely markedly enlarged, the width of frons at the narrowest point not exceeding $\frac{1}{3}$ of eye-length; *ev*, *f* and *fo* not developed, although present in the female sex. Parafacialia normally bare, only in one species (*L. fumicosta* MALLOCH) with a row of minute bristles. Median carina in the antennal groove not or only weakly developed in the upper part.

Thorax with *ac*=2-3+2-3, *dc*=3+3, *ia*=1+2-3, *ph*=3, *h*=3-4, *n*=2, *sa*=3, *pa*=2, *sc*=4-5+1-2, *st*=2 : 1, at least 1 *pst* and 1 *pp* present, alar declivity, propleuron and prosternum setulose, but supraspiracular convexity always without upright hairs. Suprasquamal ridge with an anterior and a posterior tuft of hairs. Wing with the stem-vein bare, subcostal sclerite with a few setae or with decumbent pubescence only, *r*₁ not setulose, *R*₅ open, thoracic squama broad, truncate, bare dorsally. Legs without outstanding features, fore-tibia with 1 *pv* and several *ad*; mid-tibia with a variable set of bristles, lying between 0-3 *ad*, 1-2 *av*, 1-3 *pd* and 1-2 *pv*; hind-tibia with several *ad*, 2-3 *pd* and 2-3 *av*.

Abdomen constructed as in *Calliphora*, sternites relatively small, the first two sternites clearly visible, the following ones slightly overlapped by the tergites; fifth sternite emarginated, without special thorns or bristles; 3 genital segments, cerci mostly free, rarely fused, and paralobi cerci-like; phallosome with the same structure as in the true *Calliphora* species, theca and phallus separated, spine always present, harpes rod-like and terminally bent, vesicae well sclerotized, denticulated.

The genus *Lucilia* is distributed all over the world but only poorly represented in the Ethiopian region by 3 species, namely *L. infernalis* (VILLENEUVE), *L. cuprina* (WIEDEMANN) and *L. sericata* (MEIGEN), of which only the first two are probably endemic in our region. *L. sericata* has evidently been introduced by man from the Palaearctic region, whereas *L. cuprina* may have been spread from Africa to other tropical and subtropical parts of the world by the sheep-farming industry.

Nothing is known about the bionomics of *L. infernalis*, but extensive literature is available on biological and ecological facts regarding the two other Ethiopian species. In South Africa, a great deal of work on the bionomics of *L. sericata* and *L. cuprina* has been done by SMIR (1931) and by HEPBURN (1943). Both authors as well as HALL (1948) give further references to these and other « blow-flies ». They are also known to cause myiasis in man and animals, *L. cuprina* being the most important « sheep blow fly » in S. Africa and Australia (ZUMPT, 1951).

KEY TO THE SPECIES.

- 1 (2) Costal area of wing deeply infuscate; subcostal sclerite with one or more wiry upright bristles.

Body metallic dark blue to purple, legs brownish black. Eyes in ♂ nearly touching, in ♀ separated by a distance almost equal to $\frac{1}{3}$ of eye-length. Thorax with $ac=3+2-3$, $dc=3+3$, $ia=1+2$. 8-10 mm. — Probably distributed over the whole rain forest area of Africa, southwards to the mountainous regions of S. Rhodesia 1. *L. infernalis* (VILLENEUVE).

- 2 (1) Costal area not infuscated, but wings totally hyaline; subcostal sclerite with fine decumbent pubescence only 3

- 3 (4) Fore femur in both sexes black or dark bluish metallic. Head with 6-8 occipital bristles on each side, humeral callus with 6-8 setae. Male with the hairs on the abdominal sternites about the same length as those on the hind femur and tibia.

Body metallic green or bluish-green. Frons at the narrowest point measuring $\frac{1}{5}$ - $\frac{1}{6}$ of eye-length in ♂, more than half of eye-length in ♀. Thorax with $ac=2+3$, $dc=3+3$, $ia=1+2$. 5-10 mm. — Almost worldwide 2. *L. sericata* (MEIGEN).

- 4 (3) Fore femur in both sexes bright metallic green. Head with only one occipital bristle on each side, humeral callus with 2-4 setae. Male with the hairs on the abdominal sternites strikingly longer than on the hind femur and tibia.

Body metallic green to blue-green or coppery, in some parts of the area of distribution predominantly dull olive-bronze. Frons at the narrowest point measuring about $\frac{1}{4}$ of eye-length in ♂, about $\frac{1}{5}$ of eye-length in ♀. Thoracic chaetotaxy as in the foregoing species. 5-10 mm. — A cosmopolite of the tropical and subtropical regions 3. *L. cuprina* (WIEDEMANN).

[1. — *Lucilia infernalis* (VILLENEUVE).]

(Fig. 37.)

- Phumonesia infernalis* VILLENEUVE, Bull. Soc. ent. France, LXXXIII, 1914, p. 307; AUBERTIN, Linn. Soc. J. Zool., XXXVIII, 1933, p. 404, fig. 9-10.
Roubaudiella caerulea SÉGUY, Bull. Soc. Path. exot., XVIII, 1925, p. 735; AUBERTIN, Linn. Soc. J. Zool., XXXVIII, 1933, p. 405 (*syn. nov.*).
 ?*Phumonesia bimaculata* VILLENEUVE, Bull. Ann. Soc. ent. Belge, LXVI, 1926, p. 269 (*syn. nov.*).
Lucilia nigricosta MALLOCH, Ann. Mag. N. H., (9), XVII, 1926, p. 507.
Phumonesia villeneuvei CURRAN, Amer. Mus. Nov., 248, 1927, p. 4.

In general appearance, this species is very similar to *Phumonia mallochi* ZPT. n. n. from which, of course, it is easily separable by the

generic features. AUBERTIN, in her revision of the genus, listed *caerulea* SÉGUY as a « var. » of *infernalis* VILLENEUVE, but was inclined to think that she was dealing with only a « single variable species ». The variety is separated by AUBERTIN in the male sex, the only sex she was able to compare, by dark brown antennae, a more or less infuscated alar squama and by having only two pairs of postsutural *ac*, whereas the nominate form has orange antennae, a white upper squama and 3 postsutural *ac*. The structure of the hypopygium (fig. 37) is identical in both forms.

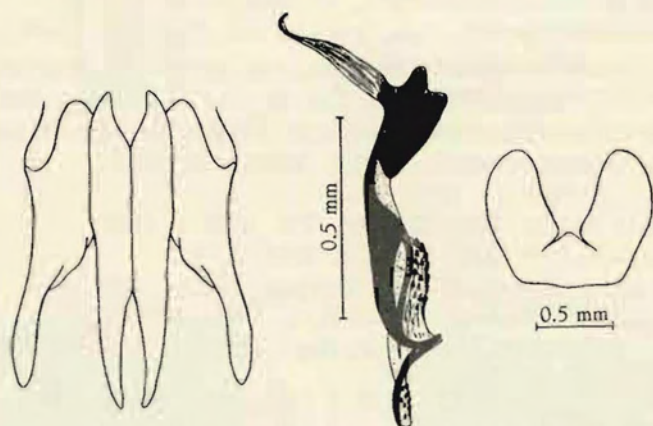


FIG. 37. — *Lucilia infernalis* (VILLENEUVE).
Frontal view of cerci, paralobi and 5th. sternite, lateral view of phallosome.
Specimen from Ituri, Belgian Congo.

In spite of the wide area of distribution, this species seems to be rare and I myself have only seen relatively few specimens. However, I received the same impression as AUBERTIN with respect to the variability and propose to place *caerulea* definitely into the synonymy of *infernalis*.

Collection Musée du Congo : [Ituri : Beni, X.1928 (1 ♀ leg. M^{me} VAN RIEL)]; [mont Wago, 24.XI.1928 (1 ♂ leg. A. COLLART)]; [Ruanda : Kayove, 2.000 m, 14.II.1953 (1 ♀ leg. BASILEWSKY)].

Collection Naturhist. Museum Wien : [N. W. Tanganyika, 1910 (1 ♂ ♀, leg. GRAUER, types of *infernalis*)].

Collection Zool. Museum Berlin : [Bismarekburg, Togo, 9-11.V.1893 (1 ♂ ♀, leg. L. CONRADT)]; [Buea, Kamerunberg, 900-1.200 m, 12.X.1910 (1 ♀ leg. HINTZ)]; [Alca Benito, Span. Guinea, 1-15.IX.1906 (1 ♀)].

Collection American Museum, New York : [Stanleyville, Belg. Congo, III.1915 (1 ♀, type of *villeneuvei*)]; [Robertsport, Liberia, 15.IX.1942 (1 ♀)].

Collection Nat. Museum, Bulawayo : [Chirinda Forest, S. Rhodesia, X.1926 (1 ♂ ♀)]; [Vumba Mts., S. Rhodesia III.1935 (1 ♂)].

[2. — *Lucilia sericata* (MEIGEN).]

(Figs. 38, 39.)

- Musca sericata* MEIGEN, Syst. Besch., V.1826, p. 53; SÉGUY, Encycl. Ent., A IX, 1928, p. 9, figs. 199, 205, 206, 209, 210, et A XXI, 1941, p. 31; AUBERTIN, Linn. Soc. J. Zool., XXXVIII, 1933, p. 411, fig. 17; S. WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 54, fig. 26; HALL, Blowflies N. America, 1948, p. 259, figs.; WATERHOUSE and PARAMONOV, Austr. J. Sci. Res., B III, 1950, p. 310 ff, figs.
- Musca nobilis* MEIGEN, Syst. Besch., V, 1826, p. 56.
- Musca tegularia* WIEDEMANN, Auss. Zweifl. Ins., II, 1830, p. 655.
- Chrysomyia capensis* ROBINEAU-DESVOIDY, Ess. Myod., II, 1830, p. 451.
- Lucilia modesta* ROBINEAU-DESVOIDY, Ess. Myod., II, 1830, p. 454.
- Lucilia pubescens* ROBINEAU-DESVOIDY, Ess. Myod., II, 1830, p. 454.
- Lucilia calida* ROBINEAU-DESVOIDY, Ess. Myod., II, 1830, p. 464; MACQUART, Dipt. exot., II, 1835, p. 258.
- Musca pruinosa* MEIGEN, Syst. Besch., VII, 1830, p. 294.
- Lucilia chloris* HALIDAY, Ent. Mag., I, 1833, p. 165.
- Lucilia flavipennis* MACQUART (nec KRAMER), Mém. Soc. Roy. Agric. Arts Lille, 1842, p. 296 et Dipt. exot., II, 3, 1843, p. 139.
- Lucilia basalis* MACQUART, Mém. Soc. Roy. Agric. Arts Lille, 1842, p. 305, et Dipt. exot., II, 3, 1843, p. 148.
- Musca lagyra* WALKER, List. Dipt. Brit. Mus., IV, 1849, p. 885.
- Lucilia latifrons* SCHINER, Fa. Austr., I, 1862, p. 590.
- Lucilia sayi* JAENNICKE, Abh. senckenb. naturf. Ges., VI, 1867, p. 375.
- Lucilia barberi* TOWNSEND, Smiths. Misc. Coll., LI, 1908, p. 121.
- Lucilia giraulti* TOWNSEND, Smiths. Misc. Coll., LI, 1908, p. 121.
- For Synonymy see also WATERHOUSE and PARAMONOV (1950).

L. sericata and *L. cuprina* are listed by several authors (see HALL, 1948) in a separate genus, *Phaenicia* ROBINEAU-DESVOIDY. But, according to WATERHOUSE and PARAMONOV (1950), neither of the characters given to separate *Phaenicia* from *Lucilia* can be regarded «as providing adequate justification for any more than subgeneric status». The question is, however, whether it is advisable at all to retain or to create subgeneric names which are subject to the laws of nomenclature. We have enough scientific names to deal with, so that I share the opinion of many other contemporary authors that, if it is really necessary to subdivide a genus, independant group-names would fulfil the same purpose.

L. sericata and *L. cuprina*, especially in the female sex, have often been confused with each other in former papers. WATERHOUSE and PARAMONOV, in an excellent paper, have studied the taxonomy of both species intensively and found several characters which allow the females to be separated with absolute certainty. The males cannot be confused at all, if the width of the frons and the length of the ventral hairs of the abdomen are carefully studied. The hypopygia are quite distinct (see figs 38 and 39).

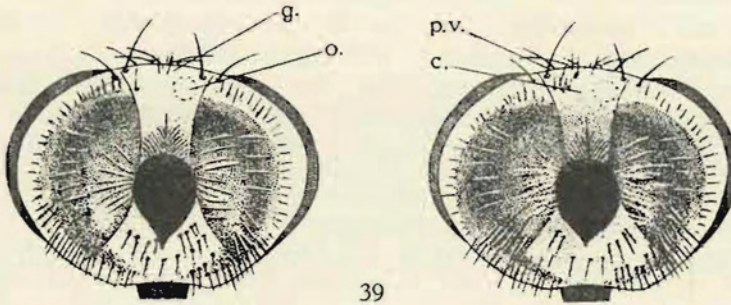
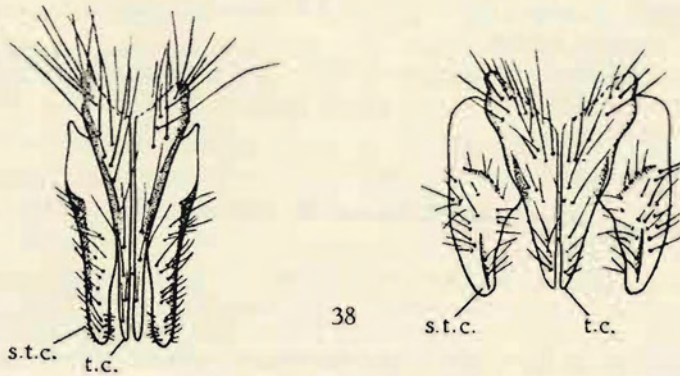


FIG. 38. — Cerci and paralobi in frontal view of *Lucilia cuprina* (WIEDEMANN) — left — and *L. sericata* (MEIGEN) — right. (After WATERHOUSE & PARAMONOV.) s.t.c. = paralobus; t.c. = cercus.

FIG. 39. — Posterior view of head of *Lucilia cuprina* (WIEDEMANN) — left — and *L. sericata* (MEIGEN) — right. (After WATERHOUSE & PARAMONOV.) c. = cerebrale; g. = post-vertical bristles; o. = area of occipital bristles; p.v. = inner vertical bristle.

