

**Article III.**—THE DERMAPTERA OF THE AMERICAN MUSEUM CONGO EXPEDITION, WITH A CATALOGUE OF THE BELGIAN CONGO SPECIES<sup>1</sup>

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The Dermaptera secured by the American Museum Congo Expedition were collected entirely in the north-eastern Belgian Congo, no material from the Lower Congo being contained in the series. As previous collections of the order made in the Congo were largely from the Lower Congo or from the Lake Kivu-Ruwenzori regions, the present representation is of particular interest. Taken partly in the Forest Province and partly in the Sudanese Subprovince of the Savannah Province (of Engler) the series has, in addition, a value much out of proportion to its size, as the extent of the range of a number of species can now be more clearly defined from the information here given.

It is the intention of the author in a future paper on the American Museum Congo Expedition collection of Orthoptera, with which order the Dermaptera often have been associated, to summarize analytically the distributional data here presented in detail under the respective species.

The number of specimens of Dermaptera contained in the collection of the Congo Expedition is two hundred and seventy-two, representing thirteen genera and nineteen species, of which one species (*Diplatys quæsitus*) is new. The study of the material brought to light the necessity of placing in synonymy for the first time one generic and four specific names.

A few specimens from Elisabethville, Katanga, belonging in the Hebard Collection, which is on deposit in the Academy of Natural Sciences of Philadelphia, have been discussed in the present report, as it seemed desirable to include all available material from the Belgian Congo. The paucity of available material from the Katanga district makes this series of Dermaptera and Orthoptera of especial interest.

The author has used consistently the term "German" East Africa to cover the region formerly so called, the marks indicating that the qualifying term has been quoted. This method seems to be the best to follow at this writing, as knowledge of the recent division of the former German possession is by no means general; the present names, where different from former ones, are given in parentheses.

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<sup>1</sup>Scientific Results of the American Museum Congo Expedition. Entomology, No. 8.

The catalogue of the Dermaptera known from the Belgian Congo follows the systematic treatment of the species (p. 401). The general plan followed in making the synonymic catalogue is discussed in that portion of the paper.<sup>1</sup>

The author wishes to express his thanks to the American Museum authorities for the opportunity to study this interesting series, and to Messrs. Herbert Lang and James P. Chapin for their friendly interest and encouragement, as well as substantial assistance, in his studies of the material which they secured while on the Congo Expedition. For much useful information concerning the Belgian Congo the author is under lasting obligations to Dr. J. Bequaert, whose kind assistance has been sought by me on a number of occasions.

#### APPROXIMATE POSITION OF BELGIAN CONGO LOCALITIES MENTIONED IN THIS PAPER

In collating the data here given I have drawn freely upon those already utilized in previous papers based on the Congo Expedition collections. In several cases we have been unable to identify certain localities given by other authors. These names are here given with a notation to the effect that they have not been located by the present author.

Akenge (Uele).—2° 55' N., 26° 50' E.	Kinshasa (Lower Congo).—4° 20' S., 15° 20' E.
Avakubi (Ituri).—1° 20' N., 27° 40' E.	Kindu (Ponthierville).—3° S., 26° E.
Barobiti (Uele).—Position unknown.	Kirima (Lake Albert Edward).—0° 15' S., 29° 30' E.
Batama (Stanleyville).—1° N., 26° 40' E.	Kuako (Lower Congo).—4° 15' S., 16° 35' E.
Bengamisa (Stanleyville).—1° N., 25° 10' E.	Kwidjwi (Lake Kivu).—2° 10' S., 29° 20' E.
Bena Bendi (Kasai).—4° 15' S., 20° 20' E.	Leopoldville (Lower Congo).—4° 25' S., 15° 20' E.
Beni (Semliki).—0° 20' N., 29° 40' E.	Lingunda (Maringa).—1° N., 20° 40' E.
Boma (Lower Congo).—5° 50' S., 13° 10' E.	Luebo (Kasai).—5° 25' S., 21° 25' E.
Buta [Rubi] (Uele).—2° 50' N., 24° 50' E.	Luki (Lower Congo).—5° 35' S., 13° 10' E.
Elisabethville (Katanga).—11° 45' S., 27° 40' E.	Lusambo (Kasai).—4° 55' S., 23° 15' E.
Faradje (Uele).—3° 40' N., 29° 40' E.	Madimba (Lower Congo).—4° 50' S., 15° 15' E.
Garamba (Uele).—4° 10' N., 29° 40' E.	Malela (Lower Congo).—6° S., 12° 40' E.
Hiri River.—Probably a misspelling of Itiri R. = Semliki R.	Mawambi (Ituri).—1° 10' N., 28° 45' E.
Ibembo (Uele).—2° 40' N., 23° 35' E.	Medje (Ituri).—2° 25' N., 27° 30' E.
Kasindi (Semliki).—0°, 29° 40' E.	Moëra [Forest] (Semliki).—0° 35' N., 29° 30' E.
Kimpoko (Lower Congo).—4° 10' S., 15° 40' E.	

<sup>1</sup>An important paper by Borelli on Belgian Congo Dermaptera, 'Dermaptères du Congo Belge' (Revue Zoologique Africaine, XI, pp. 412-434, (1923)), was not received until the present paper was in page-proof. The student should refer to Borelli's paper as supplementary to the date here presented.

Niagara (Uele).—3° 40' N., 27° 50' E.	Ruzizi [Valley] (Kivu).—3° S., 29° E.
Niapu (Ituri).—2° 15' N., 26° 50' E.	Semliki River.—0° to 1° N., 29° 30' to 30° E.
Ninagongo (Kivu).—1° 30' S., 29° 20' E.	Stanley Pool.—4° 15' S., 15° 30' E.
Popokabaka (Kwango).—5° 40' S., 17° E.	Stanleyville.—0° 30' N., 25° 15' E.
Risimu (Stanleyville).—1° N., 26° 45' E.	Ukaika (Ituri).—0° 45' N., 29° E.
Rutshuru (Kivu).—1° 15' S., 29° 30' E.	Vankerekhovenville (Uele).—3° 20' N., 29° 20' E.
Ruwenzori [western slopes].—0° 30' N., 29° 50' E.	Yakuluku (Uele).—4° 20' N., 28° 50' E.

## SYSTEMATIC DISCUSSION

**HEMIMERINA****Hemimeridæ****HEMIMERUS** Walker

1871, 'Catal. Dermapt. Salt. Brit. Mus.,' V, Suppl., p. 2.

GENOTYPE.—*Hemimerus talpoides* Walker.

This remarkable genus is the sole member of the suborder and, consequently, of the family to which it belongs, and in many ways it is one of the most extraordinary of known insects. Originally supposed by Walker to be a gryllid related to *Tridactylus*, Saussure, in 1879,<sup>1</sup> considered it to represent a new order of insects which he called Diploglossata. Hansen, however, in 1894,<sup>2</sup> showed that Saussure erred in his interpretation of the single specimen he had examined. Hansen proved that, instead of having a second or double labium as supposed by Saussure, the mouthparts exhibit but little departure from the ordinary mandibulate type, and he concluded that *Hemimerus* represented a separate family near the earwigs, for which Sharp, in 1895,<sup>3</sup> used the name Hemimeridæ. Subsequent work has sustained the conclusions of Hansen as to the proper position of *Hemimerus*, and our placing of the genus as representing a suborder of the Dermaptera is according to Burr in his comprehensive treatment of the genera of the order.<sup>4</sup>

The gross anatomy of *Hemimerus* has been treated in detail by Hansen and others and its general structure is now well known. It is entirely apterous and eyeless, and has peculiar limbs and very elongate cerci, while certain other features of its morphology are quite distinctive.

In habits *Hemimerus* is parasitic, living on the murid rodent *Criceomys gambianus* and possibly on a related species of that genus, although it is not a parasite in the more special sense of the word. It has been

<sup>1</sup>1879, *Mém. Soc. Phys. et Hist. Nat. Genève*, XXVI, pp. 399-420, Pl. I.

<sup>2</sup>1894, *Entom. Tidskrift*, XV, pp. 65-92, Pls. II and III.

<sup>3</sup>1895, 'Cambridge Nat. History,' V, p. 217.

<sup>4</sup>1911, 'Genera Insectorum, Dermaptera,' p. 8.

assumed that the relation was commensal, but this has not been proven. The fact of its remarkable association with *Cricetomys* was first noted by Sjöstedt, as recorded by Hansen,<sup>1</sup> and subsequently it was supposed that the insect fed upon fungi found upon the skin of the mammal. Heymons has shown,<sup>2</sup> however, that the principal food of *Hemimerus* is the outer horny epidermis of its host. Another remarkable feature of *Hemimerus* is that it is viviparous, and this is rather unusually qualified for an insect by the fact that birth is given to but one young at a time.<sup>3</sup> When born the immature individuals show a general resemblance to the adults.

#### ***Hemimerus hanseni* Sharp**

*Hemimerus talpoides* HANSEN, 1894, Entom. Tidskrift, XV, p. 65, Pls. II and III.

(Not *Hemimerus talpoides* Walker.) Kitta, Gold Coast.

*Hemimerus hanseni* SHARP, 1895, 'Cambridge Nat. History,' V, p. 217, figs. 114-116.

(Based on Hansen's description and figures.)

Region of the Uele. (Dr. J. Rodhain: "off *Cricetomys gambianus*.") One adult male, three adult females, seven immature individuals. (Alcoholic.)

Considered by a number of authors to be inseparable from *talpoides* of Walker, the Central African form of this genus has been shown by Carpenter<sup>4</sup> to be quite distinct, and material now before us fully corroborates the conclusions reached by him. Walker's species, which was figured by Saussure<sup>5</sup> from original Walkerian material, was described from Sierra Leone, and we are fortunate enough to have before us, from the Hebard Collection, a single female labelled "Freetown, Sierra Leone, IX, 17, 1899, E. E. Austin. From rat known as ground pig." This specimen enables us to endorse fully what Carpenter has said concerning the differential features.

The seven immature specimens represent three instars, presumably the three preceding maturity. Vosseler<sup>6</sup> has given interesting morphological notes on the immature stages of this species, there called *talpoides* but instead representing *hanseni* as his Fig. 4 shows.

The localities given in the literature which are clearly referable to *hanseni* are Kitta, Gold Coast, and Rio del Rey, Cameroon (Hansen as *talpoides*), Entebbe, Uganda (Carpenter) and in the vicinity of Amani,

<sup>1</sup>1894, *op. cit.*, pp. 81-82.

<sup>2</sup>1911, Deutsche Entom. Zeitschrift, pp. 163-174.

<sup>3</sup>Hansen, 1894, *op. cit.*, pp. 78-80.

<sup>4</sup>1909, Entom. Monthly Magazine, (2) XX, pp. 254-257, Pl. IV.

<sup>5</sup>1897, Mém. Soc. Phys. et Hist. Nat. Genève, XXVI, pp. 399-420.

<sup>6</sup>1907, Zoolog. Anzeiger, XXXI, pp. 447-449, figs. 3-4.

east Usambara mountains, East Africa (Vosseler as *talpoides* but illustration shows material to be *hanseni*), while probably the specimens reported as *talpoides* by Jordan as taken on the Ruwenzori Expedition at an unmentioned locality, and that by Bouvier from Guengere, Portuguese East Africa, refer to this species. True *talpoides* Walker is definitely known only from Sierra Leone, although Cook's record from Liberia probably correctly refers to that species. It is certain, however, that *Hemimerus hanseni* ranges from the Gold Coast to north-eastern "German" East Africa (Tanganyika Territory), at least as far north in the interior as the region of the Uele and southern Uganda, and probably south-east to Portuguese East Africa (Guengere). Whether *talpoides* and *hanseni* occur in the same region remains to be determined, also whether the former is found on *Cricetomys gambianus* or a related form of the genus.

Schouteden (1919, Bull. Soc. Entom. Belgique, I, pp. 35 to 37) has reported *Hemimerus talpoides* as taken from *Cricetomys gambianus* secured in the Ituri District. The material examined by him probably represents the present species. The two records here given constitute our sole knowledge of the occurrence of the genus in the Belgian Congo.

## PROTODERMAPTERA

### Pygidicranidæ

#### Diplatynæ

#### DIPLATYS Serville

1831, Ann. Sci. Nat., XXII, p. 33.

GENOTYPE.—*Diplatys macrocephalus* (*Forficula macrocephala* Palisot de Beauvois). (Monotypic.)

