

# BLATTIDS

BY

R. HANITSCH (Oxford).

The collection of Blattids from the « Parc National Albert » (Belgian Congo) described below, was brought together by Mr. GASTON F. DE WITTE in the years 1933 to 1935. They came from 25 different localities, their elevation, where stated, being between 925 and 2.400 metres, and include 23 species of which seven will here be described as new, together with two new genera. The novelties are chiefly amongst the *Pseudomopinae*, and it is remarkable that from so many different localities not a single Epilamprine species was obtained. The most common species, more so even than the ubiquitous *Blattella germanica* L., was *Dyscologamia wollastoni* KIRBY, of which not less than 59 examples in all stages of development from five different localities were collected, with, however, only a single adult ♂.

The principal papers on the Blattid fauna of Central Africa are : GERSTAECKER's « Orthopteren Fauna Guineas », 1883, based upon material collected by R. BUCHHOLZ in the years 1872 to 1875; HJALMAR BORG's « Blattodeen aus Kamerun », 1902, collected by Prof. YNGVE SJÖSTEDT in 1891, with a few by LINDOW of the previous year; the various writings by R. SHELFORD, chiefly « Blattids taken by SJÖSTEDT on his Kilimandjaro-Meru Expedition in the years 1905 to 1906 »; « Dr. NEAVE's collection from the Katanga Region of the Congo », 1907; and the results of the « Deutsche Central-Afrika Expedition », 1907 to 1908. Of more recent publications by far the most important are those by REHN, issued in the « Proceedings of the Academy of Natural Sciences, Philadelphia », and elsewhere, and of them the most extensive use has been made.

The types of this collection will be kept in the Congo Museum, Tervuren, and certain of the paratypes in the Hope Department of the University Museum, Oxford.

## LIST OF SPECIES

## ECTOBIINAE :

- Ectobius africanus* SAUSSURE.  
*Ectobius neavei* SHELFORD.  
*Theganopteryx pallida* n. sp.  
*Theganopteryx rhodesiae* SHELFORD.

## PSEUDOMOPINAE :

- Blattella germanica* (L.).  
*Dewittea atrofusca* n. g. & sp.  
*Onycholobus fuscus* n. g. & sp.  
*Onycholobus tigrinus* n. g. & sp.  
*Onycholobus marginalis* n. g. & sp.  
*Paraloboptera congoensis* n. sp.

## BLATTINAE :

- Periplaneta australasiae* (FABRICIUS).  
*Blattina agaboides* (GERSTAECKER).  
*Deropeltis autraniana* SAUSSURE.  
*Deropeltis bueana* KARSCH.  
*Deropeltis carbonaria* GERSTAECKER.  
*Deropeltis dichroa* GERSTAECKER.  
*Deropeltis nigrita* SAUSSURE.  
*Deropeltis rufipes* n. sp.  
*Pseudoderopeltis bicolor* (THUNBERG).

## PANCHLORINAE :

- Rhyparobia grandis* (SAUSSURE).

## CORYDINAE :

- Dyscologamia wollastoni* KIRBY.

## OXYHALOINAE :

- Oxyhaloa deusta* (THUNBERG & ENGSTRÖM).  
*Oxyhaloa murrayi* BRUNNER.

## PERISPHAERINAE :

- Cyrtotria capucina* (GERSTAECKER).

## ECTOBIINAE.

1. — *Ectobius africanus* SAUSSURE.

1899. *Ectobia africana* SSS., Abh. Senck. Nat. Ges., vol. XXI, p. 569  
[ ♀: Coast of E. Africa].
1907. *Theganopteryx africana* SHELFORD, Sjöstedt's Kilimandjaro-Meru Expedition, p. 14.
1931. *Ectobius africanus* REHN, Proc. Acad. Nat. Sci. Philadelphia, vol. LXXXIII, pp. 346-354, pl. XXXII, figs. 6-10; pl. XXXIV, fig. 9.
1933. *Ectobius africanus* REHN, ibidem, vol. LXXXV, pp. 40-41.
- 1 ♂, 1 ♀, Bitshumbi (L. Edouard), 925 m., 27.IX-15.X.1933.
- 1 ♀, Kibati, 1,900 m., IV-V.1935.
- 1 ♀, Rwankeri (Ruanda), 2,200 m., IV-V.1935.
- 1 ♀, Kibati-Shove, 1,765-2,150 m., VI-1935.
- 1 ♀, Tshamugussa, 2,250 m., 8-15.VI.1935.
- 1 ♀, Forêt Mayumbu (Nyamuragira), 2,100 m., 14-26.VI.1935.

REHN (1931), in his exhaustive treatise on *Ectobius*, gives the distribution of this species as French Equatorial Africa, Belgian Congo, Sudan, Uganda, Kenya Colony, Tanganyika Territory, Nyasaland, Rhodesia, Transvaal and Portuguese E. Africa. In his later paper (1933) he records the interesting occurrence of a brachypterous ♂ from Vumba, S. Rhodesia, from an elevation of about 7,000 feet.

The Oxford University Museum contains examples from Salisbury, Mashonaland, 5,000' (G. A. K. MARSHALL, 1900), from Kilimandjaro (SjöSTEDT, 1905), and from N. E. Rhodesia (S. A. NEAVE, 1908).

2. — *Ectobius neavei* SHELFORD.

1911. *Ectobius neavei* SHELF., Rev. Zool. Afr., vol. I, p. 198 [♂ & ♀, Kasenga-Kalumba, boundary between Belgian Congo and N. E. Rhodesia].
1931. *Ectobius neavei* REHN, Proc. Acad. Nat. Sc., Philadelphia, vol. LXXXIII, pp. 336-338, pl. XXXI, figs. 12-14; pl. XXXIV, fig. 5.
- 1 ♂, Camp Rwindi, 1,000 m., 20-28.XI.1934.

The Oxford University Museum has a long series (♂♂ & ♀♀) collected by Dr NEAVE at Kasenga-Kalumba in 1907.

REHN, *loc. cit.*, re-describes this species and gives its distribution as covering « a restricted area of largely elevated territory in the general region of the Western Rift Valley, from Ruanda and Northwestern Tanganyika to Southeastern Katanga ».

3. — *Theganopteryx pallida* n. sp.

(Fig. 1.)

Holotype : ♀, Camp Rwindi, 1,000 m., 20-28.XI.1934.

♀. Head exposed, pale testaceous, a faint whitish bar between the eyes; mouth parts and antennae testaceous; interocular space nearly equal to that between antennal sockets. Pronotum with the anterior margin parabolic, posterior margin almost straight, disk testaceous, lateral margins broadly hyaline. Tegmina slightly exceeding the abdomen, almost colourless, faintly testaceous, with traces of tessellation; 11 costals, the 10th and 11th forked; radial vein simple; anterior ulnar vein parallel to the radial, giving

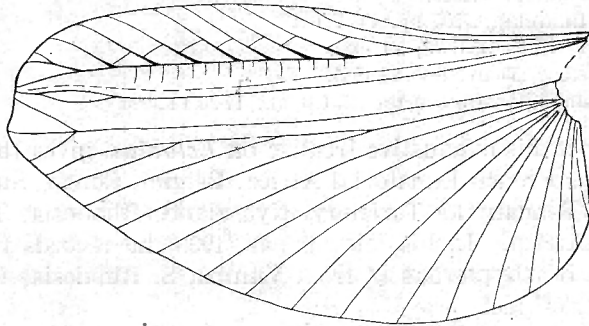


FIG. 1. — *Theganopteryx pallida* n. sp. ♀.  
Left wing.

off four slanting branches towards the posterior margin; posterior ulnar vein simple. Wings for the greater part hyaline; mediastinal vein simple, clubbed; 9 costals, simple, except the last one forked, their bases anastomosing, fuscous; median vein colourless, faint; ulnar vein stout, fuscous, distally forking, the two halves presently fusing again; apical triangle large. Body above testaceous, each tergite with a pair of sub-marginal darker transverse lines. Supra-anal plate transverse; (cerci missing); body below testaceous, each sternite with a pair of sub-marginal darker blotches. Legs testaceous, front femora armed with piliform spines only (i.e. type C); hind femora heavily armed; arolia present.