L. sericata is indigenous in the Holartic region and has been transported from there by man to almost all other parts of the world, but most probably only recently. It is by no means common in Central and S. America, and its behaviour and irregular distribution in the Oriental and Australasian regions undoubtedly reveal that it is an introduced species there. The same is true for the Ethiopian region. In South Africa, for instance, *L. sericata* is most common in or near larger towns and other «strongly civilized» places, whereas it is rare or even wanting in rural districts, its place being taken there by *L. cuprina*.

There were no specimens of *L. sericata* among the material I received from the Belgian Congo, neither have I seen any in other collections from the tropical parts of Africa.

A modern account of the life-history, with detailed descriptions and figures of the immature stages, is given by HALL (1948) and by WATERHOUSE and PARAMONOV (1950).

3. — *Lucilia cuprina* (WIEDEMANN).

(Figs. 38, 39.)

- Musca cuprina* WIEDEMANN, Auss. Zweifl. Ins. II, 1830, p. 654; SHANNON, Proc. Ent. Soc. Wash., XXVIII, 1926, p. 131; MALLOCH, Proc. Linn. Soc. N. S. Wales, LII, 1927, p. 321; AUBERTIN, Linn. Soc. J. Zool., XXXVIII, 1933, p. 413, figs 18-19; S. WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 55, figs. 27-28; WATERHOUSE and PARAMONOV, Austr. J. Sci. Res., B III, 1950, p. 310 ff., figs.
- Lucilia dorsalis* ROBINEAU-DESVOIDY, Ess. Myod., 1830, p. 453; WATERHOUSE & PARAMONOV, Austr. J. Sci. Res., B III, 1950, p. 310 ff.
- Lucilia amica* ROBINEAU-DESVOIDY, Ess. Myod., 1830, p. 453.
- Lucilia elegans* ROBINEAU-DESVOIDY, Ess. Myod., 1830, p. 458.
- Lucilia argyrocephala* MACQUART, Mém. Soc. Roy. Agric. Arts Lille, 1846, p. 326, et Dipt. Exot. Suppl., I, 1846, p. 198; MALLOCH, Ann. Mag. N. H., (9), XVII, 1926, p. 506.
- Musca fucina* WALKER, List. Dipt. Brit. Mus., IV, 1849, p. 883.
- Musca serenissima* WALKER, Ins. Saunders, IV, 1852, p. 340.
- Musca temperata* WALKER, Ins. Saunders, IV, 1852, p. 340.
- Lucilia leucodes* FRAUENFELDT, Verh. zool. -bot. Ges. Wien XVII, 1867, p. 453.
- Somomyia pallifrons* BIGOT, Ann. Soc. ent. France, VII, 1877, p. 257.
- Strongyloneura nigricornis* S.-WHITE, Spolia Zeylan., XIII, 1924, p. 115.
- Lucilia pallescens* SHANNON, Ins. Ins. Mens., XII, 1924, p. 78; HALL, Blowflies, N. America, 1948, p. 247, figs.; WATERHOUSE and PARAMONOV, Austr. J. Sci. Res., B III, 1950, p. 312.
- Lucilia sericata* SMIT, Sci. Bull. Dept. Agric. S. A., n° 62, 1928, p. 1; et Rep. Dir. Vet. Serv., Onderstepoort, 1931, p. 299, figs.
- For synonymy see also WATERHOUSE and PARAMONOV (1950).

L. cuprina is certainly an indigenous species in the Ethiopian region and from here, probably only very recently in some cases, has invaded other subtropical and tropical parts of the world.

WATERHOUSE and PARAMONOV (1950) distinguish two forms of *cuprina*, namely ssp. *cuprina* in the Far East, the Oriental region from Malaya eastwards to Hawaii and the Americas, and ssp. *dorsalis* in Africa, India and Australia. The separating features which they give are, however, very slight and intergrading and lie mostly « in general coloration ». The nominate form is said to be « easily recognized by its dull olive-bronze body coloration » whereas ssp. *dorsalis* is « metallic coppery green, green, or bluish green ».

I have seen a great number of specimens from all parts of its distribution area and have come to the conclusion that this feature does not hold throughout, and that there are all kinds of intermediate forms. *L. cuprina dorsalis* should, therefore, no longer be listed as a distinct subspecies.

For morphological characters see *L. sericata* (MEIGEN). An account of the life history including descriptions and figures of the immature stages is given by HALL (1950) under *Phaenicia pallescens* (SHANNON) and by WATERHOUSE and PARAMONOV (1950).

Mission G. F. DE WITTE : Rutshuru, 1.285 m, 26-28.XII.1933 (1 ♀); [Uele : Monga, 450 m, 18.IV-8.V.1935 (1 ♀)].

Mission H. DAMAS : Lac Édouard, Vitshumbi, 14.I.1936 (1 ♀); [N. lac Kivu : N'Coma, 11.II.1936 (1 ♂)].

Collection Musée du Congo : [Kivu : Kobaia, 17.XII.1922 (1 ♂ ♀ leg. VAN SACEGHEM)]; [Tshibinda, XI.1927 (1 ♀ leg. CH. SEYDEL)]; [Ituri : Bunia, 1938 (7 ♀ ♀ leg. P. LEFÈVRE)]; [Nioka, 20.I.1934 (1 ♀ leg. J. V. LEROY)]; [Lomami : Kamina, 1930 (1 ♂ leg. R. MASSART)]; [Sankuru : Komi, 31.III.1930 (2 ♂♂, 1 ♀ leg. J. GHESQUIÈRE)]; [Uele : Dinglia, 1935 (1 ♂ ♀ leg. J. V. LEROY)]; [Katanga : Nyonga, V.1925 (1 ♂, 2 ♀ ♀ leg. G. F. DE WITTE)]; [Kasai : Bumba, 18.III.1940 (1 ♀ leg. J. J. DEHEYM)]; [Lulua : Kasai, 1928 (1 ♀ leg. WALKER)]; [Mahagi-Miarembe, V.1935 (1 ♂, 4 ♀ ♀ leg. CH. SCOPS)]; [Élisabethville (1 ♂ ♀ leg. Miss. Agric.)]; [Barumbu, VII.1925 (1 ♂ ♀ leg. J. GHESQUIÈRE)]; [Eala, IX.1935 (1 ♂ leg. J. GHESQUIÈRE)]; [Léopoldville, 1933 (3 ♀ ♀ leg. A. TINANT)]; [Stanleyville, 25.IV.1928 (3 ♀ ♀ leg. A. COLLART)]; [Yuhovi, 23.VII.1935 (1 ♀ leg. H. J. BRÉDO)]; [Kasenyi (lac Albert), VI.1935 (1 ♀ leg. H. J. BRÉDO)]; [Kantama, 1931 (1 ♀ leg. R. MASSART)]; [Lusambo, 1938 (1 ♀ leg. V. LAGAE)]; [Bambesa, 16.V.1938 (2 ♀ ♀ leg. P. HENRARD)]; [Kabinda, X.1934 (1 ♀ leg. M^{me} GILLARDIN)]; [Leverville, 1928 (1 ♀ leg. M^{me} J. TINANT)]; Ruanda : Muhavura, 28.I.1953 (1 ♀ leg. BASILEWSKY); Ruhengeri, 20.I.1934 (2 ♀ ♀ leg. COLBACK); [Kibungu, X-XII.1937 (2 ♂♂, 1 ♀ leg. R. VERHUIST)]; [Tanganyika : Kigoma, IX.1918 (1 ♂, 2 ♀ ♀ leg. R. MAYNÉ)].

Collection S. A. Institute for Med. Research, Johannesburg : A great deal of material is recorded in the card-register or is present in the collection from all four provinces of the Union of S. Africa, from S. W. Africa, Basutoland and S. Rhodesia.

Collection Zool. Museum Berlin : [Jaunde Stat., Kamerun, 800 m, (3 ♂♂ leg. ZENKER)]; [Gore, Neu-Kamerun, 4.XII.1912 (20 ♀ ♀ leg. HOUY)]; [Langenberg, Nyassa-See, XII.1897-I.1898 (2 ♀ ♀ leg. FUELLEBORN)]; [Kisseka, D. O. Africa, 14.VII.1911 (2 ♀ ♀ leg. H. MEYER)]; [Meruberg, Kilimanjaro (1 ♀ leg. ABEL)]; [Bismarckburg, Togo, 15-17.IV.1893 (1 ♀ leg. L. CONRADT)]; [Tananarive, Madagascar (3 ♂♂, 3 ♀ ♀ leg. FRIEDRICH)].

Collection American Museum, New York : [Kasata and Robertsport, Liberia (several ♂♂ and ♀♀)]; [Narck, Kenya, II.1948 (1 ♂♀)].

Genus **PERICALLIMYIA** VILLENEUVE.

Pericallimya VILLENEUVE, Bull. Soc. ent. France, 1915, p. 266; CURRAN, S. Afr. Div. Ent. Mem., V, 1926, p. 47; MALLOCH, Ann. Mag. N. H., (10), III, 1929, p. 274; SÉGUY, Encycl. Ent. Dipt., VIII, 1935, p. 148; TOWNSEND, Man. Myiol., V, 1937, p. 161.

Type species : *P. marginalis* VILLENEUVE from N. W. Tanganyika.

Africomusca TOWNSEND, J. N. York ent. Soc., XL, 1932, p. 441; Man. Myiol. V, 1937, p. 133 (syn. nov.).

Type species : *P. westermanni* WIEDEMANN from the Cape.

There is some doubt whether this genus really represents a monophyletic group. The hypopygium of *P. insignis* is strongly reminiscent of *Calliphora* in which genus CURRAN originally placed this species. The hypopygia of the other species are similar to those of the *Adichosina* species or show some peculiar characters. The feature common to all species of this genus is the metallic blue or greenish body with a red-tipped abdomen.

Head in male with the eyes touching or closely approximated, width of frons at the narrowest point not exceeding $\frac{1}{7}$ of eye-length, upper facets more or less enlarged, bare; *ev*, *f* and *fo* not developed but present in the female sex. Parafacialia almost bare or distinctly setulose in the upper half like the parafrontalia. Antennal groove without carina.

Thorax with *ac*=2+2-3, *dc*=2-3+3, *ia*=0-1+1-3, *ph*=3, *h*=3-4, *prs*=1, *n*=2, *sa*=3-4, *pa*=2, *sc*=3-6+1, *st*=1-2 : 1, at least one *pst* and *pp* which are normally accompanied by several hairs, alar declivity and prosternum always haired, propleuron bare or haired, supraspiracular convexity bare. Suprasquamal ridge without tufts of hairs. Wing with the subcostal sclerite bare or provided with a few longer setae, τ_1 never setulose, R_5 open, thoracic squama broad, terminally rounded or more or less truncate, white to black-brown, with or without discal hairs. Legs blackish, without outstanding features, fore-tibia with 1 *pv* and a row of short *ad*, mid-tibia with 1 *ad*, 1 *av*, 1 *pd* and 2 *pv*; hind-tibia with a row of short *pd* and *ad*, among which 2-3 longer bristles project, furthermore 1-2 *av* in the lower half.

Abdomen of *Calliphora*-type, 1st and 2nd sternites separated, the 2nd relatively large, fifth sternite emarginated, without special thorns or bristles; tergites III and IV with or without median discal bristles, 5th tergite with discals and marginals and with the hind margin always demarcated reddish; 3 genital segments, cerci always free and paralobi slender, phallosome with separated theca and phallus, spine present, harpes hook-like, with or without denticles at the tip, vesicae denticulated and normally fairly heavily sclerotized.

The genus *Pericallimya* is restricted to the Ethiopian region, with the greatest number of species in the rain-forest area of Central Africa. But only relatively few specimens have so far come to our knowledge. They are probably not so rare but difficult to collect because they live in the thick bush. The South African *Pericallimya* species, *P. westermanni* and *P. perlata*, are found in the so-called « temperate rain forest » and may be baited with human faeces.

Because of the rareness of specimens in the collection, almost nothing can be said about the intraspecific variability of the different species. It can be already stated that the propleura may be bare or haired within the same species, a feature which is of generic importance for all other Ethiopian genera of *Calliphorinae*. Whether or not the arrangement of the abdominal discal bristles is constant, must be proved in future when more material becomes available. The same is true for the pattern of the thoracic bristles. In the meantime, the chaetotaxy of the abdomen is used in the key, after basing the species on the structure of the hypopygium. This organ is of decisive importance, as in other calliphorids too, and should always be checked.

KEY TO THE SPECIES.

- 1 (8) Thoracic squama dark brown with upstanding hairs on the disc; costal area never demarcated dark-brown 2
- 2 (7) Abdominal tergites III and IV without median discal bristles 3
- 3 (6) Eyes of male touching or almost so, frons at the narrowest point smaller than the anterior ocellus 4
- 4 (5) Upper facets of male only slightly enlarged.
 Body metallic dark-blue, with whitish pollinosity; legs blackish. Thorax with $ac=2+3$, $dc=2+3$, $ia=1+1-3$, $sc=5+1$, $st=2:1$, propleura haired or bare. 7-12 mm. — Cameroons, Belg. Congo, Uganda, Tanganyika Terr.
 1. *P. majuscula* VILLENEUVE.
- 5 (4) Upper facets of male strikingly enlarged.
 Otherwise like the foregoing species, but apparently always 3 post *ia* present. 10-14 mm. — S. Rhodesia
 2. *P. flavicauda* (MALLOCH).
- 6 (3) Eyes of male more widely separated, frons at the narrowest point distinctly broader than the anterior ocellus, measuring $\frac{1}{12}$ - $\frac{1}{13}$ of eye-length.
 Otherwise like *P. majuscula*. — Only known from the Cameroon Mts. 3. *P. insignis* (CURRAN).