The genus *Diplatys* comprises nearly forty species from both hemispheres but all tropical in their distribution. In the Old World the genus has the distribution shown in the accompanying map (Fig. 1) which is based on definite records in the literature. Its absence from the Papuan region is noteworthy, also the lack of information on the genus from southern Africa. From Africa and Madagascar fourteen species have been described, but the identity of several of these species, which were founded upon the female sex alone, is not clearly established at this writing. The sexes are quite different in certain features, as the form of the pronotum, forceps, and ultimate dorsal and penultimate ventral abdominal segments, while the abdomen is markedly specialized in the male sex of certain species, one of which is here described. It is

by no means certain that some of the sex correlations made in the past are correct. It is also probable that two color types may occur in each of several of the species of the genus. In consequence, systematic work on material of the genus is not at all an easy matter; the determination of isolated females is extremely difficult or impossible.

The larval forms of species of *Diplatys* possess long segmented cerci or caudal styles, which resemble antennæ and are composed of from fifteen to thirty segments. The basal segment of these is quite long and is a sheath for the developing forceps of the adult.

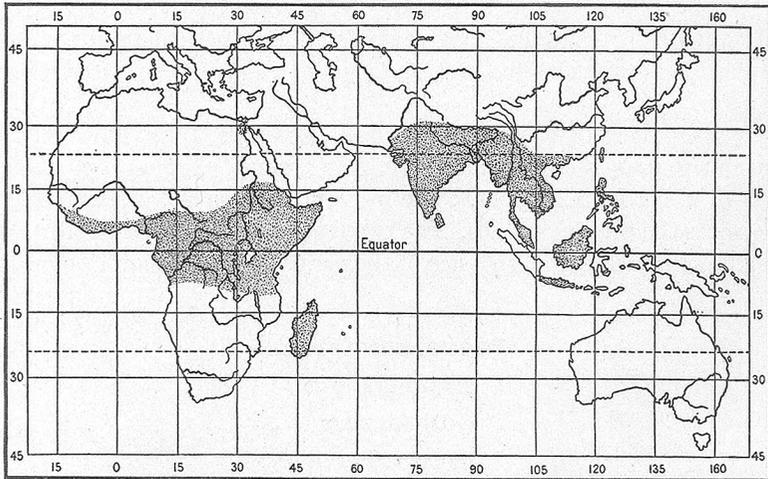


Fig. 1. Old World distribution of the genus *Diplatys*.

Individuals of the genus have been taken from under the bark of trees (*macrocephalus*), from dead leaves (*jansoni* and *severa*), from under flower pots (*gladiator*) and from flowers of nettle (*siva*). But a single identifiable species is included in the present collection and this is new to science. A single previously known species (*macrocephalus*) has been recorded from the Belgian Congo.

#### Key to the Congo Species of *Diplatys*

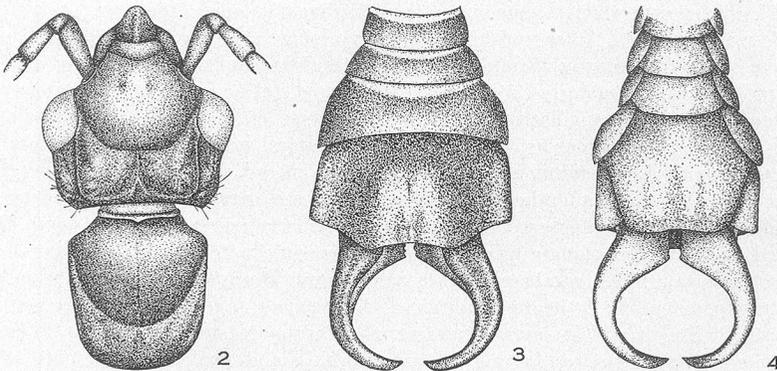
1. Ultimate dorsal abdominal segment of male with lateral margins gently arcuate. Forceps of male with branches thick and heavy in proximal third, there contiguous on median line, distad tapering and weakly arcuate, the space between the branches long elliptical. . . . *macrocephalus* (Palisot de Beauvois).

Ultimate dorsal abdominal segment of male with lateral margins straight, sub-parallel. Forceps of male with branches thick and heavy at extreme base only, there very briefly contiguous on median line, thence the branches strongly taper and are markedly falciform arcuate, the space between the branches transverse ovate.....*quæsitus*, new species.

***Diplatys quæsitus*, new species**

TYPE.—Male; Faradje, Belgian Congo; January, 1913; Lang and Chapin; A. M. N. H. No. 28068.

Size medium (for the genus). Form much as in *D. macrocephalus*, occiput depressed, abdomen expanded distad; surface weakly shining, of head, pronotum, tegmina, exposed portions of wings and limbs with numerous long hairs; abdomen with adpressed pile, this very sparse on dorsal surface, more thickly placed on the ventral surface, where scattered long hairs also occur.



Figs. 2-4. *Diplatys quæsitus*, new species. Male (type).

Fig. 2. Head and pronotum. Fig. 3. Dorsal surface of apex of abdomen. Fig. 4. Ventral surface of apex of abdomen. All greatly enlarged.

Head slightly longer than broad, mouth-parts moderately produced, occipital region subquadrate; interocular and interantennal region moderately inflated, broadly arcuate in section, sharply and arcuately margined caudad; occipital region with lateral carinæ caudad of internal margin of eyes pronounced and elevated, weakly arcuate-sinuate; area between carinæ markedly excavate, rugulose, a decided medio-longitudinal sulcus present in the excavated area; caudal margin of occiput very faintly concave, caudo-lateral angles obtuse; lateral margins of head caudad of eyes parallel for one-half of their length, then obliquely subtruncate to the caudo-lateral angles. Eyes prominent, in length nearly equal to post-ocular margin of head, with facets sharply indicated but with rounded surfaces. Antennæ nineteen-segmented, relatively heavy; proximal joint moderately inflated but relatively short; second joint very short; third joint two-thirds as long as the first joint, weakly enlarging distad; fourth joint moniliform, three-fourths as long as the third; fifth joint similar to the fourth but longer; thence the joints are of similar type but of increasing length; distal joint depressed and sub-ovate.

Pronotum faintly longer than broad, greatest width at cephalic fifth and subequal to width of occipital margin of head between the caudo-lateral angles; cephalic margin of pronotum truncate, laterad briefly oblique truncate to the point of greatest width, where the angles are obtuse; lateral margins very faintly arcuate, moderately converging caudad and broadly rounding into the arcuate caudal margin; disk of pronotum embracing the cephalic three-fourths of surface, bullate, with a brief and shallow medio-longitudinal sulcus, caudal and lateral margins of disk semi-ovate in outline; caudal and lateral portions of pronotum subtranslucent, upcurved, a weak medio-longitudinal carina present on caudal section.

Tegmina about two and one-half times as long as pronotum, relatively broad; humeral shoulders pronounced, but broadly rounded; distal margin arcuate, faintly oblique subtruncate suturad. Exposed portion of wings nearly half as long as the tegmina, narrowing distad, distal extremity sharply truncate.

Abdomen, except for the three distal segments, cylindrical, each individual segment with the faint median transverse constriction found in males of the group to which this species belongs, thus giving the articular portions of the segments a sub-nodose appearance. Antepenultimate tergite no longer than the tergite preceding it, but markedly broadening distad; penultimate tergite mesad slightly longer than the preceding tergite, regularly expanding laterad, its distal margin regularly concave; ultimate tergite rectangulate, appreciably transverse, its median length contained one and two-thirds times in its greatest width; lateral margins of ultimate tergite straight, parallel; caudal margin of same truncate mesad, very weakly oblique and subconcave laterad; caudo-lateral angles sharp and rectangulate; surface of ultimate tergite obliquely subdepressed caudo-laterad, regularly passing into the more elevated and yet subdeplanate median area. Antepenultimate sternite corresponding in its expansion to its tergal equivalent; penultimate sternite very large, as usual in the group, extending to the distal margin of the ultimate tergite, equalling the penultimate tergite in width; lateral margins of penultimate sternite straight, moderately converging, its caudal margin very weakly and shallowly biarcuate, the median portion shallowly concave; caudo-lateral angles rounded obtuse; ultimate sternite hidden. Forceps short, no longer than the ultimate tergite, strongly arcuate, the enlarged proximal portion very short, but briefly evident distad of the ultimate tergite, the branches regularly narrowing from this portion to the acute, subdepressed, striate apices; dorsal surface of forceps branches faintly excavate in median third, internal margin of this surface appreciably cingulate; internal surface of branches of forceps deplanate: contiguous portions of enlarged proximal sections denticulate, the armament of the two portions correlating in their "bite." Pygidium not evident.

Limbs of the usual type for the genus, moderately elongate and slender; cephalic tibiae weakly arcuate, median and caudal tibiae straight, all tibiae appreciably compressed. Tarsi with the proximal joint slightly longer than the third.

ALLOTYPE.—Female; Faradje, Belgian Congo; March, 1911; Lang and Chapin; A. M. N. H. No. 28069.

This sex differs from the description of the male (type) in the following noteworthy features.

Size smaller; dorsal surface of abdomen more pilose than in male.

Eyes less prominent than in male. Antennæ more slender than in other sex.

Abdomen more robust, fusiform, distinctly narrowing distad. Ultimate tergite with its proximal width slightly greater than its median length, moderately narrowing

caudad; caudal margin obliquely subconcave laterad, biarcuate dorsad of the axis of each branch of the forceps and with a median arcuate emargination, appreciably thickened in the arcuate section, a faint medio-longitudinal carination present on distal fourth of segment. Forceps simple, of the type usual in females of this genus, hardly longer than the ultimate tergite, attenuate with weakly hooked apices, weakly upcurved; internal margin of branches crenulato-denticulate for the greater portion of its length. Penultimate sternite very ample, reaching a short distance distad of the distal margin of the ultimate tergite, sublinguiform, the lateral margins converging sinuate, the distal portion faintly more than one-half as wide as the ultimate tergite, the distal margin strongly arcuate.

General coloration of head, abdomen and forceps blackish liver-brown, the tegmina and exposed portions of wings, excepting the usual oblique translucent portion, which is whitish, similar, but slightly less blackish in the female and approaching chestnut-brown, a narrow proximal portion of the tegmina in the female clay-color. Pronotum of male solidly of the general dorsal color; of the female clay-color with a pair of irregular, short lateral dashes near the cephalic margin. Antennæ of the general color in the male, of the female bister. Femora of the general color, with proximal portion broadly and distal section narrowly pale clay-color; tibiæ and tarsi generally pale clay-color, the tibiæ infuscate with the general color, the cephalic pair entirely so, the median ones largely washed with it and the caudal pair having it weaker and more proximal; tarsi of male largely infuscate with the general color, of female with arolia alone of that shade.

MALE.—Length of body, 12.7 mm.; length of pronotum, 1.4; length of tegmen, 3.5; greatest width of ultimate tergite, 2.6; length of forceps, 1.9.

FEMALE.—Length of body, 10.7 mm.; length of pronotum, 1.4; length of tegmen, 3.4; length of forceps, 1.4.

The type and allotype are the only specimens of the species we have seen. There is a bare possibility of the female sex not being conspecific with the type, but we feel little uncertainty on this point. The difficulty of correlating sexes in this genus is very great.

A relative of the African *D. macrocephalus* (Palisot de Beauvois)<sup>1</sup> and *riggenbachi* Burr,<sup>2</sup> and the Indian *D. gladiator* and *falcatus* Burr. It is distinguished from *macrocephalus* by the features given above in the key; from *riggenbachi* it differs in lacking the characteristic sculpture of the ultimate dorsal abdominal segment of the male of that species, in the broader distal portion of the penultimate ventral abdominal segment of the male, and in having the proximal portion of the forceps of the male dilated in less than the basal third. The resemblance of the present species to the Indian *gladiator* and *falcatus* Burr is very great, the latter being surprisingly close in relationship, but it can be distinguished from the new form by the less strongly arcuate forceps and the less strongly transverse ultimate dorsal abdominal segment. *D. gladiator* is wingless,

<sup>1</sup>1805, 'Ins. Rec. Afriq. Amér.', p. 36, Orth. Pl. I, fig. 3. Benin, southern Nigeria.

<sup>2</sup>1911, Ann. Mag. Nat. Hist., (8) VIII, p. 39. Garna (error for Garua), Cameroon.

with a proportionately larger pronotum and much reduced tegmina, but with considerable similarity in the form of the forceps.

### Karschiellinæ

#### BORMANSIA Verhoeff

1902, Zoolog. Anzeiger, XXV, p. 184.