♀. Total length : 9 mm.

Nearest to *T. camerunensis* SHELFORD, from S. E. Cameroons (see his key in T. E. S., London, 1912, p. 647), but differing from it by its much smaller number of costals both of tegmina and wings.

4. — *Theganopteryx rhodesiae* SHELFORD.

1912. *Theganopteryx rhodesiae* SHELF., Trans. Ent. Soc. London, p. 651  
[N. E. Rhodesia, E. shore of Lake Bangweolo, 3800'; 21-V-1908;  
S. A. NEAVE; ♂, type in Oxford University Museum].

1 ♀, Camp Rwindi, 1,000 m., 20-28.XI.1934.

The Oxford University Museum has, besides the type, another ♂ and a ♀ of the same date and locality, and also 2 ♂♂ and 2 ♀♀ from the Upper Kalangwisi Valley, 4200' (S. A. NEAVE, 11-IX-1908).

## PSEUDOMOPINAE.

5. — *Blattella germanica* (LINNAEUS).

1767. *Blatta germanica* L., Syst. Nat., ed. XII, I, p. 688.

1 ♂, Rutshuru, 1,285 m., Sept. 1933.

1 ♀, Bitshumbi (L. Edouard), 925 m., Sept. 1933.

1 ♀, Kamande (riv. Byangugwe), 950-1,100 m., Nov. 1933.

1 ♂, Rutshuru, 1,285 m., May 1934.

1 ♂; 1 ♀, 3 larvae (1 ♂, 2 ♀♀), Rutshuru, 1,285 m., June 1934.

3 ♂♂, 2 ♀♀, Rutshuru, 1,285 m., June 1934.

1 ♂, 6 ♀♀, Rutshuru, 1,285 m., June 1934.

3 (sex? abdomen missing), Rutshuru, 1,285 m., June 1934.

The collection appears to contain no specimen of the very similar *Phyllo-dromia parenthesis* GERST., from Ogowe (Limbareni), W. Africa, which REHN re-describes under the name of *Symploce parenthesis* (*Proc. Acad. Nat. Sci. Philadelphia*, vol. LXXXIV [1932], p. 434, pl. XXXI, figs. 5, 6-11). There are in the Oxford Museum four examples of a Blattid (viz. 3 ♀♀, and one specimen with abdomen missing) from St. Thomé I. (off the West Coast of Africa) which SHELFORD had identified with *P. parenthesis*. All four specimens show on the face a very distinct T-shaped black macula. GERSTAECKER describes his *parenthesis* as marked with a « kleine gleichschenkelig dreieckige Makel » (i.e. a small isoscelous triangular macula) at the base of the clypeus, whilst REHN (*loc. cit.*, p. 437) speaks of a « dart-shaped spot, point ventrad ». These descriptions are difficult to reconcile. In any case, none of the present material shows such-like markings.

DEWITTEA n. g. <sup>(1)</sup>.

Tegmina and wings of the ♀ fully developed. (♂ unknown). Radial vein both of tegmina and wings bifurcate. Discoidal sectors of tegmina only slightly oblique. Ulnar vein of wings simple. Apical triangle of wings

(1) Named in honour of Mr. G.-F. DE WITTE who brought this valuable collection together.

narrow. Front femora armed after type B (i. e. with a few large spines followed by a series of piliform spines). Hind femora armed. Tarsal claws simple, symmetrical. Arolia present.

Genotype : *Dewittea atrofusca* n. sp. ♀.

The venation both of tegmina and wings in *Dewittea* shows a striking resemblance to that of *Blattella* CAUDELL, but the front femora are here armed after type B, and in *Blattella* after type A.

6. — *Dewittea atrofusca* n. g. and sp.

(Fig. 2.)

Holotype : ♀, Ninda (Ruanda), 2,150 m., 21-26.IX.1934.

♀. Head exposed, fusco-testaceous, with a broad black bar between the eyes; interocular distance  $\frac{2}{3}$  of that between antennal sockets; palps fuscous, with terminal joint black; antennae (mutilated) fuscous. Pronotum as broad as long, anterior margin parabolic, posterior margin gently rounded; dark castaneous to black, lateral margins hyaline, only indistinctly

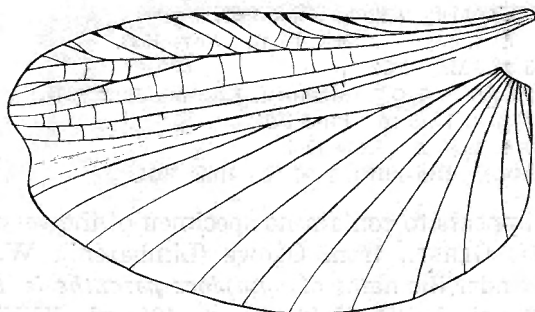


FIG. 2. — *Dewittea atrofusca* n. g. and sp. ♀.  
Left wing.

marked off. Tegmina exceeding the abdomen, reaching to the tips of the cerci; fusco-castaneous, mediastinal area lighter; 8 simple costals, 9th costal three-ramose, 10th costal multi-ramose; radial vein bifurcate at three-fourths of its course, the posterior branch terminally forking again; anterior ulnar four-ramose, posterior ulnar biramose, their branches (= discoidal sectors) only slightly oblique; anal area long and narrow, 5 anals. Wings fuscous, mediastinal vein four-ramose, ends thickened; 7 costals, ends thickened; radial vein forking at two-thirds of its course, posterior branch three-ramose; median and ulnar veins both simple, stout; dividing vein nearly as stout as ulnar; apical triangle narrow. Body above shining black; supra-anal plate triangular, twice as broad as long. Cerci black. Body below shining black. Legs (partly mutilated) fusco-testaceous; left anterior femur with 4 large spines followed by about 8 piliform spines (type B); 3 genicular spines; tarsal claws symmetrical, smooth; arolia present.

♀. Total length : 11 mm.

**ONYCHOLOBUS** n. g.

Tegmina fully developed, with discoidal sectors slightly oblique; wings much reduced, scale-like; front femora armed after type A, with 3 genicular spines; arolia present.

Genotype: *Onycholobus fuscus* n. sp.

In general appearance recalling *Ceratinoptera* BRUNNER, but differing from it in important characters. KIRBY (1904) selected *C. picta* BRUNNER, from Brazil, as genotype which has the front femora armed with piliform spines only (type C), and the tarsal claws without arolia. HEBARD (1916) re-describes this genus which is so far known from the New World only, together with its four or five species. *Onycholobus* is readily distinguished from *Ceratinoptera* by the characters given above and includes a large number of African species, e. g. all those from Kilimandjaro, viz. *bimaculata*, *castanea*, *sjöstedti*, *variabilis*, *variabilis truncata*, *perpulchra* and *ovata* which SHELFORD described under *Ceratinoptera*, and which, as Professor O. LUNDBLAD, of the Naturhistoriska Riksmuseum, Stockholm, kindly informs me, all possess arolia between the tarsal claws. The spination of the front femora, where described by SHELFORD, also agrees with *Onycholobus*.

There is in the British Museum the type of *Periplaneta inscripta* Walker, ♂, which KIRBY (1904) first placed under *Ceratinoptera*. The specimen is figured by SHELFORD (Gen. Ins., *Phyllodromiinae*, pl. II, fig. 6) as with the front legs and mid legs without arolia (hind legs mutilated). Mr K. H. CHAPMAN who has kindly examined the specimen for me, informs me that it is in poor condition, but is of opinion that no arolia were present in the perfect specimen and that the front femora appear to be armed with spines gradually decreasing in length (i. e. type A). *P. inscripta* would therefore represent a third genus.