- 7 (2) Abdominal tergites IV (♀) or III and IV (♂) with a pair of median discal bristles.
 General appearance of *P. majuscula*. Male frons at the narrowest point measuring $\frac{1}{11}$ - $\frac{1}{15}$ of eye-length. — Cape Province, Transvaal, S. Rhodesia
 4. *P. westermanni* (WIEDEMANN).
- 8 (1) Thoracic squama whitish to dark-brown, but without upstanding hairs on the disc; costal area of wing sometimes demarcated brown 9
- 9 (12) Costal area of wing demarcated black-brown 10
- 10 (11) Male frons measuring about $\frac{1}{7}$ of eye-length.
 Body metallic dark blue, with whitish pollinosity, legs blackish. Thorax with $ac=2+3$, $dc=2+3$, $ia=1+2$, $sc=4+1$, $st=1:1$, propleura bare. 5,5 mm. — Belg. Congo
 5. *P. wittei* n. sp.
- 11 (10) Male frons at the narrowest point not wider than 2-3 times the width of the anterior ocellus.
 The three following species are only separable from each other by the structure of the hypopygium. Compared with the foregoing species, the propleura may be haired or bare and the pattern of st varies from 1:1 to 2:1. — S. Africa, Belg. Congo 6. *P. perlata* (WALKER).
 Tanganyika Terr. 7. *P. versicolor* (VILLENEUVE).
 Tanganyika Terr., Belg. Congo
 8. *P. marginalis* VILLENEUVE.
- 12 (9) Costal area of wing not demarcated black-brown 13
- 13 (16) Abdominal tergites III and IV with a pair of median discal bristles 14
- 14 (15) Wing-vein $r-m$ clouded; third antennal segment 3 times as long as the second. Male frons $\frac{1}{9}$ - $\frac{1}{11}$ as wide as the eye is long.
 Body metallic dark blue and whitish pollinose as in the other *Pericallimya* species, legs black. Thorax with $ac=2+2$, $dc=2+3$, $ia=1+3$, $sc=4+1$, $st=2:1$. 6-7 mm. — Belg. Congo, Ruanda-Urundi, Tanganyika Terr.
 9. *P. basilewskyi* ZUMPT.
- 15 (14) Wing-vein $r-m$ not clouded, third antennal segment twice as long as the second. Male frons not broader than twice the width of the anterior ocellus.
 Only one badly preserved male is known from the Tanganyika Terr. 6 mm 10. *P. curvinerva* VILLENEUVE.
- 16 (13) Abdominal tergite III without a pair of median discal bristles. 17

- 17 (18) Abdominal tergite IV with a pair of median discal bristles; pre-sutural *ia* wanting.
A new species from the Belgian Congo. 5 mm
11. *P. io* n. sp.
- 18 (17) Abdominal tergites III and IV without median discal bristles; pre-sutural *ia* present 19
- 19 (20) Wing-vein *r-m* not clouded.
Known from the Belgian Congo and Uganda. 4,5-8 mm ...
12. *P. immaculata* n. sp.
- 20 (19) Wing-vein *r-m* clouded 21
- 21 (22) Wing-vein *r-m* with a circular, large black spot; costal spine wanting.
Belgian Congo, Ruanda-Urundi, Uganda. 5-7 mm
13. *P. bequaerti* CURRAN.
- 22 (21) Wing-vein *r-m* narrowly blackened; costal spine well developed.
Similar to the two foregoing species, the identities of which must always be confirmed by comparing the male genitalia. 5-6 mm. — Belg. Congo, Ruanda-Urundi, Tanganyika Terr. ...
14. *P. similis* n. sp.

1. — ***Pericallimya majuscula*** VILLENEUVE.

(Fig. 40.)

Pericallimya majuscula VILLENEUVE, Bull. Soc. ent. France, 1915, p. 267;
CURRAN, Div. Ent. Mem., 5, 1926, p. 47.

Similar to *P. insignis* (CURRAN) from which it is separable only in the male sex.

Male. — Frons in the middle line-shaped, at the narrowest point smaller than the anterior ocellus, eyes therefore almost touching, frontal stripe, parafrontalia and parafacialia black or dark reddish, silvery dusted, vibrissarium little lighter reddish, buccae and occiput black. Of the head chaetotaxy, a pair of long *iv* and *oc* and about 10 *paf* are developed, parafrontalia and upper half of parafacialia densely beset with black setae, vibrissa long, peristomal bristles and buccal hairs black, on the occiput yellowish hairs are detectable beside the black ones; facial ridge on the lower $\frac{2}{3}$ to $\frac{3}{4}$ with a row of strong black bristles and hairs. Antennae blackish, only the terminal margin of the second segment reddish, the third 3 times as long as the second, arista on both sides with long hairs. Palpi black, slightly enlarged terminally.

Thorax dark blue, sometimes with a coppery lustre, pollinosity whitish forming a pattern as in *Calliphora* species. Pro- and poststigma blackish. Chaetotaxy : *ac*=2+3, *dc*=2+3, *ia*=1+1-2, *ph*=3, *h*=3, *prs*=1, *n*=2, *sa*=3, *pa*=2, *sc*=5+1 (discals sometimes increased), *st*=2:1, *pst* and *pp* each represented by a single strong bristle accompanied by several weaker

hairs. Propleura haired or bare, with all transitions, prosternum and alar declivity haired. Wings with dark brownish base, remaining part more or less tinged, veins black-brown, basicosta black, costal spine wanting, r_{4+5} with only a long seta at the base, m bent up in a right angle, R_5 open, both squamae black-brown, the lower one almost totally beset with upstanding dark hairs, halter yellow brown. Legs blackish; fore-tibia with a row of short ad and one long submedian pv ; mid-tibia with 2 pv and one submedian av , ad and pd (last may be reduced); hind-tibia with two longer pd and ad and a row of shorter ones each, furthermore 1-2 av in the lower half.

Abdomen almost as long as broad, metallic dark blue, pollinosity white, forming a lustrous pattern; tergites II and III with lateral marginal bristles and IV and V with complete marginal rows of them, dorsally no discal bristles present, about the last two-thirds of the 5th tergite bright yellow; fifth sternite emarginated, hypopygium (fig. 40) quite different from that of *P. insignis* (CURRAN).

Female. — Frons at vertex a little more than one third as wide as the eye is long, gradually widened towards the antennal groove. Chaetotaxy of head complete, with iv , ev , f and 2 fo .

Length : 7-12 mm.

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

Collection Musée du Congo : [Eala, VI.1932 (2 ♀ ♀ leg. A. CORBISIER)].

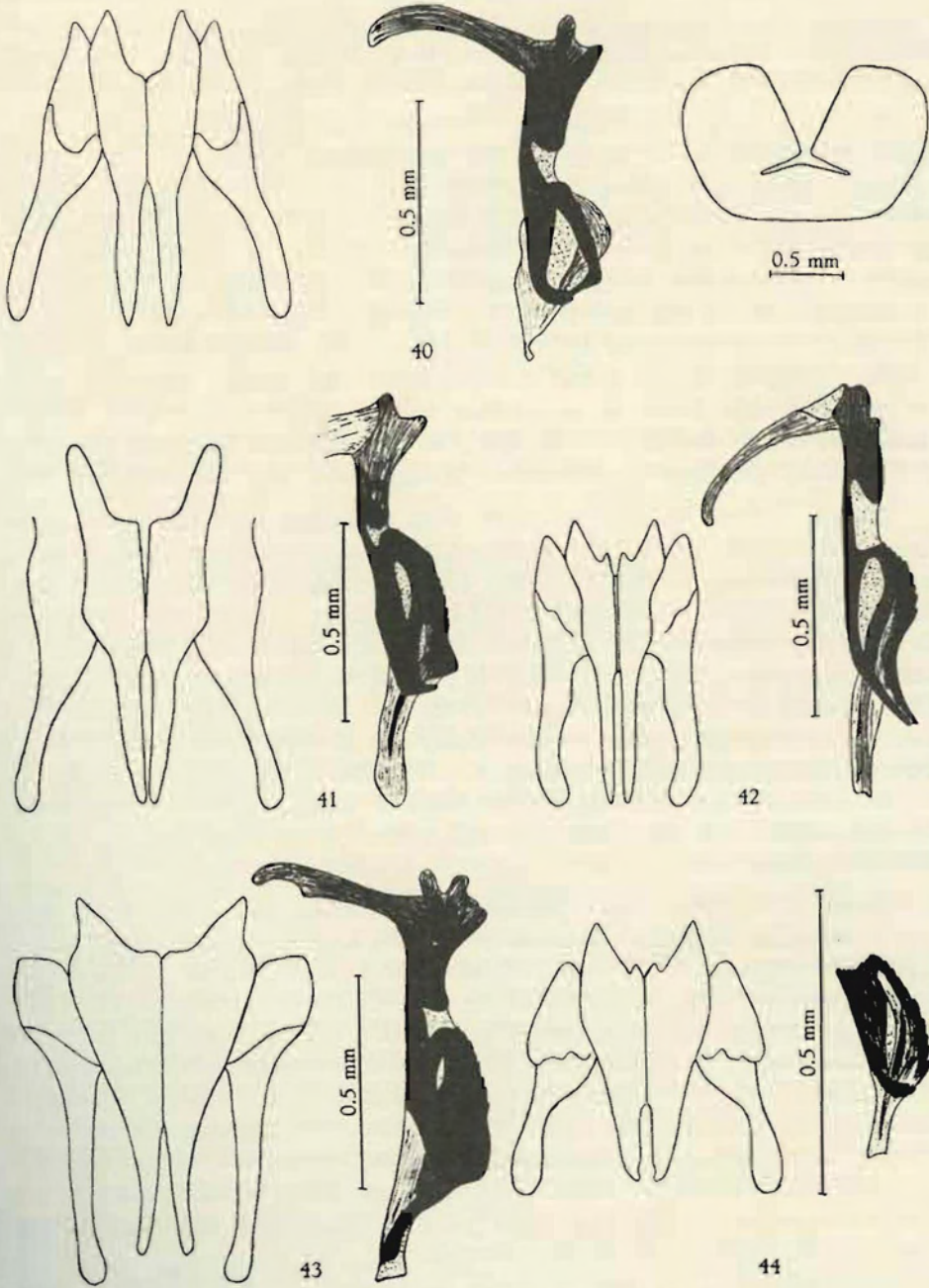
Collection Naturhist. Museum Wien : [N. W. Tanganyika, 1910 (lectotype ♂, 1 ♂ ♀ paratypes, 3 ♀ ♀ leg. GRAUER)]; [Matengo Hochl., wsw. Songea, 30.II.1936 (3 ♂ ♂, 3 ♀ ♀ leg. ZIMMER)];

Collection Zool. Museum Berlin : [Langenburg, Nyassa-See, 25-28.X.1899 (1 ♀ leg. FUELLEBORN)]; [Buea, Kamerun, 2.100-2.500 m, (1 ♂ leg. PREUSS)].

Collection S. A. Institute for Med. Research, Johannesburg : [Behungi, Uganda, 4.IV.1927 (1 ♂)].

EXPLANATION OF FIGURES 40 TO 44.

- FIG. 40. — *Pericallimya majuscula* VILLENEUVE. Cerci with paralobi, phallosome and 5th. sternite. Specimen from Buea, Cameroons.
- FIG. 41. — *Pericallimya flavicauda* (MALLOCH). Cerci with paralobi in frontal view, phallosome laterally. Specimen from Vumba Mounts, S. Rhodesia.
- FIG. 42. — *Pericallimya insignis* (CURRAN). Cerci with paralobi in frontal view, phallosome laterally. Specimen from Cameroons Mounts.
- FIG. 43. — *Pericallimya westermanni* (WIEDEMANN). Cerci with paralobi, phallosome. Specimen from Vumba Mounts, S. Rhodesia.
- FIG. 44. — *Pericallimya wittei* n. sp. Cerci with paralobi, phallosome. Specimen from P.N.A. (holotype).



FIGS. 40 TO 44.

[2. — *Pericallimya flavicauda* (MALLOCH).]

(Fig. 4L.)

Calliphora flavicauda MALLOCH, Ann. Mag. N. H., (9), XVI, 1925, p. 97;
CUTHBERTSON, Tr. Rhod. Sci. Ass., XXXVI, 1938, p. 122, figs 15-27.

This species was confused by TOWNSEND and CUTHBERTSON (see CUTHBERTSON 1938) with *P. westermanni* (WIEDEMANN), which is a S. African species extending northwards probably only as far as the Vumba Mts. in S. Rhodesia, where it meets and lives together with *P. flavicauda* (MALLOCH), a species until now known only from this district. It is easily separable from *P. westermanni* in both sexes by the wanting median discal bristles on tergites III and IV, and from *P. majuscula* VILLENEUVE and *P. insignis* (CURRAN) in the male sex by the touching eyes with strikingly enlarged upper facets. MALLOCH based the species on the female sex only, which is not separable from *P. majuscula* and *P. insignis*. Neither species, however, occurs in the Vumba Mts., so that there is no doubt about the status of *P. flavicauda*. The male is described here for the first time.

Male. — Eyes broadly touching, with strikingly enlarged facets in the upper two-thirds, frontal stripe only developed in the lower half, blackish or reddish brown, parafrontalia and -facialia coloured like the frontal stripe and white pollinose, vibrissarium red-brown, buccae blackish. Parafrontal bristles developed only in the lower half, *iv* and *oc* present, black setae on the parafrontalia and the upper half of parafacialia, vibrissa long, peristomal bristles and buccal hairs black, on the occiput yellowish hairs are detectable beside predominating black ones; facial ridge on the lower $\frac{2}{3}$ to $\frac{3}{4}$ with a row of strong black bristles and hairs. Antennae blackish, terminal margin of the second segment reddish, the third at least 3 times as long as the second, arista with long hairs on both sides. Palpi dark brown, slightly enlarged terminally.

Thorax dark blue, with a whitish pollinosity as in *P. majuscula*. Pro- and poststigma blackish. Chaetotaxy: *ac*=2+3, *dc*=2-3+3, *ia*=1+3, *ph*=3, *h*=3, *prs*=1, *n*=2, *sa*=3-4, *pa*=2, *sc*=5-6+1, *st*=2:1, one strong bristle each of *pst* and *pp*, accompanied by several hairs. Propleura haired or bare, prosternum and alar declivity haired. Wings with dark brownish base, remaining part hyaline or slightly tinged, veins black-brown, basicosta black, costal spine rudimentary, τ_{4+5} dorsally with a few setae at base, *m* bent up at a right angle, *R*₅ open, both squamae black brown, halter brown with yellow knob. Legs blackish, fore-tibia with a row of short *ad* and one long submedian *pv*; mid-tibia with 2 *pv* and one submedian *pd*, *ad* and *av*; hind-tibia with two longer *pd* and *ad* lying in a row of shorter ones, furthermore 1-2 *av* in the lower half.

Abdomen almost as long as broad, metallic dark blue, with a whitish pollinosity as in *P. majuscula* and like this species without median discals

on the 3rd and 4th tergites. Hypopygium (fig. 41) similar to that of *P. westermanni*.

Female. — No constant features known for separating it from *P. majuscula* and *P. insignis*.

Length : 10-14 mm.

Biology. — According to CUTHBERTSON, this species is larviparous and deposits one single larva at a time, apparently of the first stage. He dissected the female reproductive organs and found a large uterus of about 5 mm length which was abundantly supplied with tracheae. Several larvae removed from the uterus of gravid flies developed to the end of the third stage on human faeces. The duration was 8-9 days. However, the author could not detect whether the larvae were saprophagous or predatory on other maggots. The uterine larva and the mature one are figured in CUTHBERTSON's paper (1938).

Dept. of Research and Specialist Services, Salisbury : [Vumba Mts., Umtali distr., S. Rhodesia, XII.1934, III.1935 (4 ♂♂, 10 ♀♀, leg. A. CUTHBERTSON)].