GENOTYPE.—*Bormansia africana* Verhoeff. (Selected by Kirby, 1905.)

This remarkable genus is known from South and East Africa, from the Transvaal north to British East Africa (Kenya Colony), Uganda,

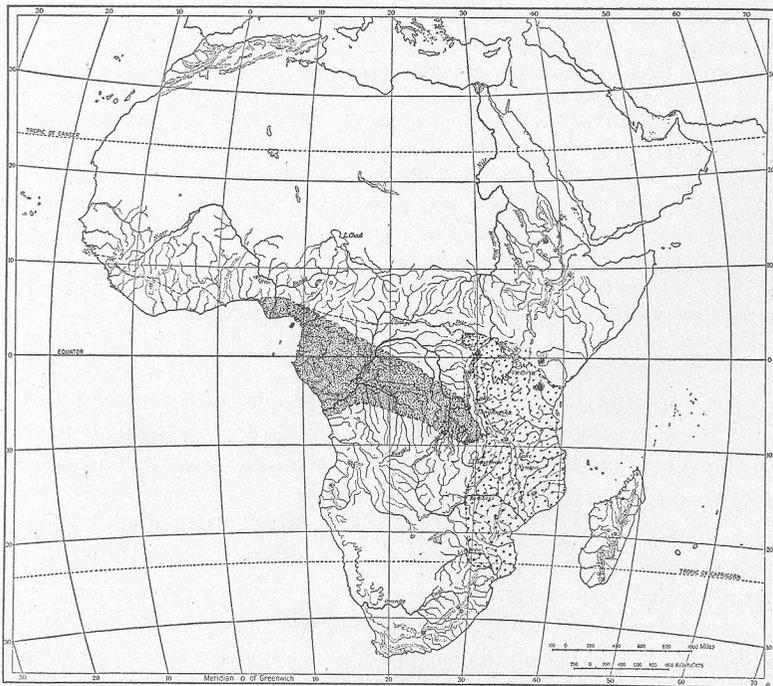


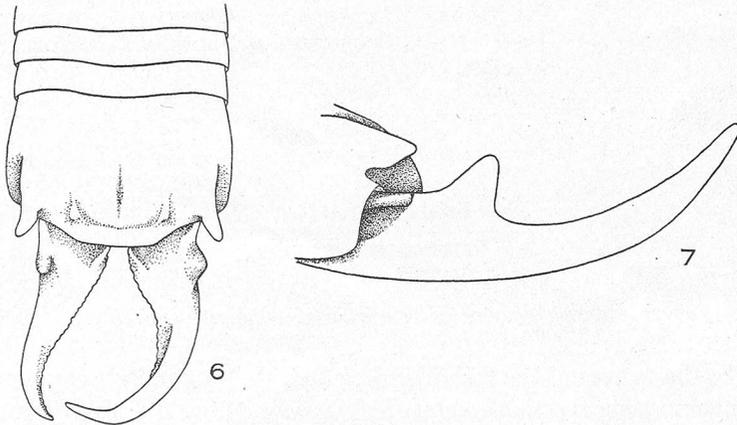
Fig. 5. Distribution of the genus *Bormansia* (open stipple) and *Karschiella* (close stipple).

The areas indicated have been made from the known records, and the actual ranges may be found to be more extensive when more exhaustive examination of Africa has been made. It is evident from this map that *Karschiella* is a Forest Province equivalent of the Savannah Province *Bormansia*.

and the north-eastern Belgian Congo. The equally remarkable and related *Karschiella* Verhoeff apparently replaces *Bormansia* over the greater portion of the Western Forest Province. These two genera comprise the subfamily Karschiellinæ.

The larval forms of species of this genus resemble those of *Diplatys* in that they possess distinct segmented cerci, the basal joint of which develops into the forceps of the adult. Beyond the proximal joint, in the larvæ, the cerci are made up of a series of fifteen to sixteen joints, of which four to five possess on the inner side a spinule directed toward the base.

But a single species of *Bormansia* is known from the Belgian Congo and that solely by the present records.<sup>1</sup>



Figs. 6-7. *Bormansia africana* Verhoeff. Male. Garamba, Belgian Congo.

Fig. 6. Dorsal surface of apex of abdomen, X6. Fig. 7. Lateral outline of left branch of forceps, X9.

***Bormansia africana* Verhoeff**

*Bormansia africana* VERHOEFF, 1902, Zoolog. Anzeiger, XXV, p. 184. ♂, ♀.  
 "German" East Africa (Tanganyika Territory).

Medje, 1910; one female. Garamba, June to July 1912; one male.  
 (Lang and Chapin.)

Both of these specimens are typical *africana*. We are not in a position to make any comment upon Burr's synonymy of *B. impressicollis* Verhoeff with *africana*. The present species was previously known only from "German" East Africa (Tanganyika Territory) and Western Uganda (Unyoro, reported by Borelli); while the clearly closely-allied, if distinct, *impressicollis*<sup>2</sup> has been recorded from Taita, Taveta, Kilimanjaro and

<sup>1</sup>Rehn (1905, Proc. U. S. Nat. Mus., XXIX, p. 504), recorded *Bormansia meridionalis* Burr from Luebo, Congo, but Burr has since shown (1910, Proc. U. S. Nat. Mus., XXXVIII, p. 444) that the specimen is not mature and represents *Karschiella camerunensis*.

<sup>2</sup>*Bormansia impressicollis* Verhoeff, 1902, Zoolog. Anzeiger, XXV, p. 184. ♀. Taita, "German" East Africa (Tanganyika Territory).

Daressalaam, East Africa, and Butiti, western Uganda, at an elevation of 1900 to 2000 meters. The Medje record is the first one of the species from within the Rain Forest, Garamba being in the Savannah region, which is more akin to East Africa.

The forceps of the male are quite asymmetrical, the right branch being rather sharply bent arcuate briefly distad of the dorsal tooth, thence subfalciform to the apex. The left branch is much more regular in its arcuation.

The two specimens measure (in millimeters) as follows:

	LENGTH OF BODY (EX- CLUSIVE OF FORCEPS)	LENGTH OF PRONOTUM	GREATEST WIDTH OF PRONOTUM	LENGTH OF FORCEPS <sup>1</sup>
♂ Garamba	22.0	3.5	3.7	5.5
♀ Medje	19.0	3.2	3.5	4.7

### Echinosomatinae

#### ECHINOSOMA Serville

1839, 'Hist. Nat. Ins., Orth.,' p. 34.

GENOTYPE.—*Echinosoma afrum* (*Forficula afra* Palisot de Beauvois). (Monotypic.)

In the tropics of the Old World we find the subfamily Echinosomatinae, comprising the single genus *Echinosoma*, filling the place occupied in the New World by the related Pyragrinae. Both groups are interesting by reason of having the body clothed with pubescence (Pyragrinae) or with short stiff bristles (*Echinosoma*), either condition being unusual in the earwigs.

The genus *Echinosoma* comprises somewhat more than a dozen forms with short forceps, showing on merely casual examination little difference in the sexual types of the forceps and with quite variable color markings. Much synonymy has been made by the description of mere color phases as species, but more broadly comparative work of recent years has shown the true relationship of a number of these forms.

Little is known of the habits of these insects, other than that they live in rotten wood, often in colonies,<sup>2</sup> and individuals have been taken from a termites' nest.

Equatorial Africa with Madagascar, Ceylon, India, Burma, and the Malayan and Australasian regions, as far as New Guinea and northern

<sup>1</sup>Measurement of the left branch, taken in straight line, i.e., shortest distance from base to tip.

<sup>2</sup>Palisot states that *E. afrum* lives under stones, but this is not supported by the observations of others, and is not what would be expected from the character of the insect.

Australia, comprise the range of the genus. Five species are known from the mainland of Africa, and two others from Madagascar. The West African *rufum*, *congolense*, and *concolor* Borelli have not been recorded from the Belgian Congo. These are small species much resembling the South African *E. wahlbergi*, although *rufum* is said to be close to *E. afrum*, from which, however, it appears to be quite distinct.

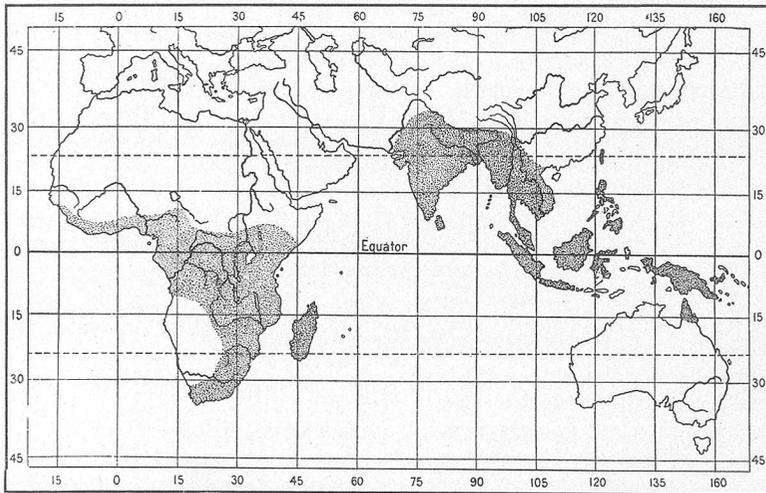


Fig. 8. Known distribution of the genus *Echinosoma*.

The genus is seen to extend into the Australasian Region, but is apparently absent from the more arid portions of southwest Africa.

Key to the Belgian Congo Species of *Echinosoma*<sup>1</sup>

1. Penultimate ventral abdominal segment of male with the margin broadly and regularly arcuate with a median concavity. Pygidium of female transverse, constricted mesad transversely, distal margin thickened, dorsal surface of pygidium appreciably excavate. Surface of abdomen less chætulose, smoother, more polished.....*afrum* (Palisot de Beauvois).
- Penultimate ventral abdominal segment of male with the margin obliquely emarginato-truncate laterad, mesad very shallowly obtuse-emarginate, passing by broad, low, rounded lobations into the lateral portions of the margin. Pygidium of female narrow, tapering, linguiform, apex rounded, deplanate ventrad, dorsad not excavate. Surface of abdomen much more distinctly and regularly chætulose, less polished.  
*occidentale* Bormans.

<sup>1</sup>Dohrn's *E. wahlbergi* has been recorded from Lingunda, Congo, by Burr, but we have reason to question the West African records of this species, as it evidently has been confused with true *E. afrum*.

**Echinosoma afrum** (Palisot de Beauvois)

*Forficula afra* PALISOT DE BEAUVOIS, 1805, 'Ins. Rec. Afriq. Amér.,' p. 35, Orth. Pl. I, fig. 1. ♀. "Kingdom of Oware and Benin" (in present Southern Nigeria).  
*Echinosoma fuscum* BORELLI, 1907, Ann. Mus. Civ. Stor. Nat. Genova, XLIII, p. 350. ♂. Fernand Vaz, French Congo; Basilé, Island of Fernando Po.

Medje; July 24 to 30, 1910, June, 1914 and July, 1914; two males and two females. (Lang and Chapin.)

Palisot's figure represents the present insect, the form of the female pygidium being clearly and accurately drawn. The above synonymy was indicated recently by Burr<sup>1</sup> and appears to us to be correct.

Structurally this species is separable from *E. occidentale* by the following features:

Surface of the abdomen in females less heavily and thickly chætulose than in *occidentale*, being nearly as naked as in the males.

Penultimate ventral abdominal segment of male with the margin broadly arcuate with a weak median concavity; in *occidentale* the margin is obliquely emarginato-truncate laterad with a pair of broad, low, rounded lobes distad, the margin between shallowly concave-emarginate. In the female sex the margin of this segment is regularly arcuate in *afrum*; bisinuato-truncate, with a very weak median arcuation, in *occidentale*.

Pygidia of males of the two species very similar, showing little of diagnostic importance; in the female the pygidium is of differential value, in *afrum* being transverse, constricted transversely mesad, the free margin inflated and elevated, lateral angles rounded, lateral margins concave, expanding proximad and appreciably cingulate, dorsal surface excavate, particularly distad; in *occidentale* the pygidium of the female is more narrow, linguiform, regularly narrowing distad, with apex rounded, distal portion bent dorsad at nearly a right angle to the proximal portion.