7. — **Onycholobus fuscus** n. sp.

(Fig. 3.)

Holotype: ♀, Tshambi, 975 m., 25.XI.1934.

Paratypes: 4 ♀ ♀, Rutshuru, 1,285 m., 22.V-1.VI.1934.

1 ♀, Rutshuru, 1,285 m., 1-6.VI.1934.

1 ♀, Rutshuru, 1,285 m., 7-9.VI.1934.

♀. Head slightly exposed; vertex testaceous, frons, palps and antennae deep castaneous; inter-ocular distance equal to that between antennal sockets. Pronotum with the anterior margin parabolic, posterior margin gently rounded, dark olive brown to black, lateral margins pale amber. Tegmina reaching to the posterior margin of the 6th tergite only, dark olive brown, with the mediastinal area pale amber; 11 costals, of which the 7th, 8th and 10th are forked; 4 oblique discoidal sectors, about 7 anals. Wings much

reduced, scale-like, reaching barely to the middle of the 2nd tergite. Abdomen above shining black, each tergite with a pair of submarginal oval lighter spots. Supra-anal plate  $2\frac{1}{2}$  times broader than long, apex rounded.

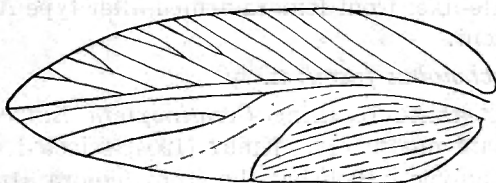


FIG. 3. — *Onycholobus fuscus* n. g. and sp. ♀.  
Left tegmen.

Cerci dark brown to black. Abdomen below fuscous. Legs fuscous; front femora armed after type A, 3 genicular spines; hind femora strongly armed; posterior metatarsus longer than the remaining joints together, entirely spined; tarsal joints also spined; arolia present.

♀. Total length : 9 mm.

#### 8. — *Onycholobus tigrinus* n. sp.

(Fig. 4.)

Holotype : ♀, Rutshuru, 1,285 m., 1.VI.1934.

Paratype : ♀ (head missing), Rutshuru, 1,285 m., 20-29.VI.1934.

1 (sex? abdomen missing), Rutshuru, 1,285 m., 20-29.VI.1934.

♀. Head slightly free, testaceous, with a large black blotch between the eyes and a I-shaped macula on the face; basal joints of palps testaceous, terminal joint black; antennae testaceous, turning black distally; interocular distance equal to that between antennal sockets. Pronotum with the

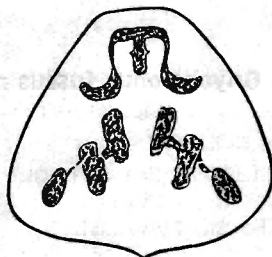


FIG. 4. — *Onycholobus tigrinus* n. g. and sp. ♀.  
Pronotum.

anterior margin parabolic, posterior margin faintly produced, pale orange, with symmetrical markings of brownish colour (see fig.). Tegmina just exceeding the abdomen, pale amber; 14 costals, the last of which is forked; 4 slightly oblique discoidal sectors. Wings much reduced, scale-like,



reaching to the posterior border of the 2nd tergite only. Abdomen above shining black, with a narrow testaceous border. Supra-anal plate very short, sub-triangular. (Cerci missing). Abdomen below dull testaceous. Legs testaceous; front femora armed after type A; 3 genicular spines; hind legs strongly armed; posterior metatarsus as long as the remaining joints together, entirely spined; tarsal joints spined; arolia present.

♀. Total length : 8 mm.

9. — **Onycholobus marginalis** n. sp.

(Fig. 5.)

Holotype : ♀, Bitshumbi (L. Edouard), 925 m., 27.IX.1933.

♀, immature. Apterous. Head free, shining black, palps and antennae fuscous; interocular distance equal to that between antennal sockets. Pronotum with the anterior margin parabolic, posterior margin gently produced; shining black, with the lateral margins broadly hyaline. Mesonotum and metanotum with the latero-posterior angles slightly produced; shining black.



FIG. 5. — *Onycholobus marginalis* n. g. and sp.  
End of abdomen, from above.

lateral margins hyaline. Abdomen above shining black, each segment laterally with a triangular hyaline macula; sixth tergite posteriorly with an undulating yellowish margin; seventh tergite with a pair of lighter spots near the centre. Supra-anal plate broadly triangular, black, with whitish margin distally. Cerci with tip and base black, middle portion testaceous. Abdomen below black, with narrow lateral lighter margins. Legs testaceous; front femora strongly armed after type A, three genicular spines; posterior metatarsus somewhat longer than the remaining joints combined, all joints spined; arolia present.

♀. Total length : 7 mm.

10. — **Paraloboptera congoensis** n. sp.

(Fig. 6.)

Holotype ♀, paratype ♀, Camp Rwindi, 1,000 m., 20-28.XI.1934.

♀. General colour shining black. Head hidden, shining black, mouth-parts castaneous, antennae black, with the last few joints pale orange. Pronotum conical; anterior margin truncate; posterior margin straight, on

either side a slight emargination for the articulation of the tegmina; shining black, with a very narrow rufous border in front and at the sides. Body above shining black. Tegmina lobiform, reaching to the middle of the metanotum only, separated from each other by more than half the width of the mesonotum; black, with the outer margin very narrowly rufous; venation obsolete. Wings absent. Metanotum with the latero-posterior angles produced backwards, reaching to the hinder border of the second tergite. Supra-anal plate semicircular, twice as broad as long, with sagittal ridge.

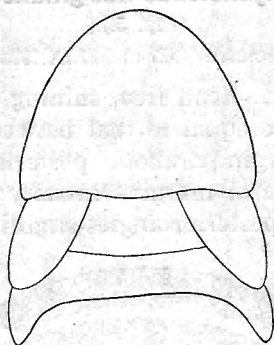


FIG. 6. — *Paraloboptera congoensis* n. sp. ♀.  
Front portion of body.

Cerci testaceous. Body below fuscous in the middle, castaneous at the sides. Legs testaceous, front femora with a few weak spines only; mid and hind femora unarmed; tibiae strongly armed; tarsal claws without arolia.

♀. Total length : 7 mm

The paratype, ♀, measures 10 mm. in total length, its body is somewhat cylindrical and shows traces of sulci to the tergites.

SAUSSURE erected the genus *Paraloboptera* as differing from *Loboptera* BRUNNER merely in the absence of arolia between the tarsal claws (*Mission scient. Mexique*, Orth., 1870, p. 86). The genotype is *P. unicolor* Sss., from Buenos Aires, and SHELFORD placed under this genus also *Loboptera ras* ADELUNG, from Abyssinia. ADELUNG (1905) was well aware that this species differed from *Loboptera* Sss. by the absence of arolia, but hesitated to establish a new genus for it, apparently overlooking *Paraloboptera* Sss. A third species, belonging to this genus, is *Paraloboptera sillemi* HAN., from Srinagar, India (in VISSER, *Karakorum*, 1935, vol. I, *Zoologie*, p. 123), so that the genus is now known from S. America, Africa and Asia.

*Paraloboptera congoensis* n. sp., ♀, differs from *P. ras* ♀ by the shape of the supra-anal plate which in *ras* is roughly trilobed (1), but in *congoensis* semicircular.

(1) Viz : consisting of a two-winged basal portion, and a median lobe distally.

## BLATTINAE.

11. — *Periplaneta australasiae* (FABRICIUS).

1775. *Blatta australasiae* FABR., Systema Entomologiae, p. 271.

2 ♀ ♀, Kamande (Kanyazi, L. Edouard), 925 m., 11-15.XI.1933.

1 ♂ (immature), Rutshuru, 1,285 m., 7-24.VI.1935.

Cosmopolitan.

12. — *Blattina agaboides* (GERSTAECKER).