[3. — *Pericallimya insignis* (CURRAN).]

(Fig. 42.)

Calliphora insignis CURRAN, American Mus. Nov., n° 985, 1938, p. 1.

This species is known only from the Cameroon Mts., at an altitude between 2.100 and 2.500 m. The type series, of which 2 ♂♂ and 2 ♀♀ are before me, was collected by myself at the «Mannsquelle», 2.300 m, 13.XI.1935. A further pair was sent to me by the Zool. Museum of Berlin. The locality-label bears the information, Buea, 2.100-2.500 m. This town is, however, situated at an altitude of about 1.000 m, whereas the given altitude of 2.100-2.500 m is already beyond the high forest. Most probably, this pair was collected near the same locality where I collected the type series.

P. insignis is similar to *P. majuscula* VILLENEUVE in every respect, except that the male frons is wider, measuring at the narrowest point $\frac{1}{12}$ - $\frac{1}{13}$ of eye-length, and that the hypopygium (fig. 42) is quite different, showing a great similarity to that of the Palaearctic *Calliphora* species. I could not find any separating features for the females of the two species.

[4. — *Pericallimya westermanni* (WIEDEMANN).]

(Fig. 43.)

Tachina westermanni WIEDEMANN, Zool. Mag., III, 1819, p. 23.

P. westermanni (WIEDEMANN) is closely related to *P. majuscula* VILLENEUVE, from which it differs in the shape of the hypopygium (fig. 43) and by the presence of median discal bristles on the abdomen. The male frons

varies at the narrowest point between $\frac{1}{11}$ and $\frac{1}{15}$ of the eye-length; the female frons at vertex is a little more than one third as wide as the eye is long. The abdominal chaetotaxy is different in both sexes. In the male, there is one pair of strong median discal bristles on the 3rd and on the 4th tergite, whereas the female shows them on the 4th tergite only. Fifth tergite in both sexes with several discal and marginal bristles, furthermore the 3rd tergite with 2-4 median and several lateral marginal bristles, and the 4th with a row of marginals. Otherwise, the species seems to coincide with *P. majuscula*.

Collection S. A. Institute for Med. Research, Johannesburg : Up to now, only records from Southern Africa are known where the species is restricted to the temperate rain forest and thick riverine bush. [Cape Province : Plettenberg Bay, V.1951 (1 ♀ leg. MUSPRATT)]; [Knysna, V.1951 and IV.1954 (3 ♀ ♀ leg. MUSPRATT)]; [Storm's River, 31.XII.1953 (1 ♂ leg. ZUMPT)]; [East London, 23.III.1924 (1 ♂ ♀, leg. MUNRO)]; [Pondoland, IV.1951 (1 ♀ leg. MUSPRATT)]; [Transvaal : Potchefstroom, 7.II.1953 (1 ♂ ♀ leg. PATERSON)]; [Magoeba's Kloof, IV.1953 (1 ♂ leg. PATERSON)]; [S. Rhodesia : Vumba Mts., III.1935 (1 ♂ leg. A. CUTHBERTSON)].

5. — *Pericallimya wittei* n. sp.

(Fig. 44.)

There is only one male before me which is not even in a good condition. But in spite of this I think a description is justified, because this species is well characterized by the shape of the hypopygium, and is also easily separable from all other *Pericallimya* species with a blackened costal area by its wide frons.

Male. — Eyes with only slightly enlarged upper facets; frons at the narrowest point about $\frac{1}{7}$ as wide as the eye is long, frontal stripe complete, at the tip of the ocellar triangle distinctly broader than one parafrontalium. Parafrontalia and -facialia whitish pollinose, ground-colour blackish for the greatest part, becoming reddish towards the vibrissarium. Antennal groove and antennae black, the 3rd segment more than 3 times as long as the second, arista with long hairs on both sides. Buccae and occiput black, with black hairs. Chaetotaxy of head consists of a pair of long *iv* and *oc* as well as about 12 *paf*. Parafrontalia with black setae which extend half way down the parafrontalia. Facial ridge on the lower two-thirds with bristles, vibrissa long and strong. Palpi black brown, moderately enlarged towards the tip.

Thorax metallic dark blue with a whitish pollinosity. Pro- and post-stigma black-brown. Chaetotaxy : *ac*=2+3, *dc*=2+3, *ia*=1+2, *ph*=3, *h*=3, *prs*=1, *n*=2, *sa*=3, *pa*=2, *sc*=4+1, *st*=1:1, but two long bristly hairs are visible under the foremost, one strong *pst* and *pp*, accompanied by several long hairs. Propleura bare in this specimen, prosternum and

alar declivity haired. Wings with the costal area deep brown including the cells *Co*, *St* and *R*₁, veins dark brown, basicosta black, costal spine short and weak, *r*₄₊₅ with a seta at the base, *m* with a rounded angle, *R*₅ open, squamae whitish, the lower without upright dorsal hairs, halter yellow brown and with a light yellow knob. Legs blackish, only the hind pair present. Abdomen coloured and dusted like the thorax, a pair of median discals on the 3rd and 4th segments, furthermore the 3rd with a pair of median marginal and several lateral bristles, the 4th with a row of marginal bristles and the 5th segment with several discal and marginal bristles. Hypopygium (fig. 44) with short cerci and club-shaped paralobi.

Length : 5,5 mm.

Mission G. F. DE WITTE : Vers Rweru (volc. Mikeno), 2,400 m, 26-27.VII.1934 (1 ♂ holotype).

[6. — *Pericallimya perlata* (WALKER).]

(Fig. 45.)

Musca perlata WALKER, Trans. Ent. Soc. London, N. S., V, 1860, p. 314.

This species is probably very rare. It was described from Natal, but only single specimens have been found since then in several localities of the temperate rain forest from the Cape Coast at Tzitzikama up to Zululand. It is very interesting to state that 3 male specimens from the Congo area prove that *P. perlata* is distributed much further North where it is linked with two other species, *P. versicolor* VILLENEUVE and *P. marginalis* VILLENEUVE. These two species are, according to the badly preserved material before me, only separable from *P. perlata* by the shape of the hypopygium.

There are 1 ♂ and 4 ♀♀ from South Africa before me. The male has the frons at the narrowest point about $\frac{1}{14}$ of eye-length (2.3 times the width of the anterior ocellus). The frontal stripe is therefore only developed in the lower half. Head otherwise as in *P. wittei*, but the occiput shows predominantly whitish hairs. Thorax with respect to colouring and chaetotaxy as in *P. wittei*, propleura haired or bare, *st*=1:1, sometimes 2:1, wings with the costal area more broadly and deeply darkened, including most of the cell *R*₃. Legs black, fore-tibia with a row of *ad* of which four are longer than the remaining ones, furthermore one long submedian *pv*; mid-tibia with 2 *pv* and one submedian *ad*, *av* and *pd*; hind-tibia with 2 *ad* and 2 *pd* as well as 2 *av* in the lower half. Abdomen as in *P. wittei*, but hypopygium (fig. 45) with slender cerci and paralobi.

The females have the frons at the vertex about $\frac{1}{3}$ of eye-length. Chaetotaxy of head complete. Colouring of thorax and abdomen metallic blue to bluish-green, 3rd and 4th abdominal segments each with a pair of median discals as in the male sex.

In the 3 males from the Congo area, the frons at the narrowest point varies from $\frac{1}{12}$ - $\frac{1}{14}$ of eye-length. In the average, they are longer (9-11 mm)

than the South African specimens (7-8 mm) and the hyaline part of the wing is a little more intensely tinged.

Collection Musée du Congo : [Bambesa, XII.1933 (1 ♂ leg. H. J. BRÉDO)]; [Mundjungani, IX.1927 (1 ♂ leg. A. COLLART)]; [Bangala : Dioho. XI.1927 (1 ♂ leg. COLLART)].

Collection S. A. Institute for Med. Research, Johannesburg : [Transvaal : Waterval Onder, 28.II.1952 (1 ♂ leg. PATERSON)]; [Natal : Hluhluwe, Zululand. 18.I.195? (1 ♀ leg. ZUMPT)]; [N'Kwaleni, Zululand, 2.III.1935 (1 ♀ leg. ROBINSON)]; [Cape Province : Pondoland, Transkei. IV.1951 (1 ♂ leg. MUSPRATT)]; [Tzitzikama Forest, XII.1951 (1 ♀ leg. MUSPRATT)].

[7. — *Pericallimya versicolor* VILLENEUVE.]

(Fig. 46.)

Pericallimya versicolor VILLENEUVE, Bull. Soc. ent. France, 1915, p. 269; CURRAN, Div. Ent. Mem., 5.1926, p. 47.

From the Zoological Museum in Vienna, I received a series of 5 typical male specimens from the «Urwald Moera» in Tanganyika, from which the drawing of the hypopygium has been made. Most probably VILLENEUVE did not designate a holotype, so I have selected the dissected specimen as lectotype. VILLENEUVE mentions in the description further specimens from Uganda and from S. Nigeria. It is very doubtful whether these, at least from the last locality, really belong to the same species.

All specimens before me are in a bad condition and more or less shrunken, evidently having been killed in alcohol. The hypopygium (fig. 46) is similar to that of *P. perlata* but the paralobi are more slender. I am not able to detect further separating features.

Length : 7-9 mm.

Collection Naturhist. Museum Wien : [Tanganyika : Urwald Moera, 1910 (5 ♂♂ leg. GRAUER)].

[8. — *Pericallimya marginalis* VILLENEUVE.]

(Fig. 47.)

Pericallimya marginalis VILLENEUVE, Bull. Soc. ent. France, 1915, p. 268.

VILLENEUVE based this species on 3 ♂♂ from «N. W. Tanganyika» and «Urwald hinter dem Bandberg d. N.-W. Tanganika-See, 1.800-2.000 m». From the Zoological Museum of Vienna, I received a ♂ from each locality, the first being selected as lectotype. A third male from Stanleyville was sent to me by Dr. CURRAN, New York. The genitalia of all three males have been dissected and proved to be identical (fig. 47). They are very similar to those of *P. perlata* and *P. versicolor* but, nevertheless, well characterized. However, the number of specimens of all three species is very small and

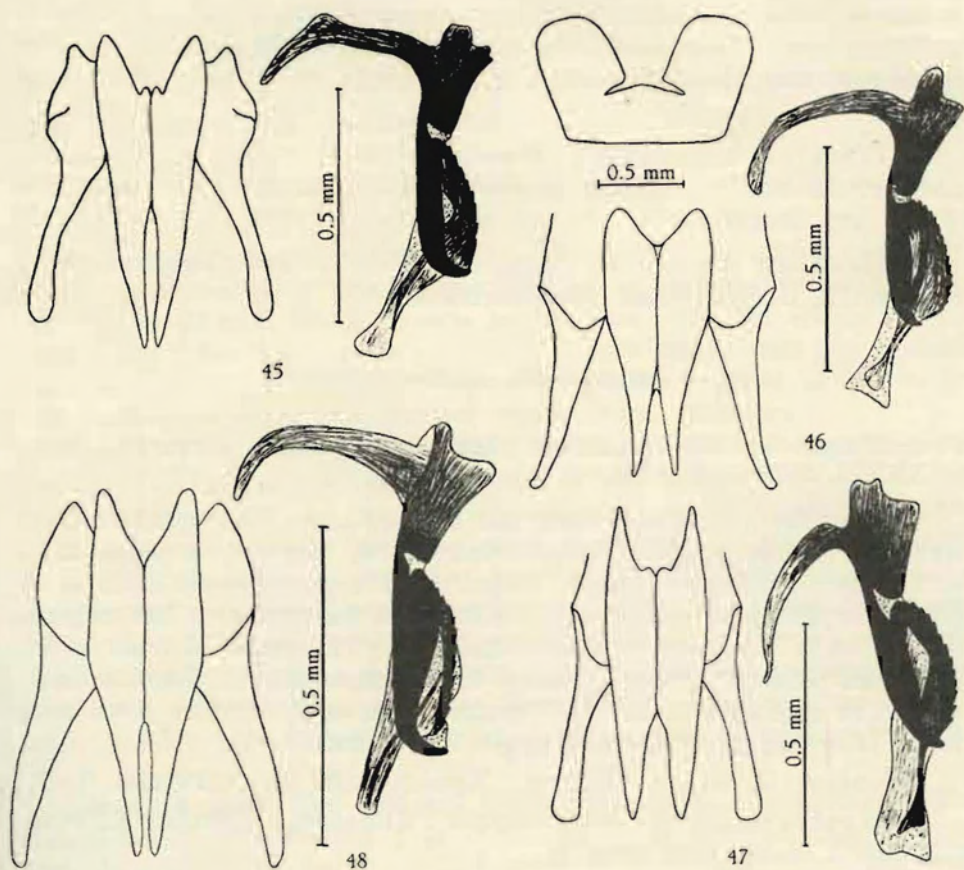


FIG. 45. — *Pericallimya perlata* (WALKER). Cerci with paralobi, phallosome. Specimen from Waterval Onder, Transvaal.

FIG. 46. — *Pericallimya versicolor* VILLENEUVE. Cerci with paralobi, 5th. sternite in frontal view, phallosome laterally. Specimen from Tanganyika.

FIG. 47. — *Pericallimya marginalis* VILLENEUVE. Cerci with paralobi, phallosome. Specimen from N.W. Tanganyika.

FIG. 48. — *Pericallimya basilewskyi* ZUMPT. Cerci with paralobi, phallosome (after ZUMPT). Specimen from Ruanda (holotype).

perhaps in future transitional specimens may be found proving that we are only dealing with one variable species.

The two ♂♂ from the typical series are shrunken as are those of *P. versicolor*. The male from the Congo is in a good condition and has the frons at the narrowest point about $\frac{1}{15}$ of eye-length. The 3rd antennal

segment is $3\frac{1}{2}$ times as long as the second, but in the lectotype, it only measures 3 times the second. The propleuron shows a few odd setae in all 3 specimens. Thoracic squama relatively dark brown in the Tanganyika specimens (body blue) but white in that from Stanleyville (body dark green).

Collection Naturhist. Museum Wien : [N. W. Tanganika and Urwald hint. d. Bandbg. d. N.-W. Tanganika-See, 1.800-2.000, 1910 (2 ♂♂ leg. GRAUER)].

Collection American Museum, New York : [Belgian Congo : Stanleyville, III.1915, taken from *Bembex* (1 ♂)].

9. — *Pericallimya basilewskyi* ZUMPT.

(Fig. 48.)

Pericallimya basilewskyi ZUMPT, Ann. Mus. Congo Tervuren, Zool., XXXVI, 1955, p. 320, fig. 1.