Dohrn's *E. wahlbergi*, described from "Caffraria," is extremely close to *afrum*, in fact so similar that there exists a probability of *wahlbergi* being merely a geographic race of *afrum*. We have compared the present material with a male of *wahlbergi* from Durban, Natal, and, aside from the smaller size of the South African individual, the only features we have found which may be considered diagnostic are that the male penultimate ventral abdominal segment shows an approach toward that of *E. occidentale* in shape, and the decurved lateral portions of the fifth and sixth abdominal tergites are distinctly longitudinally carinulate, which is not the case in the males of *afrum*, while the margin of the same portions of those tergites is more angulate caudad in *wahlbergi* than in *afrum*. The size difference means relatively little, as *wahlbergi* is known to range in body length from ten to fourteen millimeters in the male

<sup>1</sup>1915, Journ. Royal Microsc. Soc., p. 437.

sex.<sup>1</sup> Burr has recently stated that *wahlbergi* has a longer, more convoluted virga than *afrum*.<sup>2</sup>

It appears very probable to us that some, if not all, of the West African records of *E. wahlbergi* to be found in the literature refer to *afrum*, as *wahlbergi* is probably restricted to South and East Africa. It is probable also that *occidentale* has been misidentified as *afrum* and *afrum* as *wahlbergi*.



Fig. 9. Known distribution of *Echinotoma afrum* (dots) and *E. occidentale* (crosses). It is evident that both species are forms of Western Forest Province origin.

The present series measures (in millimeters) as follows:

	LENGTH OF BODY (EX-CLUSIVE OF FORCEPS)	LENGTH OF PRONOTUM	GREATEST WIDTH OF PRONOTUM	LENGTH OF TEGMEN	LENGTH OF EXPOSED PORTION OF WINGS	LENGTH OF FORCEPS
♂	17.0	2.4	2.6	4.0	1.9	2.9
♂	17.0	2.4	2.5	4.0	2.0	2.6
♀	15.0	2.3	2.6	4.0	1.8	3.2
♀	17.0	2.5	2.8	4.2	2.0	3.0

<sup>1</sup>Dohrn's original measurement of *wahlbergi* is ten millimeters, while Burr's *distanti*, now admitted by him to be a synonym of *wahlbergi*, is fourteen millimeters long.

<sup>2</sup>1915, Journ. Royal Microsc. Soc., p. 437.

The present series shows less color variation than that of *E. occidentale*, in all the two proximal antennal joints being yellowish and the limbs always particolored and never solidly blackish. However, we find the dark area of the pronotum broken up into the longitudinal blackish and yellow lines quite decidedly in one female and to a lesser degree in one male. The exposed portion of the wings show distinct (one male) or faint and indefinite (remainder) dark spots on the yellowish ground color.

The species *afrum* is distinctly one of the Western Forest Province, and its distribution is shown in Figure 9 in conjunction with the other species known from the Belgian Congo. The extreme localities are Bissao, Portuguese Guinea; Entebbe, Uganda, and Kuako, Kasai District, Belgian Congo.<sup>1</sup> We feel considerable uncertainty regarding the exact identity of records in the literature credited to *afrum* and *occidentale*.

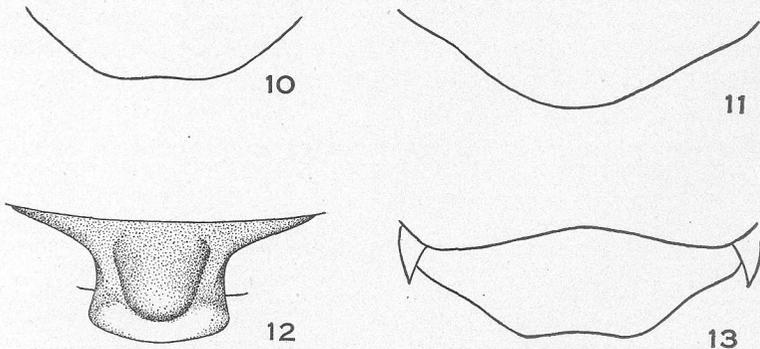


Fig. 10. *Echinosome afrum* (Palisot de Beauvois). Male. Medje, Belgian Congo. Outline of free margin of penultimate ventral abdominal segment. Fig. 11. *Echinosome afrum* (Palisot). Female. Medje, Belgian Congo. Same portion as in Fig. 10. Fig. 12. *Echinosome afrum* (Palisot). Female. Medje, Belgian Congo. Dorsal surface of pygidium. Fig. 13. *Echinosome wahlbergi* Dohrn. Male. Durban, Natal. Same portion as in Fig. 10.

#### ***Echinosome occidentale* Bormans**

*Echinosome occidentale* BORMANS, 1893, in Bolivar, Ann. Soc. Entom. France, LXII, p. 170. ♂. Assinie, Ivory Coast.

Medje, July, 1910, August to September, 1910, June, 1914 and July, 1914; one male and five females. (Lang and Chapin.)

Burr considers *occidentale* to be "a local race" of *afrum*, "well marked by the peculiar colouring of the elytra."<sup>2</sup> It is evident to us that

<sup>1</sup>Burr has recorded the species from Barobiti, Congo, but repeated search has failed to give us any information on this locality. In consequence we have been compelled to disregard it in making our map.

<sup>2</sup>1915, Journ. Royal Microsc. Soc., p. 437.

two distinct species are represented, which may be differentiated by the characters given in the key and above under *E. afrum*. The accompanying figures will assist in the recognition of these forms. It is clearly evident from the occurrence of the two forms at Medje, and also at Fernand Vaz, French Congo, Ukaika-Mawambi, Upper Ituri, Belgian Congo, and Entebbe, Uganda, that one is not a local race of the other, and the structural features we have mentioned will serve to differentiate what are clearly species.

*E. occidentale* averages larger than *afrum*, and the abdomen of the male is slightly less polished, while that of the female is much more chætulose than in *afrum*. The form of the penultimate ventral abdominal segment in both sexes and the pygidium in the female are also distinctive in the two species.

There is some variation in the exact shape of the distal portion of the pygidium of the female of this species, this section being more acute in some specimens than in others, but in all it retains its longitudinal and linguiform type, never approximating the transverse pygidium of the same sex of *afrum*.

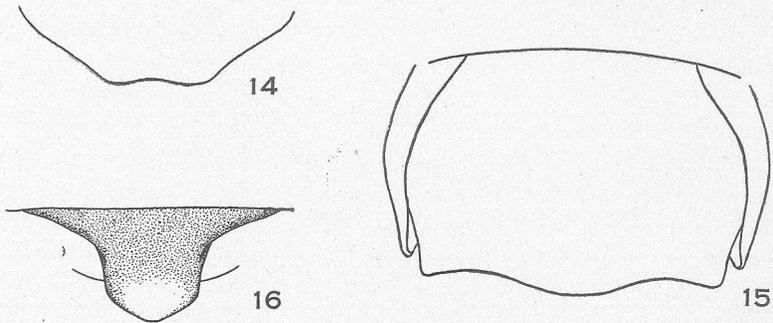
The size shows considerable variation, the series measuring (in millimeters) as follows:

	LENGTH OF BODY	LENGTH OF PRONOTUM	GREATEST WIDTH OF PRONOTUM	LENGTH OF TEGMINA	LENGTH OF EXPOSED PORTION OF WING	LENGTH OF FORCEPS
♂	17.5	2.4	2.6	4.3	2.2	3.1
♀	17.6	2.5	2.8	4.2	2.0	3.0
♀	16.2	2.4	2.7	4.0	1.6	3.1
♀	19.7	2.4	3.0	4.4	2.2	3.5
♀	20.5	2.6	3.5	4.6	2.6	3.5
♀	22.0	2.9	3.5	4.7	2.2	3.7

The color instability of this species is well illustrated by the Medje specimens. From one extreme with the head, antennæ, pronotum, tegmina, abdomen, and limbs virtually uniform blackish, with the exposed portion of the wings yellow with a black spot, the color grades to a type which has the base color more rufescent brownish, the two proximal antennal joints yellowish, the pronotum with a yellowish base and bearing seven dark irregular longitudinal lines cephalad, the lateral three of these fusing into a pair of broad dark blotches caudad, the tegmina dark with the distal and disto-lateral margins edged with yellowish and the surface spotted with the same, the femora and tibiæ pale, annulate proximad with dark. In this condition the exposed portions of the wings

are pale and may or may not (one single female) be supplied with a dark spot.

The distribution of this species will be seen, by reference to the map, to be very similar to that of *E. afrum*, although the present form has not been recorded from northwest of Assinie, Ivory Coast.



Figs. 14-16. *Echinosoma occidentale* Bormans.

Fig. 14. Male. Medje, Belgian Congo. Outline of free margin of penultimate ventral abdominal segment. Fig. 15. Female. Medje, Belgian Congo. Same portion as in Fig. 14. Fig. 16. Female. Medje, Belgian Congo. Dorsal surface of pygidium. All greatly enlarged.

### Labiduridæ

#### Psalinæ

#### ANISOLABIS Fieber

1853, Lotos, III, p. 257.

GENOTYPE.—*Anisolabis maritima* (*Forficula maritima* Gén ). (Selected by Kirby, 1905.)

The genus *Anisolabis* has been used by most authors in the past to embrace a great number of species of apterous or psaline earwigs. In recent years the work of Zacher and Burr has shown the urgent necessity for subdividing this assemblage into a number of genera, which have been based largely on characters of the male internal genitalia. The last paper on the subject, one by Burr,<sup>1</sup> brings out valuable and useful characters, which will doubtless prove of great diagnostic importance when the whole subject has been more thoroughly treated. This last paper by Burr is, however, so incomplete and so haphazard in its treatment, being largely scattered notes thrown together, often with little co-ordination, that it is extremely difficult to follow. For instance, on page 530 *Anisolabis quærens* is described as new and on page 529 Borelli's *isomorpha* is considered an *Anisolabis*, while on page 534 the author states

<sup>1</sup>1915, Journ. Royal Microsc. Soc., pp. 524 to 545.

"the few species which I retain in the genus (i.e., *Anisolabis*) can be distinguished as follows," and in the key which does follow neither *quærens* nor *isomorpha* are included. On page 539 *isomorpha* is definitely placed in a new genus *Apolabis*, and the inference is that *quærens* should be similarly assigned but this is not stated. Until the exact generic position of these species is more clearly stated it seems most advisable to retain in the genus *Anisolabis* such of them as do not seem clearly generically separable, either from previous work or original examination.

Of the species placed by Burr in the restricted genus *Anisolabis*, none have been previously recorded from the Belgian Congo, but we here report one of them. Of the species generally placed in *Anisolabis*, but which are definitely or inferentially referred to *Apolabis* by Burr, ten have been recorded from West African localities, and one from Uganda, but none to date from the Belgian Congo.

The genus *Anisolabis* has as its genotype a species of world-wide distribution—*A. maritima*—which, however, lives up well to its specific name and is rarely found distant from the sea-coasts. In the African region it occurs in the Cape Verde and Canary Islands, in Madagascar, in Morocco, the Sinai Peninsula, and at Konakry, French Guinea.

#### ***Anisolabis*<sup>1</sup> *pagana* Burr**

*Anisolabis pagana* BURR, 1915, Journ. Royal Microsc. Soc., p. 535, fig. 61, Pl. x, fig. 8 (genitalia). ♂. Cameroon.

Stanleyville, August, 1909; one female. (Lang and Chapin.)

The reference of this specimen to Burr's *pagana* has the same element of uncertainty shared by the reference of any females of this genus to a species when accompanying males are not available. The differential characters are almost entirely peculiar to, or at least more strongly indicated in, the male sex. Our reasons for referring this specimen to *pagana* are: the shape of the penultimate sternite, which closely approximates

<sup>1</sup>The present author's *Anisolabis pluto* (1905, Proc. U. S. Nat. Mus., XXIX, p. 506, fig. 4), from Liberia, based on the female sex, has given Burr a great deal of trouble. In 1910 (Proc. U. S. Nat. Mus., XXXVIII, p. 448) he suggests that it may be the female of *rufescens*, but in a footnote to the same comment he states that it is the female of Dohrn's *angulifera*. In 1911 ('Genera Insectorum, Dermaptera,' p. 30) *pluto* is definitely placed as a synonym of *angulifera* and *rufescens* stands as a closely related species. Later the same year he concluded (Stettin. Entom. Zeitung, LXXII, p. 334), after examining Dohrn's type of *angulifera*, that *angulifera*, *rufescens* and *pluto* are identical. More recently, in 1915 (Journ. Royal Microsc. Soc., 1915, p. 530), he is uncertain of the correctness of any of his former actions, as he says, "It is not yet certain to which form we are to refer *A. pluto* Rehn, and *A. angulifera* Dohrn; the former is a smooth species, and might be the female of *A. quærens* or *A. pagana*; the type seems to be a little too big for *A. tumida*." It is evident from this that he questions his previously established synonymy, and with a paratypic female of *pluto* before us it is evidently not the female of *angulifera* as figured by Burr in the same paper (idem, p. 530, fig. 59), apparently from the type. Instead, *pluto* is clearly one of the species with rounded and nonproduced lateral angles of the abdominal tergites, even when sexual differences are considered. After carefully studying our specimen it appears to us that it is more probably the female of *Anisolabis quærens* Burr (idem, p. 530, fig. 60, ♂, Mundane (err. for Mundame), Congo (err. for Cameroon)). If this proves to be the case, as appears quite probable to us, Burr's *quærens* must give way to the older *pluto*.

that figured of the male, the distal margin slightly more arcuate and the surface of the plate smoother, as would be expected in the female; the shape and development of the exposed lateral portions of the last sternite, with its lateral processes and the oblique character of the margins, virtually identical with these as figured for the male; and the rounded lateral portions of the sixth to ninth tergites, as described in the male by Burr. Practically no characters aside from abdominal and male genital ones were given in the original description, so we have no aid from any other features.