1883. *Periplaneta agaboides* GERST., Mitth. Ver. Neuvorpommern, Band XIV, p. 47 [♀ Abo, Cameroons].

1932. *Blattina agaboides* REHN, Proc. Acad. Nat. Sci., Philadelphia, vol. LXXXIV, p. 443.

1 ♀, Rutshuru, 1,285 m., 1.VI.1934.

The Oxford Museum contains several examples of this species, viz. 1 ♂ and 2 ♀ ♀, Mundame, Mungo, Cameroons; 1 ♀ Mukoiye Farm, Cameroons; and 1 ♂, Kambove-Kipaila (Dr NEAVE, July 1907).

REHN (*loc. cit.*) discusses this species and shows that it belongs to *Blattina* HEBARD (*Proc. Acad. Nat. Sci.* Philadelphia, vol. LXXXI [1929], p. 84), the other known representative of the genus being *Periplaneta concinna* DE HAAN, from the Malay region.

13. — *Deropeltis autraniana* SAUSSURE.

1895. *Deropeltis autraniana* SAUSS., Ann. Mus. Stor. Nat. Genova, vol. XXXV, p. 78 [Galla Land, W. Africa].

1907. *Deropeltis autraniana* SHELFORD, Sjöstedt's Kilimandjaro-Meru Expedition, Orthoptera, Blattodea, p. 36.

1 ♂ (immature), Kamatembe, 2,100 m., 3-22.IV.1934.

Very similar to a ♂, also immature, in the Oxford Museum, from Nairobi, 5500', the only difference being that the present specimen is entirely black, whilst the other is deep castaneous.

The material in the Oxford Museum is as follows :

1 ♂, 4 ♀ ♀, Nairobi, 5500', MACKINDER and HAUSBURG, July 1899.

1 ♂, 1 ♀, Mombasa, C. A. WIGGINS, Oct.-Nov. 1905.

1 ♂, 1 ♀, Kilimandjaro, SJÖSTEDT, 1905-1906.

1 ♀, with egg-case, Meru, SJÖSTEDT, 1905.

SHELFORD (*loc. cit.*) records a long series of 96 specimens from « Lower Meru, the steppe country and acacia forest and Kilimandjaro, 1,000 to 1,300 metres, abundant under stones ». In « Genera Insectorum, Blattinae »

(1910), p. 20, he gives the distribution as West Africa, Gallaland, and « German » East Africa, which agrees with the material in the Oxford Museum.

14. — **Deropeltis bueana** KARSCH.

1892. *Deropeltis bueana* KARSCH, Berlin. Entom. Zeitschr., Band XXXVII, p. 65 [Cameroons].

1907. *Deropeltis bueana* SHELF., Blattodea : Sjöstedt's Kilimandjaro-Meru Expedition, p. 37.

1 ♂, Bitshumbi (L. Edouard), 925 m., 17-22.X.1933.

1 ♂, Kamatembe, 2,100 m., 15-21.IV.1934.

1 ♂, Burambi (Muhavura, Ruanda), 2,325 m., 4-5.XI.1934.

1 ♂, Camp Rwindi, 1,000 m., 1.XII.1934.

In addition there are some larval forms, 15 to 18 mm. in length, which probably belong to the present species, viz.

1 ♂, Burunga (Mokoto), 2,000 m., 15-16.III.1934.

1 ♂, 2 ♀ ♀, Kamatembe, 2,100 m., 1-16.IV.1934.

1 ♀, Kiniha (Nyiragongo), 2,300 m., Febr. 1935.

1 ♀, Ruhengeri (Ruanda), 1,800-1,850 m., 5-6.X.1935.

The last of these specimens has sulci to the abdominal tergites.

The Oxford Museum has a single ♂, from Gaboon, labelled « e coll. W. W. Saunders, 1830-1873 ».

15. — **Deropeltis carbonaria** GERSTAECKER.

1883. *Deropeltis carbonaria* GERST., Mitth. naturw. Ver. Neuvorpommern, Band XIV, p. 51 [♀ Cameroons : Abo and Bonjongo].

1932. *Deropeltis carbonaria* REHN, Proc. Acad. Nat. Sci., Philadelphia, vol. LXXXIV, p. 449, pl. XXXII, fig. 5.

1 ♀, Kamatembe, 2,100 m., 3-22.IV.1934.

The single specimen, ♀ obtained, measuring 21 mm. in length, quite agrees with GERSTAECKER's description. The ♂ is unknown.

REHN (*loc. cit.*), re-describes the type from Bonjongo and records a ♀ also from Luebo, Kasai, Belgian Congo.

16. — **Deropeltis dichroa** GERSTAECKER.

1883. *Deropeltis dichroa* GERST., Mitth. naturw. Ver. Neuvorpommern, Band XIV, p. 50 [1 ♀, Aburi, Gold Coast].

1932. *Deropeltis dichroa* REHN, Proc. Acad. Nat. Sci., Philadelphia, vol. LXXXIV, p. 450.

1 ♀, Camp Rwindi, 1,000 m., June 1935.

The Oxford Museum contains a ♂, labelled « Mundame-Mungo, Kamerun,

H. ROLLE, Berlin », and a ♀ from Mukonye Farm, Cameroons (R. ROHDE), presented by the Natural History Museum, Brussels.

REHN (*loc. cit.*) who had examined the type, compares it with *D. carbonaria* GERST., but finds no difference between the two species, except for a distinctive colour pattern of *dichroa*.

The specimen (♀) from Camp Rwindi bears a very distinct orange macula on each of the postero-lateral angles of the pronotum. This macula is also present, but very faintly, in the Oxford Museum specimen (♀) from the Cameroons. Though neither GERSTAECKER, nor REHN mention that macula in their material, I still consider the present specimen to be *dichroa*.

17. — ***Deropeltis nigrita* SAUSSURE.**

1895. *Deropeltis nigrita* SAUSS., Ann. Mus. Stor. Nat. Genova, vol. XXXV, p. 80 [Somaliland].

1907. *Deropeltis nigrita* SHELFORD, Sjöstedt's Kilimandjaro-Meru Expedition, p. 38.

1 ♀, Bitale (L. Bulero, Ruanda), 1,862 m., 10-11.IX.1934.

The Oxford Museum has a series, viz. 3 ♂♂, 2 ♂♂ immature, and 1 ♀, from Lit. Marafia, Shoah, Abyssinia (ANTINORI, 1879 to 1881), and 1 ♀ from Lac Cialalaka, Shoah (ANTINORI, 1881).

18. — ***Deropeltis rufipes* n. sp.**

(Figs. 7-8.)

Holotype : ♂ (immature), Kiniha (Nyragongo), 2,300 m., Feb. 1935.

♂. Immature, apterous. Body sub-cylindrical. Head exposed, shining black; inter-ocular space equal to that between antennal sockets; mouth-

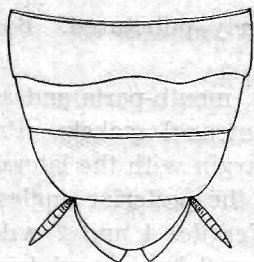


FIG. 7. — *Deropeltis rufipes* n. sp. ♂.  
End of abdomen, from above.

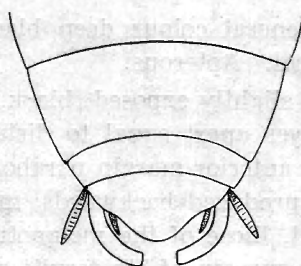


FIG. 8. — *Deropeltis rufipes* n. sp. ♂.  
End of abdomen, from below.

parts and antennae black. Pronotum with the anterior margin parabolic, posterior margin truncate; shining black, minutely granular. Mesonotum and metanotum shining black, minutely granular, their latero-posterior

angles produced backwards. Tergites black, granular, each with a distinct sulcus, 5th tergite with middle of hinder edge slightly emarginate. Supra-anal plate half as long as broad, posterior margin rounded. Cerci black. Sternites black, without sulci. Sub-genital plate somewhat smaller than the supra-anal plate, of similar shape. Styles minute. A pair of C-shaped plates, triangular in transverse section, situated on either side between supra-anal and sub-genital plates, partly encircling the latter, probably the gonapophyses. Legs with the coxae black, remainder deep orange; front femora in their distal half with a short series of piliform spines, two genicular spines; hind femora with a few small spines; posterior metatarsus shorter than the remaining joints, sparsely armed; tarsal joints unarmed. Arolia large.