This species was recently described by me from a male specimen from Ruanda. In the meantime, I have received two more males which show no important differences in the shape of the hypopygium (fig. 48) or in other morphological features. A feature not mentioned in the original description is the more or less clouded *r-m*. The width of frons at the narrowest point is $\frac{1}{10}$ and $\frac{1}{11}$ of eye-length respectively in the two above-mentioned specimens so that the measurements are now to be given as $\frac{1}{9}$ to $\frac{1}{11}$ of eye-length. The body length is 6-7 mm.

Mission G. F. DE WITTE : Ngesho, 2.000 m, 3-6.IV.1934 (1 ♂).

Collection Musée du Congo : [Ruanda : Biumba, 2.300 m, 6.II.1953 (1 ♂ leg. BASILEWSKY)].

Collection S. A. Institute for Med. Research, Johannesburg : [Songea, Tanganyika Terr., 15.000-17.000 m (1 ♂)].

[10. — *Pericallimya curvinerva* VILLENEUVE.]

(Fig. 49.)

Pericallimya curvinerva VILLENEUVE, Bull. Soc. ent. France, 1915, p. 268; CURRAN, Div. Ent. Mem., 5, 1926, p. 47.

This species is known only from one badly preserved and partly shrunken specimen of which a complete description cannot be given. It is, however, well characterized by the shape of the hypopygium (fig. 49), and in this respect not to be confused with any other *Pericallimya* species. The frons is narrow, in the middle not broader than twice the width of the anterior ocellus. Antennae black-brown, the third segment about twice as long as the second. Chaetotaxy of the thorax is not clearly detectable because of the shrunken state of the specimen, wings slightly tinged, but without

demarcated, darker costal area. Abdominal tergites III and IV each with a pair of median discal bristles.

Length : 6 mm.

Collection Naturhist. Museum Wien : [Western Tanganyika, 1910 (holotype ♂, leg. GRAUER)].

11. — *Pericallimya io* n. sp.

(Fig. 50.)

This new species is easily recognizable by the hypopygium as well as by the outer features. The hypopygium (fig. 50) is characterized by broad paralobi beset with extremely long hairs. Externally, the species is separable from the other known species by a dark brown, but bare thoracic squama, by hyaline wings, and by a pair of median discal bristles on the 4th abdominal tergite, whereas they are wanting on the 3rd.

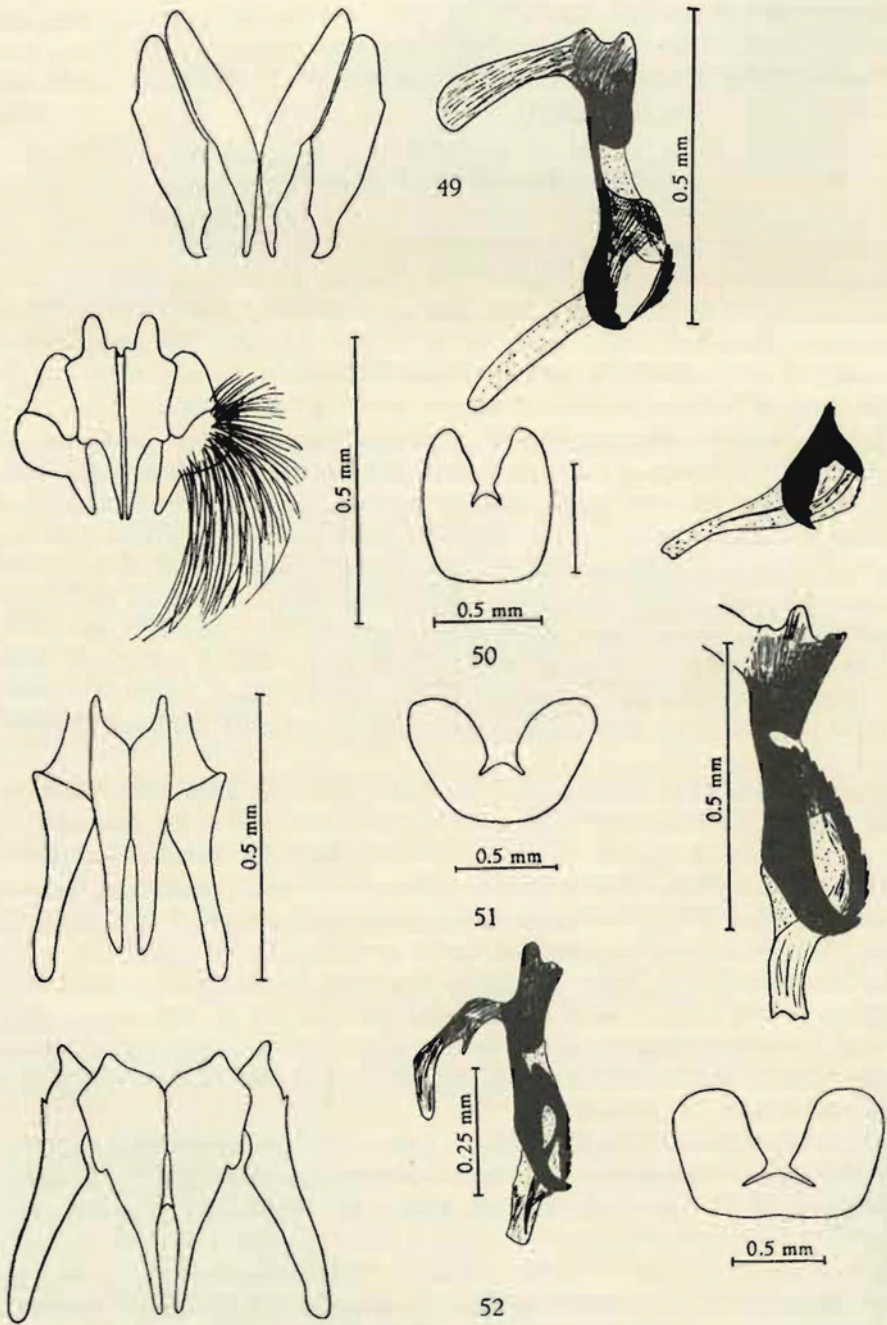
Male. — Frons narrow, breadth in the middle not more than twice the diameter of the anterior ocellus; frontal stripe line-shaped in the median part, triangular at the base, dark to reddish brown; parafrota and -facialia black, towards the vibrissarium more reddish, whitish pollinose, *iv*, *ev* and about 10 *paf* developed, parafrota and upper half of parafacialia with odd black setae, vibrissa long, above it a second fairly long seta and several shorter ones on the lower third of the facial ridge, peristomal bristles and buccal hairs black, bucca black and whitish pollinose, height one third of eye-length. Antennae black brown, third segment about 3 times as long as the second. Palpi black brown, slightly enlarged terminally.

Thorax metallic dark blue and whitish pollinose. Pro- and poststigma black brown. Chaetotaxy : *ac*=2+3, *dc*=2+3, *ia*=0+2, *ph*=3, *h*=3, *prs*=1, *n*=2, *sa*=3, *pa*=2, *sc*=3+1, *st*=1:1, but the foremost lower one is represented by a bristly hair, one stronger and one weaker bristle each of *pst* and *pp*. Propleura bare, prosternum and alar declivity with fine hairs. Wings without demarcated costal area, totally hyaline with a very slight brownish tinge, veins including basicosta black brown, costal spine small, r_{4+5} with a few setae at the base, *m* bent up in an obtuse angle, *R*₅ open, thoracic squama black brown, without dorsal hairs, upper squama lighter brown, halter yellow. Legs blackish, with the usual chaetotaxy as in *P. majuscula* VILLENEUVE.

Abdomen coloured like the thorax, with a pollinosity forming a pattern as in *Calliphora*, changing with the incidence of light. Tergites III and IV with marginal bristles, only the 4th with a pair of discals too.

Length : 5 mm.

Mission G. F. DE WITTE : Kibati, 1,900 m, 10-12.I.1934 (1 ♂ holotype); Shamuheru (volc. Nyamuragira), 1,843 m, 15.VI.1935 (1 ♂ paratype). The holotype has been returned, paratype in the collection of the S. African Institute for Med. Research, Johannesburg.



FIGS. 49-52.

12. — *Pericallimya immaculata* n. sp.

(Fig. 51.)

Similar to *P. io* and separable from it by having the lower half of the facial ridge beset with bristles, by the presence of the presutural *ia*, and by the absence of the median pair of discal bristles on tergite IV. There are, therefore, only dorsal discals on the last tergite. Furthermore, $st=1:1$, the scutellum shows 4 marginal bristles, the costal spine is wanting or weakly developed, and *m* has the terminal part bent up at a right angle. Hypopygium (fig. 51) with the normal, moderately long hairs and quite different from that of *P. io* with respect to the shape, but similar to the two following species. In the female, the frons at the vertex measures about $\frac{3}{8}$ of eye-length, head bristles complete.

Length : 4.5-8 mm.

Mission G. F. DE WITTE :

Holotype : 1 ♂ from Gitebe (volc. Nyamuragira), 2,324 m, 14-26.VI.1935.

Paratypes : Gitebe, 2,324 m, 14-26.VI.1935 (2 ♀ ♀); Mayumbu (volc. Nyamuragira), 2,100 m, 14-26.VI.1935 (1 ♀); Shamuheru (volc. Nyamuragira), 1,843 m, 15.VI.1935 (1 ♂); Nyasheke (volc. Nyamuragira), 1,820 m, 1-26.VI.1935 (1 ♀). One paratypical pair retained for the collection of the S. Afric. Institute for Med. Research, Johannesburg.

Collection Musée du Congo :

Paratype : 1 ♀ from [Rwankwi, nord Lac Kivu, IV.1948 (leg. J. V. LEROY)].

Collection British Museum : [W. Ruwenzori, Uganda, 8-9,000 ft, VI.1946 (1 ♂ leg. VAN SOMEREN)].

13. — *Pericallimya bequaerti* CURRAN.

(Fig. 52.)

Pericallimya bequaerti CURRAN, Amer. Mus. Nov., 506, 1931, p. 4.

This species was based on 1 ♂ from Bebungu in Uganda and 2 ♀ ♀ from Burunga in the Belgian Congo. The male (holotype) is characterized

EXPLANATION OF FIGURES 49 TO 52.

FIG. 49. — *Pericallimya curvinerva* VILLENEUVE. Cerci with paralobi, phallosome. Specimen from W. Tanganyika (holotype).

FIG. 50. — *Pericallimya io* n. sp. Cerci with paralobi and 5th. sternite in frontal view, tip of phallosome laterally. Specimen from Shamuheru, P.N.A. (paratype).

FIG. 51. — *Pericallimya immaculata* n. sp.. Cerci with paralobi, 5th. sternite and phallosome. Specimen from Mayumbu, P.N.A. (paratype).

FIG. 52. — *Pericallimya bequaerti* CURRAN. Cerci with paralobi, phallosome and 5th. sternite. Specimen from Bebungu, Uganda (holotype).

by a large circular black spot on *r-m*, whereas the female has *r-m* only narrowly darkened, the vein forming a blackish line. Through the kindness of Dr. CURRAN, I have been able to study the holotype and one of the two females. Additional material from Central Africa shows that we are dealing with two species characterized by differently shaped hypopygia (figs. 52-53).

The features which separate both sexes of *P. bequaerti* from the other *Pericallimya* species are the wing-pattern in combination with a dark-brown, but dorsally bare, thoracic squama, and the wanting median discals on the abdominal tergites III and IV. Frons in ♂ at the narrowest point 2-3 times as wide as the anterior ocellus ($\frac{1}{12}$ - $\frac{1}{15}$ of eye-length), in ♀ at vertex $\frac{2}{5}$ of eye-length. Head black, sometimes frontal stripe and vibrissarium more or less reddish, 3rd antennal segment about 2 $\frac{1}{2}$ times as long as the second. Buccae with black hairs, its height $\frac{1}{4}$ - $\frac{1}{3}$ of eye-length. Thoracic chaetotaxy normal, *ac*=2+3, *dc*=2-3+3, *ia*=1+2, *ph*=3, *h* mostly 4, *sc*=4+1, *st*=1-2:1. Wings without costal spine, costal area hyaline, but base brownish and *r-m* covered by a circular, large black spot; *m* bent up almost at a right angle. Abdomen metallic dark blue and whitish pollinose like the thorax, IIIrd and IVth tergites with marginal bristles only.

Length : 5-7 mm.

Mission G. F. DE WITTE : Rutshuru (riv. Rodahira), 1.200 m, 1.VII.1935 (1 ♂); Mont Tamira (près lac N'Gando), 2.600 m, 11.III.1935 (2 ♀♀).

Collection American Museum New York : [Bebungi, Uganda, 4.IV.1937 (1 ♂ leg. BEQUAERT, holotype)].

14. — *Pericallimya similis* n. sp.

(Fig. 53.)

This species is extremely similar to *P. bequaerti*, which explains the fact that CURRAN mixed them. The base of the wing, however, is not strikingly darkened, *r-m* is only narrowly blackish and the costal spine is well developed. The hypopygium (fig. 53) of the only male before me has the tips of the cerci weakly denticulated.

Length : 5-6 mm.

Mission G. F. DE WITTE : Holotype, 1 ♂ from Ruhengeri (sources Kirii), 1.800-1.825 m, 2.X.1934.

Collection Naturhist. Museum Wien : [Tanganyika Terr. : Lupembe Bg., wsw. v. Songea, 1.800-2.000 m, 1-10.II.1936 (3 ♀♀ leg. ZERNY)].

Collection British Museum : [Uganda : W. Ruwenzori, 8-9.000 ft, VII.1946 (1 ♀ leg. VAN SOMEREN)].

Collection American Museum, New York : [Burunga, Belg. Congo (1 ♀ leg. BEQUAERT, paratype of *P. bequaerti* CURRAN)].

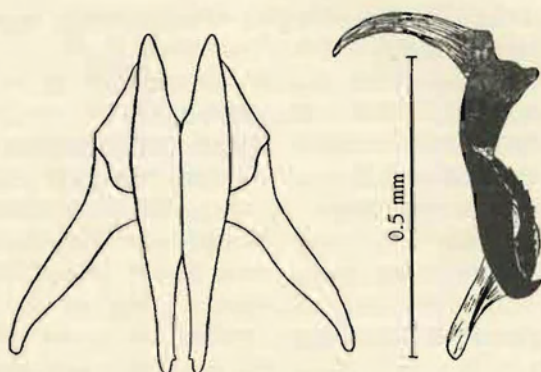


FIG. 53. — *Pericallimya similis* n. sp.
Cerci with paralobi, phallosome.
Specimen from Ruhengeri, Ruanda (holotype).