The body length is given by Burr as 10.5 mm., and that of the forceps as 2.75 mm. The present specimen is larger, the body measuring 14 mm. in length, while the forceps are 3 mm. long. Such difference is seen in the sexes of many psalids.

#### **EUBORELLIA** Burr

*Borellia* BURR, 1909, Deutsche Entom. Zeitschr., p. 325. (Not of Rehn, 1906.)

*Euborellia* BURR, 1910, Proc. U. S. Nat. Mus., XXXVIII, p. 448, footnote.

GENOTYPE.—*Euborellia mæsta* (*Anisolabis mæsta* Gén ). (By original designation.)

The African forms referred to this genus by Burr in his last study of the psalid genera<sup>1</sup> are, at this writing, so imperfectly understood that any attempt to make a key to them, without possessing more material and making an entirely new study of the genus, would be of little permanent value. Externally the species are very similar, except for the development of the organs of flight, and the sexual differences in sculpture, etc., are such as to make associations of material as difficult as in the related genus *Anisolabis* and its numerous allies. As a modifying influence upon the diagnostic value of these apparent differences we now know that in this genus, and within the species now before us, the wings may be well developed or absent, the tegmina well developed or present as short epaulet-like structures, while certain species are totally apterous.

Thirteen species of the genus are known from Africa, of which two are entirely Madagascan. Of the remaining species, but two have been recorded from the Belgian Congo, although quite a few of the others have been reported from surrounding regions. One of the species of the genus—*E. annulipes*—is virtually cosmopolitan, doubtless carried by commerce. The African records of this latter species are chiefly coastal, but it has been reported from as far inland as Ibanda, Fort Portal, Kitagueta, and Masaka, Uganda, and Bugala, Sesse Archipelago, Victoria Nyanza.

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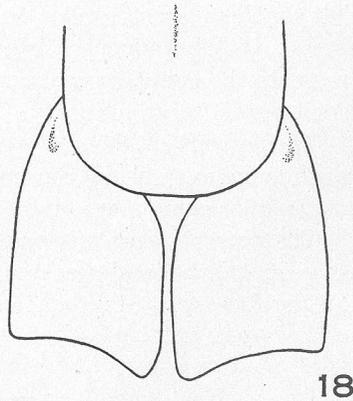
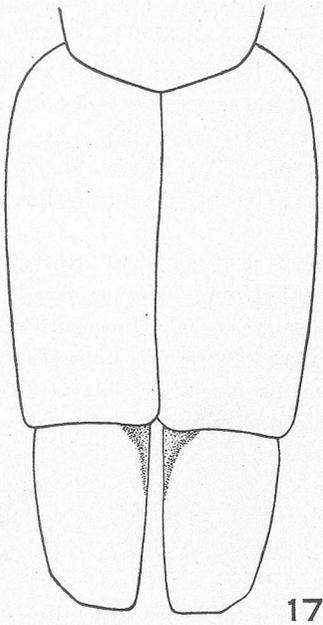
<sup>1</sup>1915, Journ. Royal Microsc. Soc., p. 544.

***Euborrellia cincticollis* (Gerstæcker)**

*Brach[ylabis] cincticollis* GERSTÆCKER, 1883, Mitth. Naturwiss. Ver. Neu-Vorpomm. und Rügen, Greifswald, XIV, p. 44. ♂, ♀. Bonjongo, Cameroon; Victoria, Cameroon.

*Psalis* (?) *picina* KIRBY, 1891, Journ. Linn. Soc. London, Zoöl., XXIII, p. 516. ♂, ♀. Gambia.

Risimu, between Stanleyville and Bafwaboli, September 7, 1909; two males. Medje, July 15 to 28, 1910 and July, 1914; one female and one immature male. Niapu, January, 1914; one immature female. (Lang and Chapin.)



Figs. 17-18. *Euborellia cincticollis* (Gerstæcker). Males. Risimu, Belgian Congo.

Fig. 17. Tegmina and wings of alate type. Fig. 18. Tegmina of brachypterous type. All greatly enlarged.

The synonymy given above was established by Burr in 1909<sup>1</sup> and we fully concur in his action. At the same time he suggests the probability of Palisot's *Forficula rufescens*<sup>2</sup> representing the same species. This seems entirely unlikely, the long and relatively slender forceps given in the figure at once removing Palisot's insect from consideration.

<sup>1</sup>1909, Ann. Mag. Nat. Hist., (8) IV, p. 113.

<sup>2</sup>Ins. Rec. Afriq. Amér., p. 35, Orth. Pl. I, fig. 2. Oware, (present) southern Nigeria.

Burr, in the paper above mentioned, suggests that individuals with abbreviate tegmina and no wings, such as the type material of *cincticollis*, are immature forms of the species, the fully adult individuals of which have much more completely developed tegmina and evident wings, similar to the types of *picina*. Of the specimens before us, the male from Risimu possesses fully developed tegmina and wings, while the second male from the same locality and the female from Medje have no evident wings, the tegmina being not more than one-half as long as in the fully alate type and these appendages are obliquely concavo-truncate distad. In the abbreviate-tegmined individual<sup>1</sup> the metanotum has its caudal margin obtuse-angulate emarginate, the segment very faintly inflated and with a medio-longitudinal sulcus weakly or subobsoletely indicated. We do not feel that the abbreviate-tegmined individual represents an immature condition and prefer to consider the species dimorphic in the adult, in this respect similar to *Psalis americana*, to which genus the present species frequently has been referred. The Niapu specimen represents the instar preceding maturity and the male from Medje the second instar before maturity.

The forceps of the males are somewhat asymmetrical, the right branch being more sharply arcuate than the left one. The usual yellow spots on the tegmina are obsolete or subobsolete in all three adults.

The present species is one representative of the Western Forest Province, and the localities from which it has been recorded extend from the Gambia east to Masaka, Uganda, south to Stanley Pool, Congo.

### Labidurinae

#### LABIDURA Leach

1815, 'Edinburgh Encycl.,' IX, p. 118.

GENOTYPE.—*Labidura riparia* (*Forficula riparia* Pallas).

A single polymorphic species with several color types makes up the genus *Labidura* as found in the Old World. There exists, and will continue to exist until we have definite and conclusive evidence, great uncertainty as to the real value of the different forms which have been combined under the specific name *riparia*. We feel that, at this writing, the best course to follow is to combine them, largely because the forms overlap and intergrade to such an extent that it is virtually impossible

<sup>1</sup>The original material described by Gerstaecker was of this type. The original description was based on both sexes, and not on the female alone, as Burr's comments on the Greifswald Dermaptera (1909, Ann. Mag. Nat. Hist., (8) III, p. 255) would lead one to suppose. It is quite incomprehensible how that author could write, "It is to be hoped that the male will be discovered soon, so that its true relations may be determined." Gerstaecker distinctly gives both sexes, measurements of both, and rather carefully describes the abdominal and forceps characters of the male.

to assign more than a portion of one's material to any of the named units, phases, or what-not. Kirby,<sup>1</sup> in 1903, made an effort to single out certain of these forms, but in a most incomplete and inconclusive way. Any effort to use his suggestions, for such they really are, leads one immediately into difficulty. We have examined some hundreds of individuals of *riparia* from various localities in the Old and New World, and we fail to find any constant and definite features upon which we can rely for separating the complex into definite species or varieties, either on marked morphological grounds or even less pronounced tendencies with geographic correlations. Certain definite tendencies in structure do exist, as abbreviation of wings, bidentate distal margin of last abdominal tergite in the male, lack of median tooth in the male forceps and dorsal curve of the forceps, while the size varies greatly. However, these features, which are probably genetic, are so inextricably tangled up that the use of names for them is clearly inadvisable at this time.

The genus *Labidura* is of virtually world-wide distribution, but whether this distribution has been assisted by the human race is at present unknown. Personally, we are inclined to believe that man has had relatively little to do with its presence in many places. The absence of the genus from some extensive areas, such as a very large part of the western coast of the Americas, appears rather significant, but two records being known from that region, i.e., Panama City, Panama, and Chile. The latter record is rather indefinite, but we are using it to assist in illustrating our point. The absence of records from the western coast of the United States may be explained by the fact that *Labidura* prefers sandy regions and that coast is largely rocky, but in the Bermudas, which are coralline limestone islands, more rugged and broken than the western coast of the United States and with few or no sandy areas, the species is quite at home. In the eastern and southern United States the type species has a very limited distribution, apparently restricted to the sandy coastal plain and outlying islands, extending back from the coast region solely along the larger river valleys, and then only within the confines of the coastal plain. There is no record of its occurrence higher up the great Mississippi Valley than New Orleans, although for over one hundred years this has been one of the greatest avenues of commerce in the world. We are citing these comparative data to show that in regions as well studied as the south-eastern United States the distribution of *Labidura* is known to be very circumscribed. With these facts in view, its

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<sup>1</sup>Ann. Mag. Nat. Hist., (7) XI, pp. 64 to 68.

marked presence far up in the Congo basin and its relative absence, or at least scarcity, up the Amazon Valley are worthy of comparison. Arab traders, slave or goods caravans, may have played a part in this distribution in Africa, which is of at least fifteen years' standing, as evidenced by the records. However, the steady and regular water transport on the Amazon, continuously for several centuries, clearly presented a far more ready method of range extension if man was the chief factor involved.

**Labidura riparia** (Pallas)

*Forficula riparia* PALLAS, 1773, 'Reise Russischen Reichs,' II, Buch 2, Anhang, p. 727. ♂. Shores of the Irtysh (Irtin) River, western Siberia.

[*Forficula*] *pallipes* FABRICIUS, 1775, 'Syst. Entom.,' p. 270. ♂. Cape Verde Islands.

*Forficula crenata* OLIVIER, 1791, 'Encycl. Méthod.,' VI, p. 467. ♀. "Middle of Africa."

[*Forficula*] *flavipes* FABRICIUS, 1793, 'Entom. Syst.,' II, p. 2. (Sex?) Guinea.

*Forficula rufescens* PALISOT DE BEAUVOIS, 1805, 'Ins. Rec. Afriq. Amér.,' p. 35, Orth. Pl. I, fig. 2. ♀. Wari (Oware), (present) southern Nigeria.

*Forficelisa terminalis* SERVILLE, 1839, 'Hist. Nat. Ins., Orth.,' p. 25. ♂. Mauritius (Isle of France).

*Labidura auditor* SCUDDER, 1876, Proc. Boston Soc. Nat. Hist., XVIII, p. 252. ♂, ♀. Natal.

*Apterygida huseinæ* REHN, 1901, Proc. Acad. Nat. Sci. Philadelphia, p. 273. ♂, ♀. Sheikh Husein, Abyssinia.

Garamba, July, 1912; one male. Faradje, April, 1911 and January, 1913; one female and three very immature specimens. Niangara, November, 1910; six males and two females. Niapu, January, 1914; one male and two females. Medje, January 22, 1910, September, 20 to 30, 1910 and June, 1914; two males and one immature specimen. Bata-ma, September 16, 1909; one male and one immature specimen. Stanleyville, January and April, 1915; two males, three females, and five very immature specimens. Malela, July 5, 1915; one immature specimen. (Lang and Chapin.)