♂ (immature). Total length : 13.5 mm.

There are two very similar species, viz. *D. intermedia* BRUNNER, from Port Natal (*Nouv. Syst. Blatt.*, 1865, p. 244) and *D. erythropeza* ADELUNG, from S. Abyssinia (*Ann. Mus. Zool. Acad. Imp. Sci. Saint-Petersbourg*, vol. IX [1904], p. 460), but in both of them the legs are described as of a uniform rufous colour, whilst in the present species the coxae are shining black.

I mentioned above a paired organ which I regard as the gonapophyses. ADELUNG (*loc. cit.*, p. 465, fig. 9) describes and figures a similar structure in an apterous (immature?) Blattid, ♂, from S. Abyssinia. He left the species unnamed, but apparently regarded it as allied to *Deropeltis*. He refers to those structures merely as « organes douteux ».

#### 19. — *Deropeltis* sp.

1 ♀, Camp Rwindi, 1,000 m., 26.XI.1934.

♀. General colour deep black, shining, finely punctured. Body sub-cylindrical. Apterous.

Head slightly exposed, black, clypeus rufous, mouth-parts and antennae black; eyes apart equal to distance between antennal sockets. Pronotum with the anterior margin parabolic, posterior margin with the lateral angles slightly produced backwards; mesonotum with the posterior angles hardly produced, those of the metanotum more so. Tergites 1 and 2 with sulci; posterior margin of 5th tergite sinuate. Supra-anal lamina sub-triangular. Cerci black. Body below deep castaneous to black. Legs black; all femora weakly spined, tibiae heavily armed; posterior metatarsus in length three-fifths of the remaining joints together, entirely spined; tarsal joints not armed; tarsal arolia present.

♀. Total length : 18 mm.

20. — *Pseudoderopeltis bicolor* (THUNBERG).

1810. *Blatta bicolor* THUNBERG, K. Vet. Akad. nya Handl., vol. XXXI, p. 187, pl. V, fig. a [without locality].  
 1910. *Pseudoderopeltis bicolor* SHELFORD, Gen. Ins., Blattinae, p. 17 [South Africa].  
 1922. *Pseudoderopeltis bicolor* REHN, Ann. Transvaal Mus., vol. IX, p. 49.  
 1 ♂, Bitshumbi (L. Edouard), 925 m., 9-12.X.1933.

REHN (*loc. cit.*), records this species from the Transvaal, viz. one ♂ from Pietersburg, and two ♂♂ from Shilouvane, and as he says that previous exact records are unknown to him, I give herewith a list of the specimens contained in the Oxford University Museum, the greater part of which was taken by members of the British Association visiting South Africa on the occasion of the meeting in Capetown in 1905.

- 2 ♂♂ Lake N'gami (CASTELNEAU, 1862).  
 1 ♂, Weener, Natal (MALCOLM BURR, 1903).  
 1 ♀, Cape Town, Lion's Head, F. A. DIXEY, 8.VIII.1905.  
 1 ♀, Newcastle, Natal, 3900', F. A. DIXEY, 28.VIII.1905.  
 2 ♂♂, 1 ♀, Cape Town, Lion's Head, G. B. LONGSTAFF, 8.VIII.1905.  
 1 ♀, Cape Colony, Pt. Elizabeth, G. B. LONGSTAFF, 11.VIII.1905.  
 1 ♀, Cape Colony, Stormberg, G. B. LONGSTAFF, 24.IX.1905.  
 2 ♀♀, Kimberley, Sanatorium Grounds, GUY MARSHALL, 6.IX.1905.  
 1 ♀, Orange River Colony, Bloemfontein, G. L. PARSONS, 4.IX.1905.  
 2 ♂♂, 6 ♀♀, Cape Town, Lion's Neck, E. B. POULTON, 10.VIII.1905.  
 1 ♀, Cölenso, Natal, 3100', E. B. POULTON, 26.VIII.1905.  
 1 ♀, Cape Colony, Warrenton, 3900', E. B. POULTON and J. R. CLELAND, 7.IX.1905.

## PANCHLORINAE.

21. — *Rhyparobia grandis* (SAUSSURE).

1872. *Panchlora grandis* Sss., Mélang. Orthopt., vol. II, fasc. 4, p. 132, pl. X, fig. 46 [♀ Sierra Leone].  
 1902. *Rhyparobia grandis* BORG, Bih. Svenska Vet. Akad. Handl., vol. XXVIII, pp. 25-27 [Cameroons].  
 1937. *Leucophaea grandis* REHN, Proc. Acad. Nat. Sci., Philadelphia, vol. LXXXIX, pp. 60-62.  
 1 ♂, Kibga (S. Visoke, Ruanda), 2,400 m., 16-18-19.II.1935.

The Oxford University Museum has

- 1 ♂, Mombasa, Kilindini (in house, C. A. WIGGINS, 16.X.1905);  
 1 ♀, Tanga, East Africa (W. A. LAMBORN, 24.VIII.1917).

BORG (*loc. cit.*, p. 25), in re-describing this species, shows that GERSTAECKER had confused it with *Panchlora (Rhyparobia) maderae* FABR.; and REHN,

*loc. cit.*, gives a full list of localities, including the Ivory Coast, Gold Coast, the Cameroons, French Equatorial Africa, Belgian Congo, Uganda Protectorate, and Tanganyika Territory.

### CORYDINAE.

#### 22. — *Dyscologamia wollastoni* KIRBY.

(Figs. 9-21.)

1909. *Dyscologamia wollastoni* KIRBY, Trans. Zool. Soc., London, vol. XIX, p. 63 [ $\sigma$ , Mokia, S. E. Ruwenzori].
1911. *Dyscologamia wollastoni* SHELFORD, Wiss. Ergeb. Deutsch. Zentral-Afr. Exp., 1907-1908, vol. III, Zool. 1, Lief. 16, p. 504.
1926. *Dyscologamia wollastoni* REHN, Zool. Res. Swed. Exp. Centr. Africa, 1921. Arkiv för Zoologi, Bd. XVIII<sup>A</sup>, n° 18, p. 21.

#### Adult :

- 1  $\sigma$ , R. Molindi (L. Kibuga), 1,000 m., 2.V.1934.  
 14  $\text{♀}$   $\text{♀}$ , N'Zulu (Sake, L. Kivu), 1,500 m., 6-15.II.1934.  
 1  $\text{♀}$ , I. Tshegera (L. Kivu), 1,560 m., 10-12.II.1934.

#### Immature :

- 14  $\sigma$   $\sigma$ , N'Zulu (Sake, L. Kivu), 1,500 m., 6-19.II.1934.  
 1  $\sigma$ , I. Tshegera (L. Kivu), 1,560 m., 10-12.II.1934.  
 2  $\text{♀}$   $\text{♀}$ , Bitshumbi (L. Edouard), 925 m., 12.X.1933.  
 1  $\text{♀}$ , Katanda, 950 m., 13-19.X.1933.  
 23  $\text{♀}$   $\text{♀}$ , N'Zulu (Sake, L. Kivu), 1,500 m., 6-19.II.1934.  
 2  $\text{♀}$   $\text{♀}$ , I. Tshegera (L. Kivu), 1,760 m., 10-12.II.1934.