Genus **ZERNYIELLA** nov.

Type species : *Z. dubia* n. sp. from the Tanganyika Terr.

This so far monotypic genus is represented by an easily recognizable species. Its generic features may be taken from the species description. The bare suprasquamal ridge and supraspiracular convexity, the haired prosternum and alar declivity in conjunction with the colouring of the body show that this genus is evidently most closely related to *Pericallimya*.

Nothing is known about the biology.

[1. — **Zernyiella dubia** n. sp.]

(Fig. 54.)

In general appearance, this fly could be taken for an *Orthellia* with a yellow abdomen.

Male. — Eyes with almost equal facets, frons at the narrowest point measuring $\frac{1}{9}$ - $\frac{1}{13}$ of eye-length, widened towards the vertex and the antennal groove. Parafrontalia and -facialia black or partly reddish, densely silvery dusted, frontal stripe black-brown to reddish, complete, at the tip of the ocellar triangle almost as wide as one parafrontalium. Vertex with a pair of long and strong *iv*, *ev* developed as a pair of long hairs, ocellar triangle with a pair of proclinate *oc* and several hairs, 12-14 pairs of strong *paf*, *f* and *fo* wanting, parafrontalia and the upper half of parafacialia with relatively long setae. Antennae black-brown, third segment a little more than twice as long as the second, arista with long hairs on both sides almost up to the tip, antennal groove without carina. Vibrissarium reddish brown, facial ridge with a row of long bristles on the lower third, buccae and occiput black, with white pollinosity, peristomal bristles and buccal hairs

black, height of bucca $\frac{1}{4}$ of eye-length. Palpi brown, slightly curved and a little widened terminally.

Thorax metallic dark blue, with slight whitish pollinosity as in *Pericallimya*. Chaetotaxy : $ac=2+3$, $dc=2-3+3$, $ia=0+2$, $ph=3$, $h=3$, $prs=1$, $n=2$, $sa=3$, $pa=2$, scutellum with 3 long and thick marginals and several bristly hairs of unfixed number on the disc, one long pp and pst , which are accompanied by several hairs, $st=1:1$. Propleuron bare, prosternum and alar declivity with long hairs. Wings with a slight brownish tinge, but without demarcated costal area, veins brown, costal spine distinct, r_{4+5} dorsally at base with a few setae, R_5 open, m bent up in a rounded obtuse angle, thoracic squama light yellow, dorsally bare, halter yellow. Legs black brown; fore-tibia with a row of ad and one long submedian av ; mid-tibia with 2 pv and a submedian pd , av and ad ; hind-tibia with 2 pd , 2 longer and 2 shorter ad as well as with 2 av in the lower half.

Abdomen unicoloured yellow-orange, sternites with dense and long hairs, tergite I+II laterally with marginal bristles and bristly, densely placed discal hairs, the dorsal part with short hairs only, tergite III with a pair of median discals and marginals as well as with a few lateral marginals, 4th tergite with a pair of median discals (in one paratype with 2 pairs of median discals) and a continuous row of marginals, last tergite with bristles all over the surface. Hypopygium (fig. 54) with slender cerci and truncate paralobi.

Length : 8.9 mm.

Female. — Not known.

Collection Naturhist. Museum Wien : [Ugano, Matengo Hochl. wsw. Songea, Tanganyika Terr., 15-1.700 m, 11-20.III.1936 (3 ♂♂ leg. ZERNY)].

Genus **CALLIPHORA** ROBINEAU-DESVOIDY.

Calliphora ROBINEAU-DESVOIDY, Ess. Myod., II, 1830, p. 433; MALLOCH, Ann. Mag. N. H., (9), XVI, 1925, p. 96; SÉGUY, Encycl. Ent., A IX, 1928, p. 135; MALLOCH, Ann. Mag. N. H., (10), III, 1929, p. 274; SÉGUY, Encycl. Ent. B. Dipt., VIII, 1935, p. 144; HARDY, Proc. Linn. Soc. N. S. Wales, LXII, 1932, p. 17; TOWNSEND, Man. Myiol., V, 1937, p. 141; S. WHITE, AUBERTIN and SMART, Fa. Brit. India, Dipt., VI, 1940, p. 32; HARDY, Proc. R. Soc. Queensland, LVII, 1947, p. 53; HALL, Blowflies, N. America, 1948, p. 292. Type species : *M. vomitoria* LINNÉ from Sweden.

Mya RONDANI, N. Ann. Sci. Bologna, (3), II, 1851, p. 175, et Dipt. Ital., I, 1856, p. 90; TOWNSEND, Mann. Myiol., V, 1937, p. 141.

Type species : *M. vomitoria* LINNÉ from Sweden.

Somomyia RONDANI, Dipt. Ital., IV, 1861, p. 9; TOWNSEND, Man. Myiol., V, 1937, p. 141 (nov. nom. pro *Mya* RONDANI).

Type species : *M. vomitoria* LINNÉ from Sweden.

A fair number of species of the genus is distributed over the Holarctic region, but, as far as it is known, only one occurs in the Ethiopian region.

This species, *C. croceipalpis* JAENNICKE, is a typical *Calliphora* and very closely related to the type species. But there are, in the Northern hemisphere as well as in the Australasian region, further groups of species which are sometimes dealt with as distinct genera, sometimes as subgenera or mere groups (cf. TOWNSEND, 1937; HARDY, 1937 and 1947; H322, 1948).

The question of a new classification of the Holarctic *Calliphorinae* will be raised in a forthcoming paper («*Calliphorinae*» in LINDNER, *Fliegen der palaearktischen Region*). Those of the Australasian region have recently been dealt with by HARDY.

1. — ***Calliphora croceipalpis* JAENNICKE.**

(Fig. 55.)

Calliphora croceipalpis JAENNICKE, Abh. Senckenberg, Ges., VI, 1867, p. 376 : Porter, S. Afr. J. Sci., XXVII, 1924, p. 376, fig. 6; MALLOCH, Ann. Mag. N. H., (9), XVII, 1926, p. 509; CUTHBERTSON, Tr. Rhod. Sci. Ass., XXXVI, 1938, p. 122.

Calliphora capensis BRAUER & BERGENSTAMM, Denkschr, Akad, Wien, LVIII, 1891, p. 442.

Calliphora parasacra SPEISER, Kilimanjaro-Meru Exp., II, 1910, Abt. 10, p. 155; PATTON, Phillipp. J. Sciences, XXVII, 1925, p. 187.

This widespread fly is easily recognizable by its generic features and not to be confused with any other of the known *Calliphorids* in the Ethiopian region. Some of the bigger *Pericallimya* species are similar to *C. croceipalpis* in general appearance but they have a red-tipped abdomen.

Male. — Eyes with the upper facets only slightly enlarged, frons at the narrowest point measuring $\frac{1}{9}$ - $\frac{1}{10}$ of eye-length. Frontal stripe black to reddish brown, triangular, the tip reaching the ocellar triangle; parafrontalia black and silvery dusted, besides the *paf* densely beset with black setae, parafacialia black too or more or less reddish towards the vibrissarium, silvery pollinose and in the upper half with black setae like the parafrontalia. Ocellar triangle with hairs and one pair of long *oc*, *iv* well developed, *ev*, *f* and *fo* wanting. Antennal groove without carina, third antennal segment about $3\frac{1}{2}$ times as long as the second, black, more or less reddish at the base, basal segments predominantly black, arista with long hairs on both sides, last third bare. Facial ridge with the basal two thirds bristled, vibrissarium reddish, vibrissa long, peristomal bristles, hairs on buccae and occiput black on black ground, height of bucca about one third of eye-length. Palpi bright orange, terminally enlarged.

Thorax blackish blue, with the pollinosity typical of *Calliphora*. Prostigma bright orange, poststigma black-brown. Chaetotaxy : *ac*=2-3+3, *dc*=3+3, *ia*=1+1-2, *ph*=3, *h*=4, *prs*=1, *n*=2, *sa*=3-4, *sc*=4-5+1, *st*=2:1, one strong *pp* and *pst* each, accompanied by several hairs. Propleura, prosternum and alar declivity haired. Wings hyaline, at the base more or less brownish tinged, veins dark brown, basicosta brown, epaulette black, costal spine wanting, r_{1+5} with a few setae at the base, *m* with a pronounced

right angle, R_5 open, both squamae black brown, the lower with upstanding long hairs on almost the whole disc, halter dark brown with a yellow tip. Legs black, fore-tibia with a row of *ad* and one long submedian *pv*, mid-tibia with 2-4 *ad*, 1-2 *pd*, 2 *pv* and 1 *av*; hind-tibia with a row of *ad* of which two are strikingly longer, 2-4 longer *pd* as well as 2 submedian *av*.

Abdomen metallic dark blue, with white pollinosity forming a pattern of large spots changing with the light incidence. Tergite III with lateral marginals, tergite IV with lateral and dorsal marginals, last tergite densely beset with discal and marginal bristles. Hypopygium (fig. 55) similar to that of the Holarctic *C. vicina* ROBINEAU-DESVOIDY (= *erythrocephala* auct.).

Female. — Frons at vertex almost half as wide as the eye is long, chaetotaxy of head complete, with *ev*, *f* and 2 *fo*.

Length : 7-12 mm.

Biology. — CUTHBERTSON (1938) says that the female is larviparous. This is wrong. We have reared *C. croceipalpis* several times on decomposing meat and can state that it is oviparous like the Holarctic *Calliphora* species. The stigmal plates of the 3rd instar have been figured by PORTER (1924) who recorded the species as an occasional cause of wound and enteric myiasis. In Johannesburg, this species occurs during the colder months and was found developing in carcasses from June until September (ZUMPT and PATTERSON, 1952).

Mission G. F. DE WITTE : Karisimbi, vers sud, riv. Bikwi, 3.100 m, 28.II.1935 (1 ♂ ♀); Tshamugussa (Bweza), 2.250 m, 10.VIII.1934 (1 ♀); volc. Sabinyo, vallée Rwebeya, 3.000 m, 26.IX.1934 (15 ♂♂, 9 ♀♀); Ninda, 2.150 m, 26.IX.1934 (8 ♂♂, 10 ♀♀); Kibga (volc. Visoke), 2.400 m, 11.II.1935 (1 ♂); mont Tamira (près lac N'Gando), 2.600 m, 11.III.1936 (1 ♀).

Collection Musée du Congo : P. N. A. : gite Nyiragongo, 2.300 m, 1933 (1 ♂ ♀ leg. DE WULF); Kivu : Mutura, 15.III.1923 (1 ♂ leg. VAN SACEGHEM).

Collection American Museum, New York : [Mt. Mlanje, Nyasaland (1 ♂)]; [Addis Abeba, Abyssinia, VII.1926 (1 ♀)].

Staatl. Museum f. Naturkunde, Stuttgart : [Kibo West, Tanganyika, 2.800 m, IV.1952 (2 ♀♀ leg. E. LINDNER)].

Collection S. A. Institute for Med. Research, Johannesburg : A great deal of material is recorded in the card-register or present in the collection from the Cape Province, Basutoland, Orange Free State, Transvaal, Natal and S. Rhodesia.

C. croceipalpis ranges from the Cape over the higher altitudes of East and Central Africa up to Abyssinia, but most probably it is not present in the Western parts of Africa.

Genus **OCHROMELINDA** VILLENEUVE.

Ochromelinda VILLENEUVE, Bull. Soc. ent. France, 1915, p. 295; TOWNSEND, Man. Myiol., V, 1937, p. 158.

Type species : *Ochromelinda thoracica* VILLENEUVE from Tanganyika.

This genus is closely related to *Adichosina* and could perhaps be united with it. In general appearance, however, it is characterized by a slender body of yellow and blackish colouring and is easily separable from the species of *Adichosina*, which have the entire body or at least the thorax metallic blue or green (*Adichonisa novella* VILLENEUVE from Nyasaland, Bull. Ann. Soc. ent. Belge, 74, 1934, p. 185, which I have not seen, may belong to *Ochromelinda*). Furthermore, the presutural *ac* are wanting or only the median pair may be present. The fact that the phallosome is unusually heavily sclerotized (cf. fig. 56) made me decide to keep *Ochromelinda* separate from *Adichosina*.

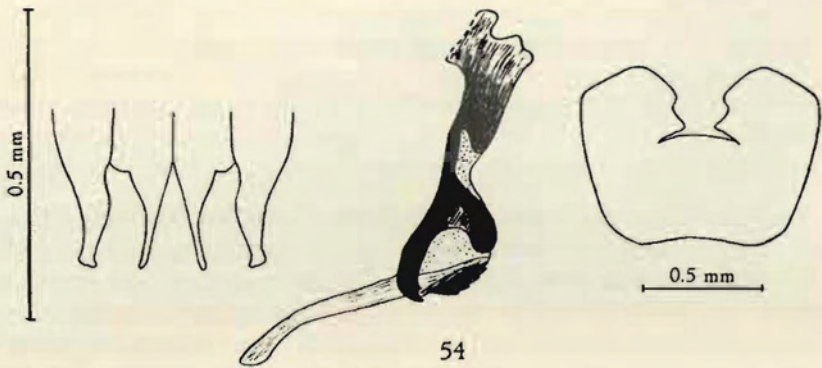
Only very few specimens of *Ochromelinda* as well as of *Adichosina* are known, and it will have to be decided in the future whether they really represent two distinct units or not.

Head in male with the eyes closely approximated, width of frons apparently not exceeding twice the diameter of the anterior ocellus; upper facets hardly enlarged, bare; *iv* always, *ev* sometimes weakly developed, *f* and *fo* only present in the female sex. Parafacialia in the upper part with a few odd setae which are difficult to see. Antennal groove without carina.

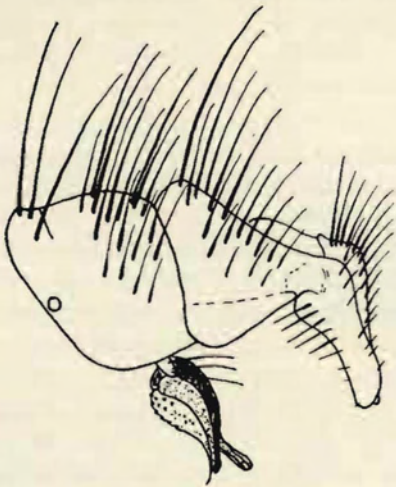
Thorax with *ac*=0-1+1, *dc*=2+3, *ia*=1+3, *ph*=1-3 (outer present or wanting), *h*=2-3, *prs*=1, *n*=2, *sa*=3, *pa*=2, *sc*=3-4+1, *pst* and *pp* developed, *st*=2:1. Propleuron and supraspiracular convexity bare, but prosternum as well as the alar declivity sometimes with a few odd hairs. Suprasquamal ridge without tufts of hairs. Wing with the subcostal sclerite bare, τ_1 not setulose, R_5 open, thoracic squama broad, dorsally bare. Legs without outstanding features.