We are giving above the original references and the synonymy as based on African material. The full synonymy of this widely distributed and apparently polymorphic species is so extensive that it seems inadvisable to include more than the African synonyms. Of these two have not been so placed previously. These are *flavipes* Fabricius and *rufescens* Palisot de Beauvois. The position of these will be evident after examining the descriptions and Palisot's figure. The latter author's name has been considered to be a questionable synonym of *Euborellia cincticollis*, but its reference there is entirely without reason or evidence.

While adding two names to the synonymy we also remove two African forms which have been referred here by Burr,<sup>1</sup> as there is no justification for so placing them. These are *Labidura dubroni* and *L. karschi* Borg,<sup>2</sup> both of which are not only not referable to *Labidura*, but probably belong to the Labiidæ. The figure of *karschi* shows and the descriptions of both emphasize features which are not found in labidurine types.

For the present, at least, it seems most advisable to consider nearly all of the numerous form and color variations of the *Labidura riparia* complex as representatives of a single, widely distributed, very variable species. Future field work may show this to be incorrect and breeding experiments may demonstrate that genetic value should be attached to certain of these tendencies. Until such work has been done and the evidence presented, we have little reason for taking a position different from that here indicated.

The pale form, which has been called true *riparia*, is represented by two males and two females of the Stanleyville series, the Faradje female and one Niapu female. The dark-bodied type, which has been referred to frequently in the literature as *pallipes*, is represented by the Garamba male, nearly all of the Niangara series, a Medje male, the Niapu male and second female, and the Batama male. The third Stanleyville female, two males and a female from Niangara, and the second Medje male are nearer *pallipes*, but paler than the others.

In size the variation is most marked, the extremes of the series of males measuring (in millimeters) as follows:

	Niangara	Niangara	Medje
Length of Body.....	22.5	16.1	20.2
Length of Forceps.....	9.4	5.3	10.6
	Medje	Stanleyville	Stanleyville
Length of Body.....	17.1	20.4	18.5
Length of Forceps.....	7.8	8.5	6.8

The two females from Niangara are not comparable in body length, as one has had the abdomen much distended by the absorption of a liquid preservative, one of the Niapu females has lost its forceps, and the Stanleyville females are of very nearly the same size.

All of the adults show the wings projecting distad of the tegmina to a variable extent. In the Niangara males the paired teeth on the distal margin of the last abdominal tergite are distinctly present in all but one, almost completely absent in this, the smallest individual of that series.

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<sup>1</sup>1911, 'Genera Insectorum, Dermaptera,' p. 36.  
<sup>2</sup>1904, *Labidura dubroni* Borg, Arkiv för Zoologi, I, p. 565. ♀. Cameroon. *Labidura karschi* Borg, idem, p. 566, Pl. xxvi, fig. 1. ♂, ♀. Cameroon.

In one Stanleyville male they are markedly present, in the other almost absent. In both Medje males these teeth are present, more decided in the larger individual; in the Garamba and Batama males they are present, and are present but very weak in the Niapu male, which is of very small size. In all the males the internal margin of the forceps shows a median tooth, although this varies in strength.

The distribution of this species in Africa is very extensive, virtually the only large areas of the continent from which we have no records being the Saharan region, Angola and Southwest Africa, and Portuguese and "German" East Africa (Tanganyika Territory). In all but the first area we feel this is due to the lack of definite information. *Labidura* is not a desert-loving form, although the presence of a river system or sea-coast will extend its distribution into arid regions.

### Apachyidæ

#### APACHYUS Serville

1831, Ann. Sci. Nat., XXII, p. 35.

GENOTYPE.—*Apachyus depressus* (*Forficula depressa* Palisot de Beauvois). (Monotypic.)

This most peculiar genus and its relative *Dendroiketes*, from Ceylon, have been considered to constitute the family Apachyidæ, and this representative of a superfamily, the Paradermaptera. Burr, the leading authority on the Dermaptera, now prefers to cancel the superfamily and to treat the group as a family or even a subfamily.<sup>1</sup> It is, at any rate, one of the clearly cut groups, with a general facies which makes its immediate recognition possible. The body form is greatly modified, strongly depressed and, in fact, flattened, recalling that of the *Spartanæ*, while the development of the remarkable squamo-pygidium, with its unusual median projection and simple sickle-shaped forceps, furnishes a very distinctive set of structures.

The Ceylonese *Dendroiketes* is an annectant type between the more specialized genus *Apachyus* and the more typical earwigs, having a simple rectangular instead of much specialized and longitudinal pronotum, less depressed body and differences in the tarsal and abdominal structures.

All the information we have regarding the habits of species of this genus is to the effect that they live under the bark of dead trees, a habitat for which their flattened form admirably fits them.

<sup>1</sup>1915, Journ. Royal Microsc. Soc., p. 447. In this paper Burr seems uncertain of the status of the group. He first says, "Subfamily 7. Apachyidæ." Three lines below he says, "I . . . treat the Apachyidæ as a family of the Protodermaptera." The heading quoted above is equivalent in position and type with the other subfamilies, consecutively numbered and properly given with "næ" terminations, treated as subfamilies of the Labiduridæ. His intention can hardly be called clear, nor his treatment consistent.

The genus is known to occur in the Papuan and Oriental Regions, from New Guinea through the Sunda Islands to Tonkin, Burma, Assam, Sikkim, and Bhutan, and in the African Western Forest Province, extending into the Eastern and Southern Subprovince of the Savannah Province, and reaching the eastern coast of Africa at Beira, but being absent from Madagascar and the other islands of the Malagasy Region. The related genus *Dendroiketes*, as stated above, occurs only in Ceylon.

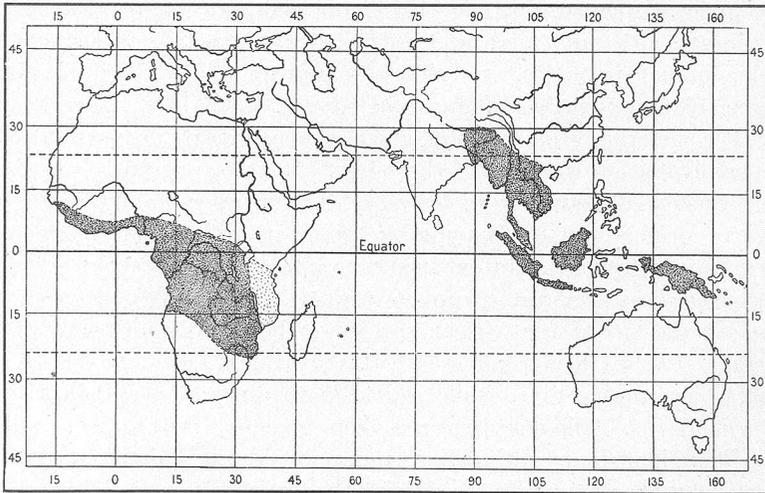


Fig. 19. Known distribution of the genus *Apachyus*.

In the Malayan Region it is more than probable that the genus will be found on a number of the islands not stippled here; but we have restricted ourselves to those from which actual records have been published. The light stippled area in eastern Africa is also an area of probable distribution, but we have no actual records from this section.

Key to the African Species of *Apachyus*

1. Form broader and heavier, more robust; size generally larger. Pronotum broader. Abdomen with moderate but evident expansion distad; width across anal segment decidedly greater than twice width of pronotum. Anal segment of male with produced section between forceps bases twice as broad as long, the serrulate margin in general broad and low arcuate; anal segment of female with proportions similar to those of male, the margin in general form arcuate obtuse-angulate. Forceps of both sexes with arms more strongly bowed, heavier proximad. . . . . *depressus* (Palisot de Beauvois).  
 Form more slender; size generally smaller. Pronotum more narrow. Abdomen subequal in width, hardly expanding at all distad; width across anal segment hardly or not at all greater than twice width of pronotum. Anal segment of male with produced section between forceps bases one and one-half times as broad as long, the serrulate margin arcuate obtuse-angulate; anal segment of female with proportions similar to those of male, the margin in general form crenulate subrectangulate. Forceps of both sexes with arms less strongly bowed, more slender proximad. . . . . *murrayi* Dohrn.

**Apachyus depressus** (Palisot de Beauvois)

*Forficula depressa* PALISOT DE BEAUVOIS, 1805, 'Ins. Rec. Afriq. Amér.,' p. 36, Orth. Pl. I, fig. 5. ♂. Oware (present southern Nigeria, west of mouth of the Niger River), West Africa.

*Apachya reichardi* KARSCH, 1886, Berlin. Entom. Zeitschr., XXX, p. 85, Pl. III, fig. 3. ♂. "Eastern Central Africa, east of (Lake) Tanganyika, probably Kawande" (western "German" East Africa.)

Niagara, November, 1910; one male, one female, and three immature males. Akenge, October, 1913; one female. Medje, July 24 to September, 1910 and June and July, 1914; six males, three females, twelve immature males, and eleven immature females. Stanleyville, March, 1915; one male. (Lang and Chapin.)

The synonymy of *reichardi* given above appears to us to be the proper disposition to make of the name. It has, apparently, no claim to be considered distinct from *depressus*, the general size and colorational features originally cited having no value as differential characters. Burr<sup>1</sup> leaves the matter rather in suspense by giving *depressus*, *murrayi*, and *reichardi* as geographic forms of a single species. We have shown above in the key to the African species of the genus, and below under *murrayi*, that we do not agree with this treatment, *murrayi* clearly not being a geographic race, while *reichardi* certainly equals Palisot's far older *depressus*. The color features there given by Burr appear to us to have little significance, although certain points of the abdominal coloring may be of real assistance in recognizing the two species here treated.

The present series shows very great variation in size in adults of both sexes, and in the males from Medje alone the differences are decided. Representative material shows the following body length, exclusive of the forceps, in millimeters.

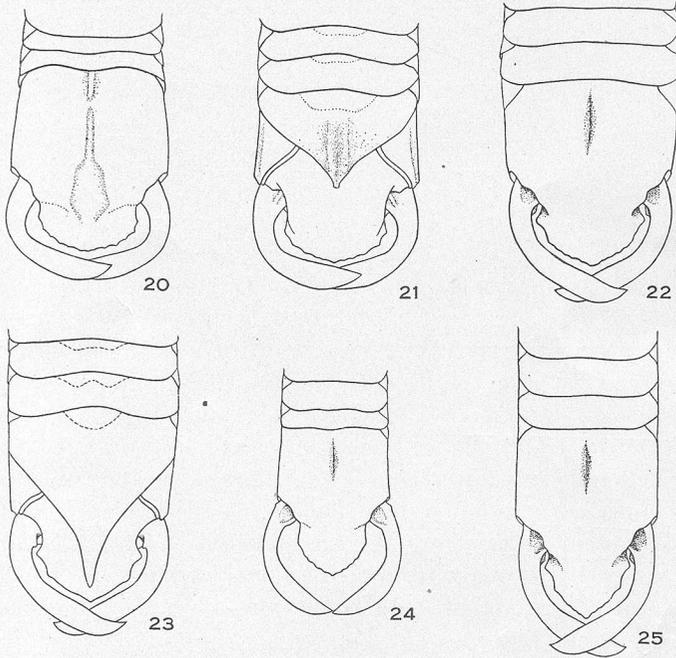
	Niagara	Medje	Medje	
♂	24.7	22.4	25.0	
			Akenge	Stanleyville
♀	21.0	24.6	22.4	24.2

In coloration the adult specimens before us show almost no noteworthy features. In all, the internal section of the folded wings is pale yellowish and the pronotum is unicolorous, with the tegmina except for an occasional weak paling mesad. In no specimen is the pronotum bordered with pale color. The scutellum varies slightly in depth of color-

<sup>1</sup>1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Zool., Lief. 16, p. 457.

tion, much the same as the pronotum. The immature specimens are largely gamboge yellow in their younger instars, darkening and becoming more contrastingly colored as they develop.

The anal segment of the adult male shows no variation in its shape or that of the production of the segment. The female shows equal fixity in the character of the anal segment.



Figs. 20-23. *Apachyus depressus* (Palisot de Beauvois).

Fig. 20. Male. Niangara, Belgian Congo. Dorsal surface of apex of abdomen.  $\times 4$ . Fig. 21. Ventral surface of apex of abdomen of the same,  $\times 4$ . Fig. 22. Female. Medje, Belgian Congo. Dorsal surface of apex of abdomen,  $\times 4\frac{1}{2}$ . Fig. 23. Ventral surface of apex of abdomen of the same,  $\times 4\frac{1}{2}$ .

Figs. 24-25. *Apachyus murrayi* Dohrn.