#### KIRBY's description runs as follows :

« 1  $\sigma$ . Long. corp. 19-20 mm.; exp. al. 55-57 mm. Head small, reddish behind and black in front, shining; antennae reddish; pronotum reddish brown or dark brown, the front, and in the lighter specimen a spot on each side above, reddish; tegmina rufous brown, with the costa redder; scapular nervure scarcely pale; outer lower half of right tegmen greyish hyaline; wings dingy hyaline, with the costal border and apex yellowish; abdomen and legs reddish; terminal segments of abdomen blackish above. »

« Two specimens from Mokia, S. E. Ruwenzori, coll. June 1906, at an elevation of 3500'. »

The single adult  $\sigma$  specimen of the present collection, from R. Molindi, 1,000 m., may be described as follows :

$\sigma$ . Body elongate. Head covered by the pronotum; upper face shining black, depressed, with five minute circular pits, lower face and palps rufous; eyes meeting on the vertex; fenestrae large, pale orange, situated just above and to the inside of the antennal pits; antennae rufous. Pronotum transverse



elliptical, dark castaneous, finely granular, densely pubescent, especially along the anterior margin. Tegmina exceeding the abdomen by  $\frac{2}{5}$  of their length, proximally rufo-castaneous to almost black, becoming paler distally. Wings fully developed, hyaline, costal border fusco-castaneous. Cerci 13-jointed, pilose, rufous. Body below golden brown. Sub-genital plate trans-

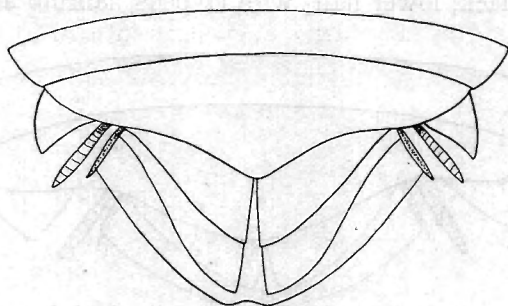


FIG. 9. — *Dyscologamia wollastoni* KIRBY, ♀ juv.  
End of abdomen, from below.

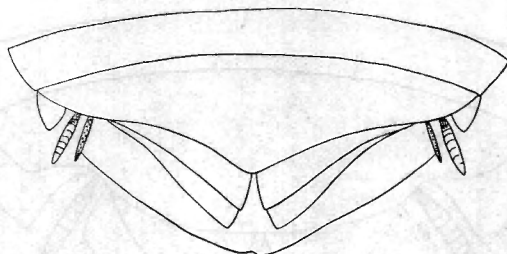


FIG. 10. — *Dyscologamia wollastoni* KIRBY, ♀ juv.  
End of abdomen, from below.

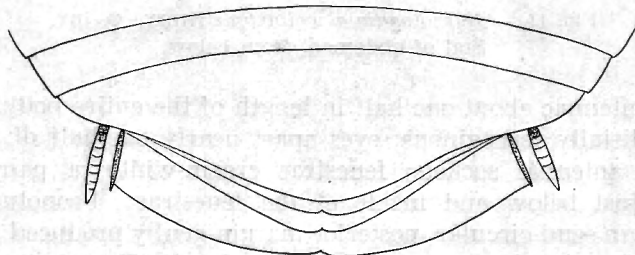


FIG. 11. — *Dyscologamia wollastoni* KIRBY, ♀ juv.  
End of abdomen, from below.

verse elliptical,  $1\frac{1}{2}$  times as broad as long. Styles nearly  $\frac{2}{3}$  as long as the cerci, stout, strongly hirsute, pale rufous at base, apex darker. Legs dull castaneous, femora densely rufous pubescent, tibiae strongly armed; posterior metatarsus somewhat longer than the remaining joints together, densely pubescent; tarsal claws symmetrical; arolia present.

♂. Total length : 33 mm.; body : 20 mm.; pronotum : 7 × 10 mm.; tegmina : 27 mm.

The ♀ has apparently never been described in detail. This may be done as follows, from a specimen from N'Zulu, Sake, 1,500 m.

♀. Body sub-circular. Head entirely hidden, upper half of face depressed, finely granular, black; lower half, with clypeus, labrum and palps, shining

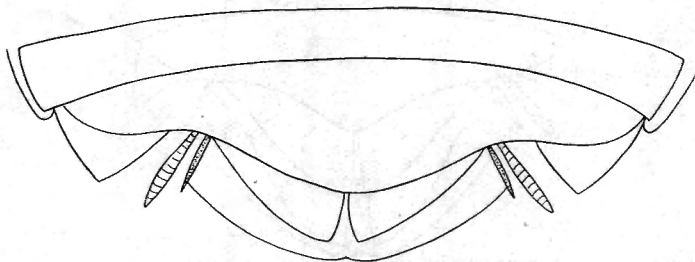


FIG. 12. — *Dyscologamia wollastoni* KIRBY, ♀ juv.  
End of abdomen, from below.

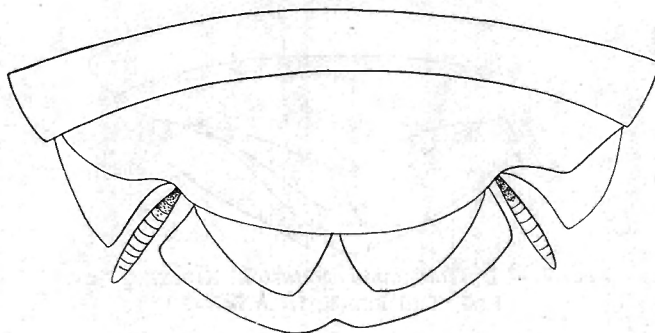


FIG. 13. — *Dyscologamia wollastoni* KIRBY, ♀ juv.  
End of abdomen, from below.

castaneous; antennae about one half in length of the entire body, proximally castaneous, distally ferruginous; eyes apart nearly one-half of the distance between the antennal sockets; fenestrae cream-white; a pair of pit-like depressions just below and inside of the fenestrae. Pronotum with the anterior margin semi-circular, posterior margin gently produced; dark brown to black, finely granular, strongly pilose in front. Tegmina much shorter than the body, reaching to the posterior border of the second tergite only, dark brown to black, coarsely granular, costal margin with rufous setae. Wings greatly reduced, about 3/4th the length and 1/2 the width of the tegmina; dark fuscous, posterior part not folded, radial vein simple, ulnar vein multiramose, axillary vein with numerous anastomosing branches, forming a honeycomb-like mesh work. Body above shining black, each tergite finely and closely punctured, each with a broad sulcus. Supra-anal

plate twice as broad as long, posterior border rounded, a sagittal ridge starting from its centre and ending in a slight indentation. Cerci short, half the length of the supra-anal plate, black, bearing setae. Body below : each sternite with its anterior half dark brown, posterior half ferruginous, each with a distinct sulcus. Legs dark ferruginous, all femora unarmed,

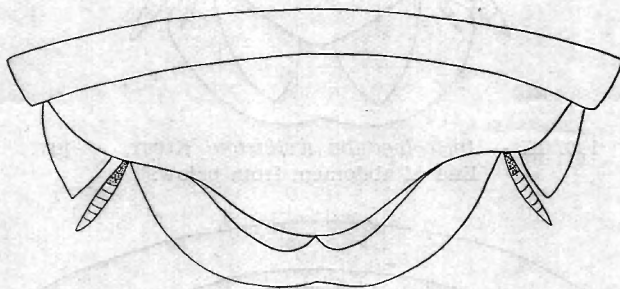


FIG. 14. — *Dyscologamia wollastoni* KIRBY, ♀ juv.  
End of abdomen, from below.