Abdomen slender, structure as in *Pericallimya*. Tergites with lateral discal and marginal bristles of outstanding length, median discs present on tergites IV and V, sometimes on III too. Structure of hypopygium principally as in *Pericallimya*, but vesicae heavily sclerotized and hardly separable from the other terminal parts of the phallosome.

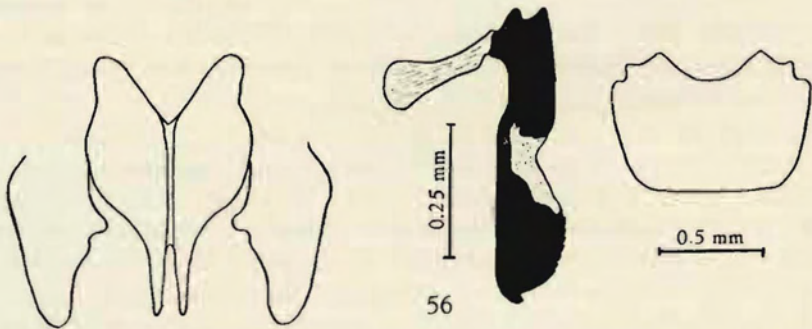
Only two species are known which inhabit the Eastern and Central parts of the Ethiopian region down to the mountainous districts of S. Rhodesia.



54



55



56

FIG. 54. — *Zernyiella dubia* n. gen., n. sp. Cerci with paralobi and 5th. sternite in frontal view, phallosome laterally. Specimen from Ugano, Tanganyika (paratype).

FIG. 55. — *Calliphora croceipalpis* JAENNICKE. Hypopygium laterally, cerci with paralobi in frontal view. Specimen from Johannesburg, Transvaal.

FIG. 56. — *Ochrometinda thoracica* VILLENEUVE. Cerci with paralobi, phallosome and 5th. sternite. Specimen from P.N.A.

KEY TO THE SPECIES.

- 1 (2) One pair of presutural *ac* and outer *ph* present. Thorax and abdomen yellow-brown, with a variable black pattern.

Frons in ♂ at the narrowest point not more than twice as wide as the anterior ocellus, in ♀ at vertex about $\frac{1}{3}$ of eye-length. 8-9 mm. — Belg. Congo, Tanganyika, S. Rhodesia

1. *O. thoracica* VILLENEUVE.

- 2 (1) Presutural *ac* as well as outer *ph* wanting. Thorax black, with white pollinosity forming an *Anthomyia*-like pattern.

Otherwise as in the foregoing species. 7 mm. — Abyssinia

2. *O. abyssinica* n. sp.

1. — *Ochromelinda thoracica* VILLENEUVE.

(Fig. 56.)

Ochromelinda thoracica VILLENEUVE, Bull. Soc. ent. France, 1915, p. 296.

Ochromelinda vittigera VILLENEUVE, Bull. Soc. ent. France, 1915, p. 297 (syn. nov.).

An evidently rare fly, which is very variable with respect to the colouring but well characterized by the structure of the hypopygium (fig. 56).

Male. — Frons at the narrowest point not more than twice the diameter of the anterior ocellus ($\frac{1}{13}$ - $\frac{1}{15}$ of eye-length), widened towards the vertex and the antennal groove. Parafrontalia black, dusted with white, touching at the tip of the ocellar triangle, frontal stripe dark to reddish brown; parafacialia more or less reddish towards the vibrissarium, whitish dusted like the parafrontalia; buccae and occiput also black with white pollinosity, the former measuring only $\frac{1}{4}$ the length of the eye. Vertex with *iv* strongly developed and in two ♂♂ with a hair-like *ev* too, which, however, is not developed in the 3rd male before me; a pair of proclinate *oc* behind which a second but weaker pair is developed, *f* and *fo* wanting, 6 stronger pairs of *pa**f* and several hair-like ones extending from the tip of the ocellar-triangle to the antennal base, parafrontalia and basal part of parafacialia with a few odd blackish setae which are only detectable at high magnification. Facial ridge with a second, slightly shorter vibrissa above the long one and a few thin and short hairs, which are restricted to the basal part of the ridge; peristome with black bristles, buccae with black hairs, occiput with black and yellowish hairs. Antennal groove without carina, antennae predominantly black-brown, third segment about twice as long as the second, arista with long hairs on both sides, last third bare. Palpi dark brown, very slender and hardly enlarged terminally.

Thorax totally black-brown, only pro- and poststigma yellow, or yellow brown with the mesonotum and pleurae darkened to a greater or lesser extent. Chaetotaxy : *ac*=1+1 (the middle presutural being present),

$dc=2+3$, $ia=1+3$, $ph=2-3$, but outer one present, $h=2-3$ (one weak), $prs=1$, $n=2$, $sa=3$, $pa=2$, $sc=3-4+1$, one long pst and pp , accompanied by stouter hairs, $st=2:1$. Propleura and prosternum bare, alar declivity bare too or only with a few odd setae. Wings partly or totally brownish tinged, alar and thoracic squamae with the same tinge, bare on the disc, halter yellow. Veins brown, costal spine distinct, r_1 bare, r_{4+5} with a few setae at the base only, R_s open, r_{4+5} bent downwards, m bent up terminally like a flat «s». Legs yellow brown, except the tarsi which are totally black; fore-tibia with 3-5 ad and one long submedian av ; mid-tibia with 2-3 pd and one submedian ad and pv ; hind-tibia with 2 ad , 2 pd and 1 submedian av .

Abdomen with a variable pattern like the thorax. It may be almost totally black, leaving only the tergites I+II, the front margin of III and the sternites yellow brown, or the black area may be reduced, only a dorsal median vitta of variable size remaining. All tergites laterally with several discal and extremely long marginal bristles, dorsally the 3rd with a pair of semi-erect median marginals, the 4th at least with a pair of discal bristles and the 5th with several discal and marginal bristles.

Female. — The only female before me is relatively light-coloured. Frons almost parallel, at vertex about $\frac{1}{3}$ as wide as the eye is long. Frontal stripe bright orange, parafrontalia and -facialia silvery dusted as in the male. Face including antennae yellow-brown. Second pair of oc minute, but ev , f and 2 fo fully developed, long and strong. Palpi yellow. Abdomen with a pair of weak median discals on tergite III. Otherwise as in the male.

Length : 8-9 mm.

Mission G. F. DE WITTE : Nyasheke (volc. Nyamuragira), 1.820 m, 1-26.VI.1935 (1 ♂); Burunga (Mokoto), 2.000 m, 15-16.III.1934 (1 ♂).

Mission H. DAMAS : Lukula, lac Mokoto, 15.VIII.1935 (1 ♂).

Collection Musée du Congo : [Ruanda : Rutovu, 2.350 m, L.1953 (1 ♂ leg. P. BASILEWSKY)].

Dept. of Research and Specialist Services, Salisbury : [Vumba Mts., Umtali distr., S. Rhodesia, XI.1940 (1 ♂ leg. A. CUTHBERTSON)].

O. thoracica was originally described from N. W. Tanganyika.

2. — *Ochromelinda abyssinica* n. sp.

(Fig. 57.)

This new species, of which only a single male is known, shows a very striking colouring. The thorax has an *Anthomyia*-like pattern consisting of a black, rectangular, median vitta extending from the anterior margin to the level of the second pair of postsutural dc ; on each side there is one pair of lateral blackish vittae only narrowly separated at the suture. The

foremost vitta is bordered anteriorly by the *prs* and the single median *ph*. The hindmost vitta extends a little further behind the first *ia*. Remaining mesonotum white pollinose, scutellum black. Pleurae black with a white pollinosity, pro- and poststigma black-brown. Abdomen predominantly yellow brown, dorsally with a broad median vitta of black-brown colour covering the basal half of the combined tergites I+II, and narrowed from here until it reaches the 4th tergite, which is almost totally darkened dorsally like the last one. Legs yellow brown, except coxae, tips of femora and tarsi, which are black-brown.

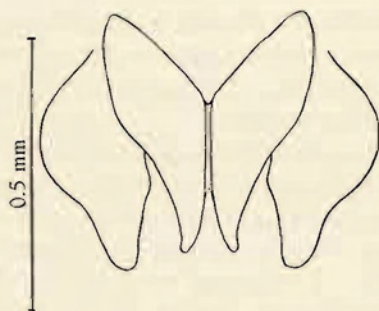


FIG. 57. — *Ochromelinda abyssinica* n. sp.
Frontal view of cerci with paralobi.
Specimen from Abyssinia (holotype).

With respect to the morphological features, there is a great similarity to *O. thoracica*. Structure and chaetotaxy of head as in this species. With respect to the thorax, the presutural *ac* are wanting, as well as the outer *ph*, foremost postsutural *ia* very weak, $sc=4+1$, but first marginal and the discal bristles short and thin. Wings with a longer costal spine. Hind-tibia with 2 submedian *av*. Remaining features of the thorax and those of the external abdomen as in *O. thoracica*, but median discals on tergite III present. Hypopygium (fig. 57) with broader cerci, phallosome as in the related species.

Length : 7 mm.

Collection British Museum : [Wachache Ravine nr. Addis Abeba, Abyssinia, ca. 8.000 ft, 9.IX.1926 (1 ♂ leg. H. SCOTT)].

Genus **ADICHOSINA** VILLENEUVE.

Adichosina VILLENEUVE, Bull. Ann. Soc. ent. Belge, LXXIV, 1934, p. 186.

Type species : *Adichosina thoracica* VILLENEUVE from the Cameroons.

The genus is based on *A. thoracica* which has remained unknown to me. The description is, moreover, very inadequate only enabling me to

establish the fact that the other species placed by me into this genus really belong to it. VILLENEUVE's diagnosis does not allow this species to be included with the other ones before me in a key.

In the same paper, VILLENEUVE described a second species of the genus, *A. novella*, based on a single female from « Mt. Mlanje », Nyasaland. I have not seen this species either, but according to the description, it may be a species of *Ochromelinda*.

From the Commonwealth Institute of Entomology, London, as well as from the Dept. of Research and Specialist Services, Salisbury, I received a number of specimens, identified by VILLENEUVE himself as *Adichosina* spec. or *A. marginata* VILLENEUVE. This last species has apparently never been described and is therefore a mere name in litt. CURRAN, when describing his *munroi*, mentions *marginalis* VILLENEUVE as a related species which has a dark-tipped abdomen like *munroi*.

VILLENEUVE described a *Pericallimya marginalis*, but it shows a red-tipped abdomen like all other species of the genus. CURRAN's species, however, is certainly an *Adichosina* spec., which has never been described by VILLENEUVE. It is not known where Dr. CURRAN saw this species and what it really represents. It was not amongst the Ethiopian calliphorids which he kindly sent me for my studies.

This material, and that sent to me from other museums, contained 2 species which have proved to be distinct according to the different shapes of the hypopygia. However, the members of this genus seem to be rare or are at least not commonly found, so that the range of the intraspecific variability is still not known. I was therefore unable to classify a certain number of female specimens which do not agree in every outer feature with the males present. The presence or absence of the discal bristles on the abdominal tergites is one of these questionable features. It may be that they are of no taxonomic value at all, but the contrary may be true too, so that these females may include several still unknown species.

To be brief, the genus *Adichosina* is one of the most insufficiently known groups within the Ethiopian *Calliphorinae* owing to the rareness of material. Probably many more species are still to be discovered in future, and collections should be made especially in West and Central Africa, in order to find out which species VILLENEUVE had before him when erecting this genus.

The two species of *Adichosina* before me have in common a metallic green to blue and brownish-black body of slender shape. The eyes in the male sex are relatively close together, the frons at the narrowest point measuring $\frac{1}{9}$ - $\frac{1}{12}$ of eye-length. In *A. thoracica*, however, the male is said to be completely holoptic. The inner vertical bristle may be represented as a long hair in the male, *f* and *fo* are wanting as usual but present in the female. The parafacialia may be bare or provided with setae in the upper part.

Thorax with $ac=2+0-3$, $dc=2+3$, $ia=0-1+2$, $ph=2-3$ (outer present), $h=3-4$, $prs=1$, $n=2$, $sa=3$, $pa=2$, $sc=3-4+0-2$, pst and pp developed, st normally 1 : 1. Remaining features as in *Ochromelinda* to which *Adichosina* is closely related.

KEY TO THE SPECIES.

(*A. thoracica* VILLENEUVE, *A. novella* VILLENEUVE and *A. marginalis* CURRAN nec VILLENEUVE, are omitted).

- 1 (2) Parafacialia bare, without setae in the upper part; postsutural ac present, presutural ia wanting.

Frons in ♂ at the narrowest point measuring $\frac{1}{9}-\frac{1}{12}$ of eye-length, in ♀ at vertex about $\frac{3}{7}$ of eye-length. Abdomen of ♂ with width to length from 9 : 13 (n nominate form) to 1 : 2 (ssp. *ugandensis* nov.), 3rd and 4th tergites in both sexes with a pair of median discal bristles. 5-7,5 mm. — Cape Province, Transvaal, S. Rhodesia, Uganda, Belg. Congo

1. *A. munroi* (CURRAN).

- 2 (1) Parafacialia with an irregular row of setae in the upper part; postsutural ac absent, presutural ia present.

Frons in ♂ at the narrowest point about $\frac{1}{11}$ of eye-length, in ♀ (?) at vertex about $\frac{2}{5}$ of eye-length. Abdomen in ♂ with width to length = 7 : 9, median discals of tergites III and IV only present in ♂. 5-6 mm. — S. Rhodesia

2. *A. rosei* n. sp.

[1. — *Adichosina munroi* (CURRAN).]

(Fig. 58.)

Pericallimya munroi CURRAN, Mem. Div. Ent., U. S. A. Dept. Agric., 1926, p. 47; Bull. Amer. Mus. N. H., LVII, 1928, p. 366.

A. munroi was the first species of the genus to be described. It was based on several males from the Eastern Cape Province, collected by Dr. K. MUNRO in 1923 and 1924. Specimens of this type series are before me, from which the following redescription has been made.

Specimens from Uganda, the Congo area and S. Rhodesia differ considerably in several outer features and could easily be taken as representatives of a further species, if the structure of the hypopygium did not coincide basically with that of the type specimens. Furthermore, a pair of specimens from the Eastern Transvaal which are intermediate in some of the outer features, show that a cline may exist from South to North. I decided, therefore, to regard the specimens from Central Africa as belonging to a new subspecies, whereas for the time being, I place those from Transvaal

to the nominate form. This solution, however, can only be a temporary one, until more material becomes available which may throw more light on the natural relationship of these forms.