Fig. 24. Male. Medje, Belgian Congo. Dorsal surface of abdomen,  $\times 4\frac{1}{2}$ . Fig. 25. Female. Stanleyville, Belgian Congo. Dorsal surface of abdomen,  $\times 5\frac{1}{2}$ .

The immature specimens appear to represent at least three instars preceding maturity. In these the production of the anal segment is similar in both sexes, being a lanceolate linguiform projection with crenulate edges. When the ventral surface is examined a distinct difference in the sexes is noted. In the male in the youngest instar the eighth sternite is broadly and regularly arcuate, the two preceding ones with

their margins concave mesad. In the next instar of the same sex the eighth sternite has the margin obtuse-angulate produced, the two preceding segments with their concavity much less evident. In the instar preceding maturity in the male the eighth sternite is more markedly obtuse-angulate with the sides of the angle weakly concave and the apex with a bifid tendency. As Burr already has pointed out,<sup>1</sup> eight sternites

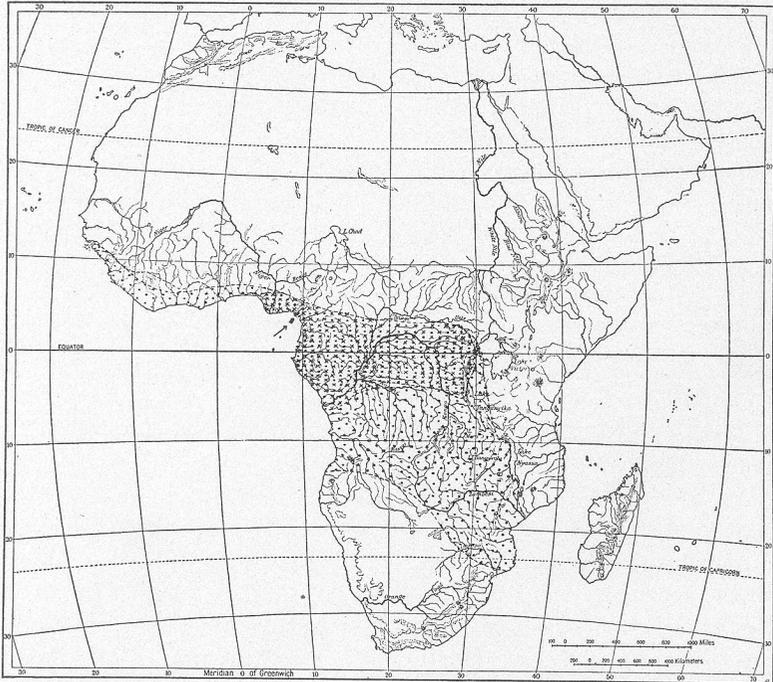


Fig. 26. Known distribution of *Apachys depressus* (dots) and *A. murrayi* (crosses).

It is evident that *murrayi* has a much more circumscribed distribution than *depressus*, the former being a strictly Western Forest Province form, while *depressus* has maintained or achieved a greater distributional area, probably by a more ready adaptability.

are distinctly visible in the immature female of this genus. In the female sex we have but two instars preceding maturity represented. In the earlier of these the sixth sternite has its margin very weakly angulate produced mesad, the seventh is concavo-truncate distad and the eighth is broadly and shallowly arcuate. In the instar preceding maturity in the female the sixth sternite has the production more pronounced, acute,

<sup>1</sup>1910, 'Fauna Brit. India, Dermapt.,' p. 34.

reaching nearly to the margin of the seventh sternite, the sides of the angle concave, the seventh sternite with its margin concave mesad, arcuate laterad, eighth sternite low arcuato-obtuse-angulate. Definite wing-venational indications are to be seen in the two instars preceding maturity.

The area of distribution of this species covers virtually all of the Western Forest Province and portions of the Eastern and Southern Subprovince of Engler. It is known to occur from the Rio Cassini, Portuguese Guinea, to the north-eastern Belgian Congo (localities here given and from between Ukaika and Mawambi) and western "German" East Africa (Kawende), south to Benguela, northeastern Transvaal (Zoutpansberg) and central Portuguese East Africa (Beira). It also has been specifically recorded from Mount Coffee, Liberia; Assinie, Ivory Coast; Aburi, Gold Coast; Oware, southern Nigeria; Mundame, Cameroon; Cape San Juan, Biafra; Lambarené, Fernand Vaz, and Nkogo, French Congo, as well as from the island of Fernando Po.

#### ***Apachyus murrayi* Dohrn**

*A[pachyus] murrayi* DOHRN, 1863, Stettin. Entom. Zeitung, XXIV, p. 44. Sex? Old Calabar, West Africa.

Medje, July, 1914; one male. Stanleyville, March, 1915; one female. (Lang and Chapin.)

In addition to these specimens we have an adult female and an immature female from Bitye, Dja River, Cameroon, in the collection of the Academy of Natural Sciences of Philadelphia, which are identical with the specimens from the north-eastern Belgian Congo. As we have stated above under *depressus*, we do not consider these names to represent forms of the same species, but instead distinct species. Burr considers *murrayi* to be a West African race or form of a single species comprising all the described African *Apachyus*. The present material shows that *murrayi* ranges to the north-eastern Belgian Congo, occurs with *A. depressus*, and differs constantly in structural features, also exhibits no difference between specimens from the north-eastern Belgian Congo and those from the southern Cameroon.

In the key to the species given above under the generic discussion, we have presented the salient features for distinguishing *A. murrayi* from *A. depressus*, and in addition to those the following less evident but still useful features have been observed.

In *murrayi* the eyes are slightly smaller in proportion to the post-ocular portion of the head, and also slightly more prominent.

The dark suffusion of the dorsal and lateral surfaces of the base of the abdomen is more broadly distributed over the segments involved in *depressus*, while in *murrayi* the sides and lateral portions of the dorsum of the segments only are involved.

In *murrayi* the more elongate produced portion of the anal segment and the more slender form of the whole insect gives to the anal segment a more elongate facies in *murrayi* than in *depressus*, this more evident in the male than in the female sex.

The specimens before us measure as follows in body length (exclusive of forceps): ♂, Medje, Belgian Congo, 21 mm.; ♀, Stanleyville, Belgian Congo, 19.6; ♀, Bitye, Cameroon, 22.5.

We find no noteworthy color or structural variational differences in our material. The immature female from Bitye is in the instar preceding maturity and the development of its distal sternites is much as in the same instar of *depressus*, the eighth, however, with its margin more regularly arcuate. The produced portion of the anal segment in the same specimen is slightly more acute and lanceolate than in *depressus*.

As far as our present knowledge of the distribution of this species goes it covers a more restricted area than that of *A. depressus*, the present form not being found outside of the Western Forest Province. It is known from localities extending from Southern Nigeria (Old Calabar and Olokemeji) east to Lake Kivu and the north-eastern Belgian Congo (Medje and Avakubi), and from as far north as Medje, Belgian Congo, and from the Nigerian localities south to the Lower Congo (Luki and Stanley Pool). Its distributional limits on the southeast are completely unknown.

## EUDERMAPTERA

### Labiidæ

### Labiinæ

### LABIA Leach

1815, 'Edinburgh Encycl.,' IX, p. 118.

GENOTYPE.—*Labia minor* (*Forficula minor* Linnæus).

This genus is composed of more than fifty species of uniformly small earwigs, occasionally of striking coloration, but often difficult to distinguish satisfactorily, as the variation in the species is not as clearly understood as is necessary for permanent critical work. This variation is not limited to coloration, but is known also to be structural in certain species, as in the nearly circumtropical *L. curvicauda*. Many of the described species are at present virtually unrecognizable on account of

the insufficient character of their descriptions. Two species of the genus are widely distributed, *L. minor* being nearly cosmopolitan and very probably distributed by the agency of man, while *L. curvicauda* is virtually circumtropical in its distribution, and man may have been an influencing factor in the distribution of this species as well as in the case of *minor*.

Sixteen species of the genus are known from Africa with Madagascar, the Comoros, and the Seychelles. Of these, but three have been recorded from the Belgian Congo, i.e., *Labia minor*, *L. ochropus*, and *L. owenii*, but there can be no question of the occurrence in that territory of quite a few other species described from West African localities.



Fig. 27. Known distribution of *Labia ochropus*.

***Labia ochropus* (Stål)**

*F[orficula] ochropus* STÅL, 1855, Öfv. Kongl. Vetensk.-Akad. Förhandl., XII, p. 348. ♂, ♀. Port Natal (Durban), Natal.

Bengamisa, September 29, 1914; one female. (Lang and Chapin.)

This widely distributed African species has been referred to in a number of publications as *Labia marginalis* (Thunberg),<sup>1</sup> but we do not feel warranted in using this name for the specimen before us. The Bengamisa female fully agrees with the description of *ochropus* and its interpretation by subsequent authors, while it does not answer Thunberg's very brief description. In such a case it appears best to use the later but clearly applicable name. The species is said to be variable in coloration, but the real extent of the variation has not been recorded.

The present specimen has the head, pronotum, tegmina, and abdomen uniform pitch-brown, while the exposed portions of the wings are honey-yellow, margined along the sutural margins and more broadly their apices with pitch-brown. The antennæ are yellow with the following exceptions: first and second joints, which are strongly, and the third much less decidedly pitch-brown, joints ten to fourteen pitch-brown. Limbs honey-yellow with the femora clouded proximad with pitch-brown. The forceps are ferruginous.

The species is known to inhabit much of the Western Forest Province and the greater part of the Eastern and Southern Subprovince, having been reported from localities extending from Assinie, Ivory Coast and Fernand Vaz, French Congo to Tanga, "German" East Africa (Tanganyika Territory), and from as far north as these localities and Buta (Rubi), Belgian Congo, south to Natal, also occurring on the island of Mayotte in the Comoros. The records from the Belgian Congo are Leopoldville, Buta on the Rubi River, and the present one.

### Chelisochildæ

#### CHELISOCHES Scudder

*Lobophora* SERVILLE, 1839, 'Hist. Nat. Ins., Orth.,' p. 32. (Not of Curtis, 1825.)

*Chelisoches* SCUDDER, 1876, Proc. Boston Soc. Nat. Hist., XVIII, p. 295.

*Enkrates* BURR, 1907, Trans. Entom. Soc. London, p. 131.

GENOTYPE.—*Lobophora rufitarsis* (= *Forficula morio* Fabricius). (Monotypic.)

It was necessary to replace the first generic name proposed for this group on account of its preoccupation in Lepidoptera. This Scudder properly did by substituting *Chelisoches* for *Lobophora*. Burr's name *Enkrates* has an unfortunate history, wholly due to the misidentification of his genotypic species. After the original description of his new genus, which is that of a distinct and clearly recognizable one, he states: "The only known species is *Enkrates flavipennis* Fabr., from West Africa,

<sup>1</sup>[*orficula*] *marginalis* Thunberg, 1827, Nova Acta Reg. Soc. Scient. Upsal., IX, p. 52. Sex? Cape (of Good Hope).

of which the synonymy is rather confused." After this follows the synonymy, headed by the reference to Fabricius' *Forficula flavipennis*. The difficulty here is, that *flavipennis* Fabricius is not a member of the genus described by Burr, but it is the oldest name for the chelisochid called *plagiata* by Fairmaire in 1858. We are discussing this identification below. The designation of the genotype and the citation of the author of the same is the last resort in the fixing of a generic name and, in consequence, Burr's name *Enkrates* must be placed, albeit very unwillingly by us, as a synonym of *Chelisoche*s. We are elsewhere proposing a new generic name for the species which Burr had misidentified as *flavipennis* Fabricius.

The present genus, like the whole family to which it belongs, is of Old World origin, but the genotype, *C. morio*, is a very adaptable species which apparently has been transported by commerce to such an extent that it is now established in the Hawaiian Islands and in California. The majority of the ten or so species of the genus are Oriental or Australasian, and the genus reaches its greatest diversity in the Sunda Islands.

From the African continent but two species are known. One of these two African species is *C. morio*, the widely distributed and adaptable genotypic species of the genus. In Africa it is known only from several localities in Usambara, "German" East Africa (Tanganyika Territory), and the vicinity of Mombasa, where it was probably accidentally transported, while it also occurs in Madagascar and the Comoros, as well as north of Madagascar on the Farquhar Atoll.

#### Key to the Species of *Chelisoche*s of the African Mainland

1. Body coloration uniformly brownish black. Pronotum subquadrate, lateral margins very weakly diverging caudad. Male forceps elongate, not abruptly differentiated into very robust proximal and more slender distal portions.

*morio* (Fabricius).