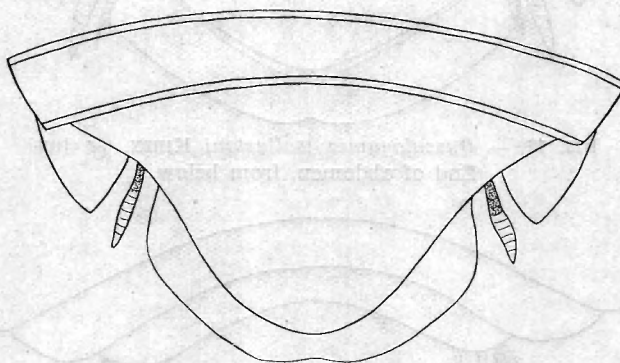


FIG. 15. — *Dyscologamia wollastoni* KIRBY, ♀ adult.  
End of abdomen, from below.

all tibiae heavily spined, posterior metatarsus equal in length to the remaining joints, entirely spined; tarsal joints spined; tarsal claws symmetrical; no arolia.

♀. Total length : 26 mm.; pronotum :  $8.4 \times 15$  mm.; tegmina :  $12 \times 11$  mm.; wings :  $9 \times 6$  mm.

To recapitulate the differences between the two sexes :

♂	♀
Body elongate.	Body sub-circular.
Fully winged.	Tegmina and wings reduced.
Pronotum small (about $7 \times 10$ mm.).	Pronotum large (about $8\frac{1}{4} \times 15$ mm.).
Eyes meeting.	Eyes apart.
Tarsal claws with arolia.	Tarsal claws without arolia.

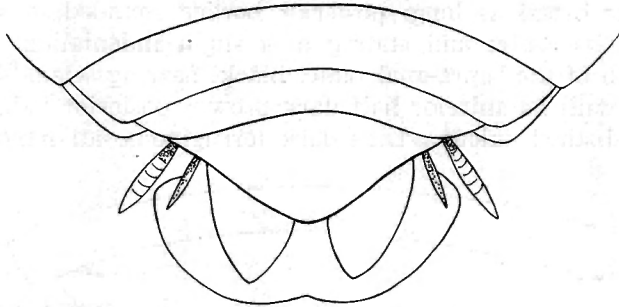


FIG. 16. — *Dyscologamia wollastoni* KIRBY, ♂ juv.  
End of abdomen, from below.

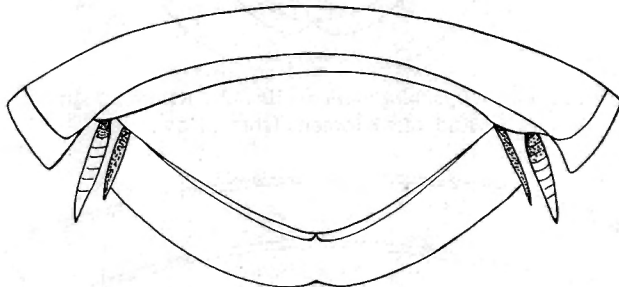


FIG. 17. — *Dyscologamia wollastoni* KIRBY, ♂ juv.  
End of abdomen, from below.

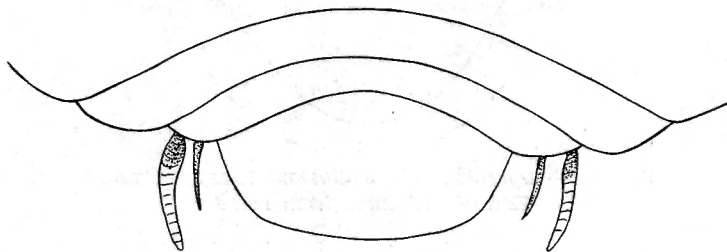


FIG. 18. — *Dyscologamia wollastoni* KIRBY, ♂ adult.  
End of abdomen, from below.

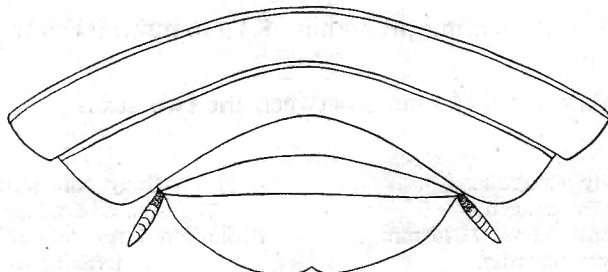


FIG. 19. — *Dyscologamia wollastoni* KIRBY, ♀ juv.  
End of abdomen, from above.

REHN gives the distribution of this species as Tanganyika Territory, Uganda, Belgian Congo and French Congo, his record being based upon 13 ♂♂ and 4 ♀♀, a surprising preponderance of the male sex, whilst the present collection contains 1 ♂ adult, 15 ♂♂ immature, 15 ♀♀ adult and 28 ♀♀ immature specimens.

The accompanying illustrations give a series of different stages in the development of the end of the abdomen, both of the ♂ and the ♀.

(1). The end of the abdomen of the ♀ from below : four stages are shown in which the styles are still present; they have disappeared in the fifth stage, and, of course, are absent in the adult ♀. The earliest stage in the collection (fig. 9) shows the ninth and tenth sternites projecting beyond the sub-

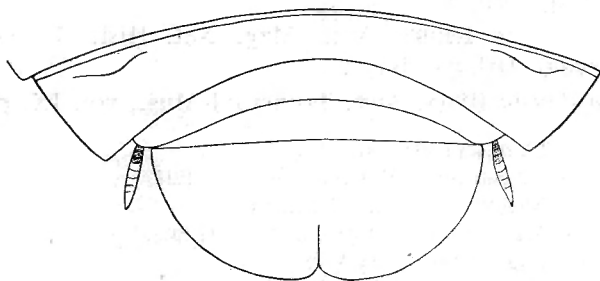


FIG. 20. — *Dyscologamia wollastoni* KIRBY, ♀ adult.  
End of abdomen, from above.

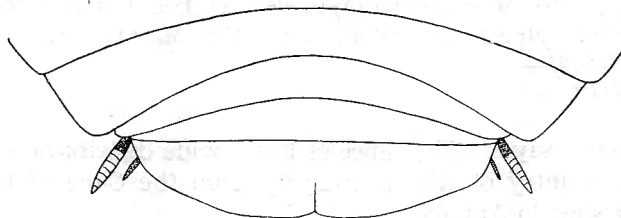


FIG. 21. — *Dyscologamia wollastoni* KIRBY, ♂ adult.  
End of abdomen, from above.

genital plate; they are about equally developed and nearly equal in size to that plate. Figs. 10 and 11 show sternites nine and ten partly withdrawn beneath the sub-genital plate. In figs. 12 and 13 the ninth sternite has disappeared, but whilst in fig. 12 the styles are still present, they have gone in figs. 13 and 14. In fig. 15, showing the adult stage, the tenth sternite has also disappeared. The sub-genital plate has progressively increased in length from figs. 9 to 15, though remaining of about the same width.

(2). The end of the abdomen of the ♂ from below : the earliest stage in the collection, fig. 16, shows only the tenth sternite projecting beyond the sub-genital plate; it has almost disappeared in the next stage, fig. 17, and has done entirely so in the adult stage, fig. 18.

(3). The end of the abdomen of the ♀ from above : only two stages are shown, figs. 19 and 20 with the supra-anal plate of the adult considerably longer than that of the immature.

(4). The end of the abdomen of the ♂ from above : it is practically the same in shape in the immature and in the adult stage, fig. 21.

### OXYHALOINAE.

#### 23. — *Oxyhaloa deusta* (THUNBERG and ENGSTRÖM).

1784. *Blatta deusta* THUNBERG and ENGSTRÖM, Diss. Entom. Nov. Ins. Spec., p. 77 [Cape of Good Hope].

1900. *Oxyhaloa deusta* KIRBY, Ann. Mag. Nat. Hist. (7), vol. V, p. 293 [Transvaal, Delagoa Bay].

1922. *Oxyhaloa deusta* REHN, Ann. Transvaal Mus., vol. IX, p. 70.

2 ♀ ♀, Rutshuru, 1,285 m., VI-VII.1934.

1 ♀, Gandjo (South of Burunga, Mokoto), 2,050 m., 1934.