Male. — Eyes with the upper facets slightly enlarged, frons at the narrowest point measuring $\frac{1}{9}$ - $\frac{1}{10}$ of eye-length (2-3 times the width of the anterior ocellus), widened towards the vertex and the antennal groove. Parafrontalia and -facialia black to reddish-brown, silvery pollinose, without setae beside the bristles; frontal stripe black-brown, very narrow in front of the ocellar triangle. Vertex with a pair of long *iv*, a pair of long and a pair of short proclinate *oc*, about 10 pairs of *paf* present. Antennal groove black-brown with white pollinosity like the remaining part of the head, without carina, antennae dark brown, the third segment about twice as long as the second, arista with long hairs on both sides, the last third or fourth bare. Facial ridge in the basal part with a few black hairs above the vibrissa, peristomal bristles and occipital hairs black, bucca low, measuring $\frac{1}{6}$ - $\frac{1}{7}$ of eye-length. In addition to the peristomal hairs, there are only a few buccal hairs present. Palpi dark brown, very narrow, hardly enlarged terminally.

Thorax metallic greenish to dark blue, pleurae and fore-part of mesonotum densely white pollinose, remaining thorax only slightly dusted, pro- and poststigma black-brown. Chaetotaxy : *ac*=2+3, *dc*=2+3, *ia*=0+2, *ph*=3, *h*=3, *prs*=1, *n*=2, *sa*=3, *pa*=2, *sc*=3+0-2 (discals weak), a long *pst* and *pp* present, accompanied by stouter hairs, *st*=1:1. Propleura and prosternum bare, alar declivity with a few setae. Wings with the costal area down to *m* demarcated dark-brown, remaining part hyaline or slightly tinged, veins brown, costal spine distinct, r_{4+5} at base with a few setae, *R*₅ open, *m* bent up in a broad arch; thoracic squama broadly rounded, black-brown and bare dorsally. Legs black brown, fore-tibia with a row of relatively long *ad* and one submedian *av*; mid-tibia with 2 *pv* and one submedian *av*, *ad* and *pd*; hind-tibia with 2 *pd* and 3 *ad* as well as one submedian *av*.

Abdomen relatively broad, greatest width to length =9:13. Colouring as in the thorax, white pollinosity relatively thin, almost totally covering the last tergite, and laterally more than the basal half of the 4th and 3rd tergites, whereas it is indistinct in the median part, tergite I+II not pollinose. Fifth tergite with long marginal and discal bristles, the fourth and third with a row of marginal bristles and a pair of median discals, basal tergite laterally with a long marginal bristle accompanied by a tuft of bristly hairs, dorsal marginals and discals not developed. Hypopygium strown in fig. 58.

Length : 6-7,5 mm.

The typical series, coming from East London, C. P., consists of 7 males, of which I have received two from Dr. H. C. CURRAN (American Museum, New York) and one from Dr. H. K. MUNRO (Dept. Agriculture, Pretoria).

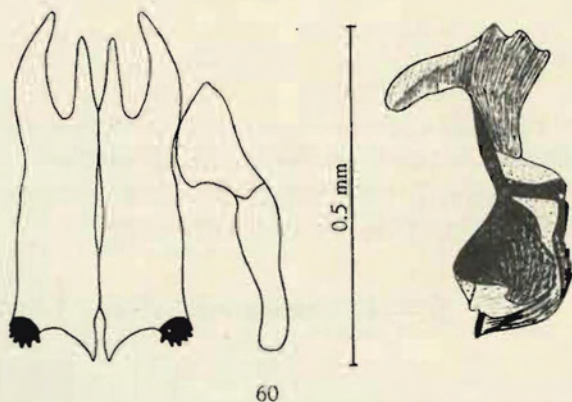
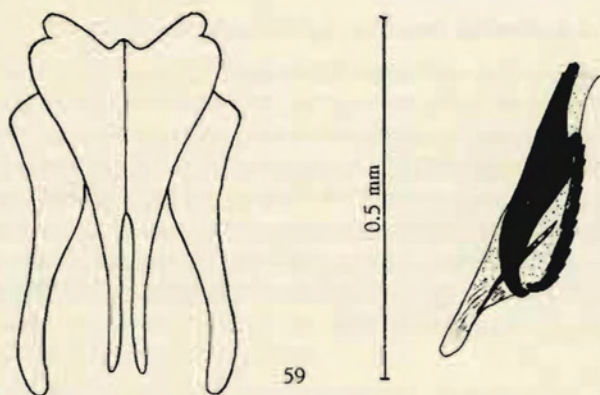
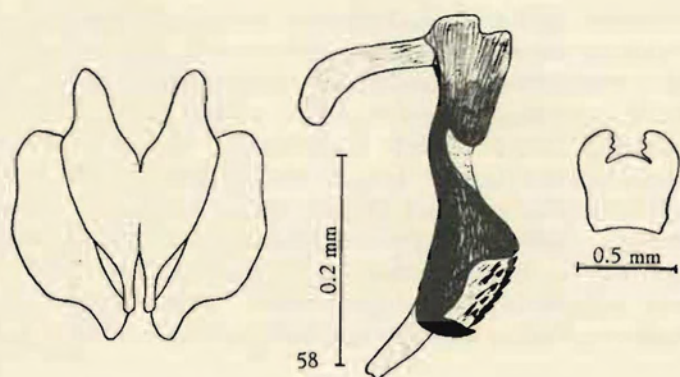


FIG. 58. — *Adichosina munroi* (CUBBRAN). Cerci with paralobi, phallosome and 5th. sternite. Specimen from East London, Cape Province.

FIG. 59. — *Adichosina rosei* n. sp. Cerci with paralobi, terminal part of phallosome. Specimen from Vumba Mounts, S. Rhodesia (holotype).

FIG. 60. — *Tricyclea patrizii* ZUMPT. Cerci with one paralobus in frontal view, phallosome laterally (after ZUMPT). Holotype from Nairobi, Kenya.

One pair from White River, Transvaal (leg. H. PATERSON, 6.III.1953), differs from the type series by its more slender body, the index of the abdomen being 7:10. Furthermore, the 3rd antennal segment is $2\frac{1}{2}$ times as long as the second. Width of frons at the narrowest point is about $\frac{1}{12}$ of eye-length; frontal stripe, therefore, narrowed to a line before reaching the ocellar triangle. The female has a broad frons, which is very slightly widened towards the antennal groove and measures at vertex $\frac{3}{7}$ of eye-length. Frontal stripe black brown, slightly narrowed towards the antennae. Regarding the head bristles, *iv*, *ev* and *f* are well developed, of the *fo*, however, only the upper pair is present. Chaetotaxy of the thorax and abdomen the same in both sexes and identical with that of the type specimens.

***Adichosina munroi ugandensis* subsp. nov.**

The 4 males before me from Kampala, Uganda (leg. H. HARGREAVES, 19.V.1926), which were sent to me by Dr. F. VAN EMDEN, Commonwealth Institute of Entomology, London, are regarded as typical. The thorax is dark-green coloured, pollinosity and chaetotaxy as in the nominate form. Abdomen very slender and twice as long as broad, ground colour metallic dark brown, pollinosity thick, covering about the anterior half of the last three tergites; arrangement of bristles as in the S. African specimens. Width of frons between $\frac{1}{9}$ and $\frac{1}{12}$ of eye-length, third antennal segment about 3 times as long as the second.

Length : 5-7,5 mm.

The following specimens agree generally with the type series of ssp. *ugandensis* :

Mission G. F. DE WITTE : Rutshuru, 1.285 m, 30.XII.1933-3.I.1934 (1 ♂).

Collection Musée du Congo : Rutshuru, 19.V.1936 (1 ♂ leg. L. LIPPENS); [Élisabethville, 12.III.1921 (1 ♀ M. BEQUAERT)].

Dept. of Research and Specialist Services, Salisbury : [Salisbury, 17.II.1939 (1 ♂ leg. A. CUTHBERTSON)].

[2. — ***Adichosina rosei* n. sp.**]

(Fig. 59.)

Mr. D. J. W. ROSE, Salisbury, sent me some calliphorid flies ex CUTHBERTSON's collection, among which I found a male *Adichosina* identified as *P. munroi*. It is, however, different from *P. munroi* in several outer features and is well characterized by the structure of the hypopygium, proving that we are dealing with a new species.

Male. — Eyes with the upper facets only slightly enlarged, frons at the narrowest point about $\frac{1}{11}$ as wide as the eye is long, widened towards the

vertex and the antennal groove. Parafrontalia and -facialia black, with whitish pollinosity, frontal stripe black-brown, complete, at the tip of the ocellar triangle about as broad as one parafrontalium. Vertex with a pair of strong *iv*, *ev* hair-like, but almost as long as the *iv*, *oc* long and proclinate, 9 *paf* with several shorter hairs between them, parafacialia with a few setae in the upper third continuing the *paf* in an irregular row. Antennal groove whitish pollinose, without carina, antennae black brown, 3rd segment 3 times as long as the second, arista with hairs almost to the tip. Vibrissarium dark reddish brown, facial ridge with a row of about 8 bristles above the vibrissa, bucca black and, like the occiput, densely beset with black hairs, its height more than a third of eye-length. Palpi black-brown.

Thorax metallic dark blue, with a white pollinosity, which leaves three broad mesonotal stripes undusted. Pro- and poststigma black-brown. Chaetotaxy : $ac=2+0$, $dc=2+3$, $ia=1+2$, $ph=2-3$, $h=4$, $prs=1$, $n=2$, $sa=3$, $pa=2$, $sc=4+1$, but the discals weak, a long *pp* and *pst* present, $st=1:1$. Propleura and prosternum bare, alar declivity with a few setae. Wings without demarcated costal area, slightly brownish tinged, veins dark brown, costal spine distinct, r_{4+5} at base with a few setae, R_5 open, *m* with a rounded angle of almost 90° ; thoracic squama broadly rounded, black brown, bare dorsally. Legs black-brown, fore-tibia with a row of relatively long *ad* and one submedian *av*; mid-tibia with 2 *pv*, a small submedian *pd* and a long one each of *av* and *ad*; hind-tibia with 2 long *pd* and *ad* and 2 relatively weak *av* in the lower half.

Abdomen longer than broad, with an index of about 9 : 7, metallic dark blue like the thorax, with a faint pollinosity which leaves the hind half of the 3rd and 4th tergites more or less and indistinctly free. Tergite I+II laterally with a strikingly long marginal bristle and a tuft of stouter bristles and hairs, dorsal discals and marginals not developed, tergite III with a pair of long median discals and marginals, laterally with hairs and several marginal bristles, 4th tergite with a pair of median discals as on III, but the hind margin with a continuous row of bristles, last tergite with discal and marginal bristles all over the dorsal surface. Hypopygium (fig. 59) with slender cerci and parolobi.

Female. — There are 3 female specimens from the type locality before me which most probably belong to this species, but they may not be labelled as paratypes. In contrast to the male, the median discals of the abdominal tergites III and IV are wanting. Frons at vertex measuring about $\frac{2}{5}$ of eye-length, strongly widened towards the antennal groove, frontal stripe black, parallel, at the tip of the ocellar-triangle about twice as wide as one parafrontalium, *iv*, *ev*, *oc*, *f* and 2 *fo* as well as 5 *paf* present, the row of fine setae continuing the *paf* on the parafacialia are developed as in the male sex. Height of bucca about $\frac{1}{4}$ of eye-length, 3rd antennal segment $2\frac{1}{2}$ - 3 times as long as the second. Chaetotaxy of thorax as in the male,

but the scutellar discs are wanting in one of the three specimens, the formula for *st* in one female is 2 : 1 instead of 1 : 1.

Length : 5-6 mm.

Dept. of Research and Specialist Services, Salisbury : [Vumba Mts., Umtali distr., S. Rhodesia, XI.1940 (1 ♂ leg. A. CUTHBERTSON, holotype)]; [VI.1935 and XI.1940 (3 ♀♀ leg. A. CUTHBERTSON)].

Genus **TRICYCLEA** WULP.

Tricyclea WULP, C. R. Soc. Ent. Belge, XXVIII, 1884, p. 293; CURRAN, Ann. Mag. N. H., (9), XIX, 1927, p. 513; CURRAN, Bull. Amer. Mus. N. H., LVII, 1928, p. 365; MALLOCH, Ann. Mag. N. H., (10), III, 1929, p. 275 et 555; SÉGUY, Mem. Estud. Mus. Zool. Coimbra, (1), n° 67, 1933, p. 75; TOWNSEND, Man. Myiol., V, 1937, p. 87; ZUMPT, Trans. R. Ent. Soc. Lond., CIV, 1953, p. 481.

Type species : *T. ferruginca* WULP from E. Africa.

Zonochroa BRAUER & BERGENSTAMM, Musc. Schiz., II, 1891, p. 87; ROUBAUD, Bull. Sci. Fr. Belg., (7), XLVII, 1913, p. 110; MALLOCH, Ann. Mag. N. H., (10), III, 1929, p. 555; ZUMPT, Trans. R. Ent. Soc. Lond., CIV, 1953, p. 481.

Type species : *Z. exarsa* BRAUER & BERGENSTAMM from Guinea.

Keniella MALLOCH, Ann. Mag. N. H., (10), IV, 1929, p. 114; TOWNSEND, Man. Myiol., V, 1937, p. 78; ZUMPT, J. Ent. Soc. S. Africa, XVI, 1953, p. 187; et J. Ent. Soc. S. Africa, XVIII, 1955, p. 53.

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

In 1953, I published a revision of the genera *Tricyclea* and *Hemigymnochaeta* based mainly on material which I had received through the kindness of Dr. C. H. CURRAN, American Museum of Nat. History, New York. Following former authors, I tried to classify them according to so-called outer features, that means using the pattern of the thorax, abdomen and wings and the chaetotaxy. But I also started to confirm the status of every species by dissecting the male terminalia and figured them as far as it was possible. As the specimens were not very numerous and came only from few localities, I was able to compile a key in which the male genitalia could be avoided completely.

After this, I received material not only from the «Institut des Parcs nationaux du Congo Belge» and the «Musée du Congo Belge», but also from various other museums, for example from the British Museum including the Commonwealth Institute of Entomology, and the rich and interesting collection of the Zoological Museum of Berlin. This material reveals that the variability of the outer features is much greater than I thought previously, and that my first key is quite inadequate. It will be necessary in future to dissect the genitalia of every male or at least of a few of a series collected at the same locality and date. In spite of the much richer material