1 ♀, Ngesho (étang Kashwa), 2,000 m., 7-23.I.1935.

1 ♀, Mugongo (près du L. Gando), 2,400 m., 10-12.III.1935.

1 ♂, Rwankeri (Ruanda), 2,200 m., IV-V.1935.

The Oxford University Museum possesses :

2 ♀ ♀, Salisbury, 5000', Mashonaland, April 1900 and Dec. 1904. GUY MARSHALL.

1 ♀, S. E. Rhodesia, Melseetter, Gazaland, about 3600', Mt. Chirinda, in forest; 26-27.X.1905. GUY MARSHALL.

1 ♀, « South Africa ».

REHN (*loc. cit.*), says : « This species has a wide distribution in the steppe and savannah country of Africa, ranging from the Cape of Good Hope to Gallaland and west to Angola. »

#### 24. — *Oxyhaloa murrayi* BRUNNER.

1865. *Oxyhaloa murrayi* BR., Syst. Blatt., p. 253, pl. VI, fig. 25 [♀ Old Calabar].

1902. *Oxyhaloa saussurei* BORG, Bih. K. Svenska Vet. Akad. Handl., Band XXVIII, p. 29, pl. II, fig. 2 [♂ ♀, Cameroon Mts.].

1912. *Oxyhaloa murrayi* SHELF., Wiss. Ergeb. Deutsch. Zentr.-Afrika Exp., 1907-1908, Band III, p. 504.

1926. *Oxyhaloa murrayi* REHN, Arkiv för Zoologi, Band XVIII<sup>A</sup>, p. 19.

2 ♀ ♀ (immature), Bitshumbi (L. Edouard), 925 m., 2.X.1933.

1 ♀ (immature), Rutshuru, 1,285 m., 10-20.VI.1934.

1 ♀, Kalimbo (Binza), 1,000 m., IV-V.1935.

The Oxford University Museum has

- 1 ♂ (immature), Kalumba-Kilwa. S. A. NEAVE, Aug. 1907.  
 1 ♂, 4 ♀ ♀, Bunkeya-Kambove. S. A. NEAVE, Sept.-Oct. 1907.  
 2 ♀ ♀, Upper Kalungwisi Valley, 4200', N. E. Rhodesia. S. A. NEAVE, Sept. 1908.  
 1 ♀, Cameroons. CONRADT.

According to REHN (*loc. cit.*) the northern limits of this widely distributed species extend into the Ivory Coast, Belgian Congo and Uganda.

### PERISPHAERINAE.

#### 25. — *Cyrtotria capucina* (GERSTAECKER).

1861. *Derocalymma capucina* GERST., Arch. Naturg., vol. XXV, p. 207  
 [East Africa; type in Berlin Museum].  
 1873. *Derocalymma capucina* VON DER DECKEN, Reise in Ost-Afrika, vol. III (2),  
 p. 8, pl. I, fig. 4.  
 1895. *Stenopilema somali* SAUSSURE, Ann. Mus. Genova, vol. XXXV, p. 88;  
 SAUSSURE and ZEHNTNER, Rev. Suisse Zool., vol. III, p. 27.  
 1908. *Cyrtotria capucina* SHELFORD, Ann. Mag. Nat. Hist. (8), vol. I, p. 171,  
 pl. X, fig. 13.  
 1 ♀, Nyarusambe (Kikeri), 2,226 m., 28.VI-2.VII.1934.  
 5 ♀ ♀, Rutshuru, 1,285 m., 23-30.X.1934.

The Oxford University Museum has

- 3 ♀ ♀, Kilimandjaro, 1,000-1,300 m., SJÖSTEDT, 1905-1906.  
 1 ♀, Meru, SJÖSTEDT, 1905-1906.  
 6 ♀ ♀, Salisbury, 5000', Mashonaland, GUY MARSHALL, May 1905.  
 1 ♀, High Plateau, Lake Tanganyika, 4500, S. A. NEAVE, 22.VIII.1908.

SHELFORD (*loc. cit.*), who was the first to place this species under *Cyrtotria* STÅL, gives a useful key to the 11 species of this purely African genus.

## LITERATURE

- ADELUNG, NICOLAUS, *Symbola nova ad cognitionem Blattodeorum (Orthoptera) Africae orientalis* (*Ann. Mus. Zool. Acad. Imp. St. Petersbourg*, vol. IX, 1904, pp. 417-489, 11 fig.).
- BORG, HJALMAR, Blattodeen aus Kamerun (*Bihang till Svenska Vet. Akad. Handlingar*, Band XXVIII, 1902, Afd. 4, n° 10, pp. 1-36, pls. I and II).
- GERSTAECKER, A., Beitrag zur Kenntniss der Orthopteren — Fauna Guinea's, nach den von R. Buchholz während der Jahre 1872 bis 1875 daselbst gesammelten Arten (*Mitth. d. naturw. Ver. für Neuvorpommern u. Rügen*, Greifswald, Band XIV, Jan. 1883, pp. 39-102).
- Baron Carl Claus von der Decken's Reisen in Ost-Africa in den Jahren 1859-1865; Band III (*Wissensch. Ergebnisse*, Abtheil. 2, Gliederthiere, 542 pp., 18 pl., 1873).
- HEBARD, MORGAN, The genus *Ceratinoptera* (Orthoptera, Blattidae, Pseudomopinae) (*Trans. Amer. Entom. Soc.*, vol. XLII, 1916, pp. 125-134).
- KIRBY, W. F., Notes on a Collection of African Blattidae, chiefly from the Transvaal, formed by Mr. W. L. Distant (*Ann. Mag. Nat. Hist.*, [7], vol. V, 1900, pp. 277-294).
- Ruwenzori Expedition Reports; 8. Orthoptera (*Trans. Zool. Soc.*, vol. XIX, 1909, pp. 63-66).
- REHN, JAMES A. G., Contributions to our knowledge of the Dermaptera and Orthoptera of the Transvaal and Natal (*Annals of the Transvaal Museum*, vol. IX, 1922, pp. 1-99, pl. I-IV).
- Zoological Results of the Swedish Expedition to Central Africa 1921. Insecta. 18. Blattidae (*Arkiv för Zoologie*, Band XVIII<sup>a</sup>, 1926, pp. 1-24, 9 fig.).
- African and Malagasy Blattidae (Orthoptera) : Part I (*Proc. Acad. Nat. Sci., Philadelphia*, vol. LXXXIII, 1931), pp. 305-387, pl. XXXI-XXXV); Part II (*Ibid.*, vol. LXXXIV, 1932), pp. 405-511, pls. XXX-XXXIII); Part III (*Ibid.*, vol. LXXXIX, 1937, pp. 17-123, pls. VIII-XI).
- Dermaptera and Orthoptera of the De Schauensee South African Expedition; Part I (*Proc. Acad. Nat. Sci., Philadelphia*, vol. LXXXV, 1933, pp. 39-66, 1 pl.).
- SAUSSURE, H. DE, *Mission Scientifique au Mexique. Études sur les Insectes Orthoptères*, 1<sup>re</sup> livr., 1870; 2<sup>me</sup> livr., 1872.
- SHELFORD, R., *Blattodea. Sjöstedt's Kilimandjaro Meru Expedition*, N° 17, Uppsala, 1907, pp. 13-48, pls. II-III.
- New Blattidae collected by Dr. Sheffield Neave in the Katanga Region of Congo (*Rev. Zool. Afr.*, Bruxelles, 1911, pp. 198-203).
- *Wissenschaftliche Ergebnisse der Deutschen Zentral-Afrika Expedition 1907-1908* Band III, Lief. 16, 1912, pp. 497-504.
- XII. Studies of the Blattidae. A Revision of the genus *Theganopteryx* Br., together with remarks on some species of *Hemithyrsocera* Sauss. (*Trans. Ent. Soc. London*, 1912, pp. 643-661, pls. LXXIX-LXXX).