- Body coloration variegated, yellow, red-brown, ivory-white, and pitch-black. Pronotum longitudinal, lateral margins markedly diverging caudad. Male forceps short, very abruptly differentiated into a broad, sublammellate proximal portion and a more slender, tapering, arcuate distal portion.

*flavipennis* (Fabricius).

#### ***Chelisoche*s *flavipennis* (Fabricius)**

[*Forficula*] *flavipennis* FABRICIUS, 1793, 'Entom. Syst.,' II, p. 5. Sex? Senegal.  
*Forficula plagiata* FAIRMAIRE, 1858, in Thomson, 'Archives Entom.,' II, p. 257, Pl. IX, fig. 3. ♀. Gaboon (West Africa).

Medje, April to September, 1910 to 1914; two males and five females. Stanleyville, April, 1915; one male. (Lang and Chapin.)

As we have stated above under the generic discussion, Fabricius' *flavipennis* has been misidentified by Burr, and this misidentification has resulted in the synonymy of the generic name *Enkrates*. Fabricius' description is as follows:

F. nigra elytris flavescens: sutura nigra.

Media. Caput obscure rufum macula frontali nigra. Thorax marginatus, nigricans.

Elytra flava sutura communi nigra. Corpus nigrum pedibus flavis.



Fig. 28. Locations of known records of *Chelisoches flavipennis* (Fabricius).

The "Senegal" record may refer to some point considerably to the south of the present Senegal, which is here indicated.

Of these features two are as found in that species later described by Fairmaire as *plagiata*, while in the species to which Burr referred the name *flavipennis*, i.e., that for which Kirby's name *variegata* is available, they are quite different. The head is solid red in *variegata*, and is red with the frontal portion black in the species named by Fairmaire. In *variegata* the tegmina (i.e. elytra) are yellow with two dark longitudinal bars, the sutural margins of the tegmina being yellow; in *plagiata* of

Fairmaire the tegmina are clear yellow with the proximal half of the sutural tegminal margins blackish. With both species before us there is no question in our mind as to which is really Fabricius' *flavipennis*. Unfortunately, the correct interpretation disturbs some accepted generic and specific names, but a careful examination of the original description would have prevented the error, which must be corrected.

This striking and distinctively colored species was very well figured in colors by Fairmaire. It can at once be distinguished from the other species of the genus known from Africa, *C. morio*, by its markedly contrasted pattern of yellow, red-brown, ivory-white, and pitch-black.

In general size the present material shows some variation, the extremes (in millimeters) being as follows:

	♂	♂	♀	♀ <sup>1</sup>
	Stanleyville	Medje	Medje	Medje
Length of Body	13.0	15.8	14.0	16.0
Length of Forceps	4.2	4.2	5.3	6.5

The perfect antennæ vary in having from seventeen to eighteen joints. The distal pale annulus of the antennæ is always made up of two segments, which may be the twelfth and thirteenth or the thirteenth and fourteenth. In one specimen, on one antenna, the distal pale segment is blackish distad.

In its distribution this species is probably a West African Forest Province form, ranging from Senegal and the Gold Coast (Aburi) to the north-eastern Belgian Congo (Stanleyville and Medje). It is possible that "Senegal" as understood by Fabricius embraced much of the country to the south of the present Senegal, and thus within the Forest Province. The species also occurs on the island of Fernando Po.

### Forficulidæ

#### Forficulinæ

#### FORFICULA Linnæus

1758, 'Syst. Nat.,' 10th Ed., p. 423.

GENOTYPE.—*Forficula auricularia* Linnæus. (By indication of Rehn, 1903.)

This genus embraces what might be called the most representative group of Old World earwigs, one or more species being found native in most areas of the hemisphere except Australasia. One species, the

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<sup>1</sup>There is another Medje female which has the body longer than the measured maximum, but we refrain from giving its proportions as its body apparently has been distended by the absorption of fluid in which it was originally preserved. The forceps of the distended specimen are equal in length to those of the maximum female here measured.

genotype, is found as an introduction in North America and portions of Australasia.

Nearly fifty species are known to belong to the genus as now restricted, and of these fourteen have been recorded from Africa and the adjacent islands. The Eurasian influence is very strong in this genus as found in Africa, as seven of the fourteen species are restricted in their distribution to Mediterranean North Africa, several of these being European forms, while a few of those of more Ethiopian distribution in Africa are extremely local in their occurrence. One species (*F. redempta* Burr) is peculiar to the island of Sokotra, while another (*F. sjöstedti* Burr) is restricted to relatively high elevations in East Africa, occurring on Kilimanjaro, Kenya, the Aberdare Mountains, and also on the Ufumbiro Volcanoes very close to, if not within, the borders of the Belgian Congo.

Three species of the genus are now known to occur within the Belgian Congo, and one other certainly within a few miles of the boundary in "German" East Africa (Tanganyika Territory) (*sjöstedti*, vide supra). Two of the species are here reported for the first time from the territory we are considering, while *F. rodziankoi* has been recorded from Kasindi, within the Belgian Congo, on Lake Albert Edward, and from the western slope of Ruwenzori at an elevation of about 2500 meters. The same species has also been reported from an elevation of 3000 meters on Ninagongo, Ufumbiro Volcanoes, in the Belgian Congo.

#### Key to the Species of *Forficula* found in the Region of the Belgian Congo

1. Tegmina fully developed, nearly or quite twice as long as the pronotum; distal margin of tegmina obliquely arcuate truncate, the point of the tegmina sutural in position. Wings evident, well developed. . . . . 2.
- Tegmina abbreviate, one to one and one-half times as long as pronotum; distal margin of tegmina oblique truncate, the point of the tegmina costal in position. Wings aborted, not evident<sup>1</sup>. . . . . 3.
2. Pronotum with the lateral margins appreciably arcuate; pronotum in form moderately transverse. Forceps of male with proximal expansion of internal margin short; distad of this section the branches are forcipate, gently arcuate, the tips crossing; in macrolabic form the forceps are longer than body. Forceps of female more slender. . . . . *brolemanni* Borelli.

<sup>1</sup>Since preparing this key I have found that Burr (1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped. 1907-1908,' III, Zool., Lief. 16, p. 459) states that *F. rodziankoi* occurs both winged and wingless. Borelli has also stated recently (1915 'Résultats Scientif. Voy. Alluaud et Jeannel en Afriq. Orient. (1911-1912), Orth.,' I, p. 15), that *senegalensis* occurs with tegmina and wings more abbreviate than in the typical condition. Without material of *rodziankoi* or *sjöstedti* before me I can do no more than build a table from the literature, utilizing solely the most apparent features. However, *rodziankoi* needs comparison solely with *F. senegalensis*, being well removed from *brolemanni* and *sjöstedti*. Semenoff's species may prove to be extremely close to *senegalensis*. Burr's *sjöstedti* is a localized mountain species with extremely abbreviate tegmina and very distinctive forceps.

- Pronotum with the lateral margins subparallel, hardly at all arcuate; pronotum in form subquadrate. Forceps of male with proximal expansion of internal margin elongate, equal to or more than one-half of the length of forceps; distad of this section the branches are caliper-like, distinctly arcuate, the tips not crossing; in macrolabic form the forceps are equal to about two-thirds of body length. Forceps of female more robust. . *senegalensis* Serville.
3. Pronotum with caudal margin gently arcuate. Tegmina bicolored. Pygidium of male abbreviate. Forceps of male with proximal lamellation of internal margin equal to more than one-half of forceps' length. . *rodziankoi* Semenoff.
- Pronotum with caudal margin strongly and broadly arcuate. Tegmina unicolored. Pygidium of male elongate, linguiform. Forceps of male with proximal lamellation of internal margin less than one-half of the length of the forceps. *sjöstedti* Burr.

### **Forficula brolemanni Borelli**

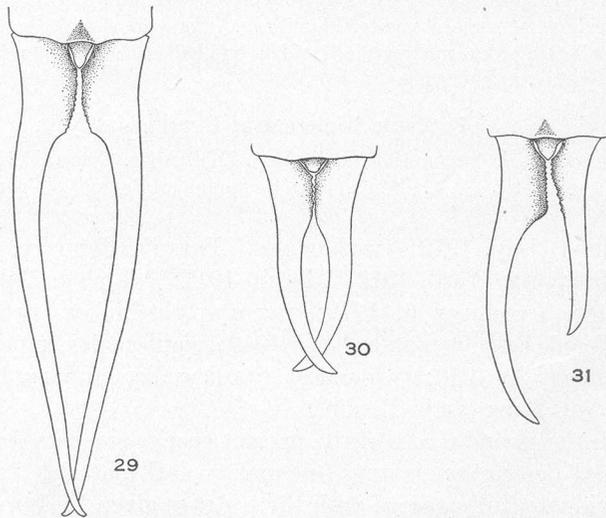
*Forficula brolemanni* BORELLI, 1907, Boll. Mus. Zool. Anat. Comp. Torino, XXII, No. 573, p. 1, fig. ♂, ♀. Bougounni (Bougouni or Buguni), [Upper Senegal, French] Sudan.

Garamba, July, 1912; two females. Faradje, January, 1912 and 1913; February to April, 1912; March, 1911; March to April, 1911; April, 1911; December 6, 1912; twenty-eight males, twenty-three females. Vankereckhovenille, April, 1912; eight males, nine females. Medje, January 22, 1910; two males. Stanleyville, January, 1915; one female. (All Lang and Chapin.)

This is the second record of the present species since its description. The original description is very full and typical material (i.e., macrolabic individuals) fully accord with the features given by Borelli.

The present series shows that *brolemanni* has decidedly different macrolabic and brachylabic forms in the male sex of material taken at the same locality corresponding to those found in *E. auricularia* and numerous other species. Borelli (1915, 'Résultats Scientif. Voy. Alluaud and Jeannel en Afriq. Orient., Orth.,' I, p. 15), would lead one to infer that such differences might be geographic, but the present series shows such is not the case. The macrolabic type is that originally described, the length of the forceps in this extreme being equal to two-thirds or more of the body length, the elongation of the slender distal section being proportionately greater than that of the subcontiguous, lamellate proximal portions, when compared with the brachylabic extreme. The latter (called cyclolabic by Borelli) has the forceps no longer than the tegmina, the proximal lamellate section is less sharply differentiated from the tapering distal section and the same section is also less markedly depressed. The two extremes appear very different, but they are fully connected by intermediate individuals in the present series.

The parallelism with the dimorphism found in the males of *F. auricularia* is also evident in the less pronounced sculpture of the disto-dorsal abdominal segment of the brachylabic individuals of *brolemanni*. The Vankerckhovenville series of males are all macrolabic except one, which is nearly intermediate, while the two Medje males are very similar. The bulk of the macrolabic, all of the brachylabic, and the greater portion of the intermediate specimens are contained in the Faradje series.



Figs. 29-31. *Forficula brolemanni* Borelli. Males.

Fig. 29. Vankerckhovenville, Belgian Congo. Macrolabic type of forceps,  $\times 6$ . Fig. 30. Faradje, Belgian Congo. Brachylabic type of forceps,  $\times 8$ . Fig. 31. Faradje, Belgian Congo. Abnormal forceps,  $\times 6$ .

Measurements (in millimeters) of representative Faradje individuals follow.

	♂ (macrolabic)	♂ (macrolabic)	♂ (brachylabic)	♂ (brachylabic)
Length of Body (Exclusive of Forceps)	12.9	9.7	11.6	10.2
Length of Forceps	10.2	7.6	4.2	3.7
			♀	♀
Length of Body (Exclusive of Forceps)			11.6	10.5
Length of Forceps			3.2	3.1

All of the specimens before us have the wings well developed, although varying somewhat in the length of the exposed portion of the same. One macrolabic Faradje male shows abortion of the dextral arm

of the forceps. In this the aborted branch is less than half as long as the perfect sinistral arm, the apex is blunt, and the proximal dilation is but little altered. Another Faradje male has the sinistral branch of the forceps normal male in type and approaching the macrolabic condition, while the dextral branch is of the form found in the female, but slightly more robust and longer than in similarly sized females, the internal margin proximad with crenulations much like those of normal male forceps, although no expansion is present (see Fig. 31). In every other way this specimen is a normal male.

In coloration the Vankerckhovenville series averages slightly darker in general tone than that from Faradje.

The species is now known to range across the Sudanese region from Upper Senegal (Bougounni) to the north-eastern Belgian Congo (Garamba), and western Uganda (Unyoro), extending southward into the Forest Province in the Belgian Congo as far as Stanleyville (see Fig. 32).

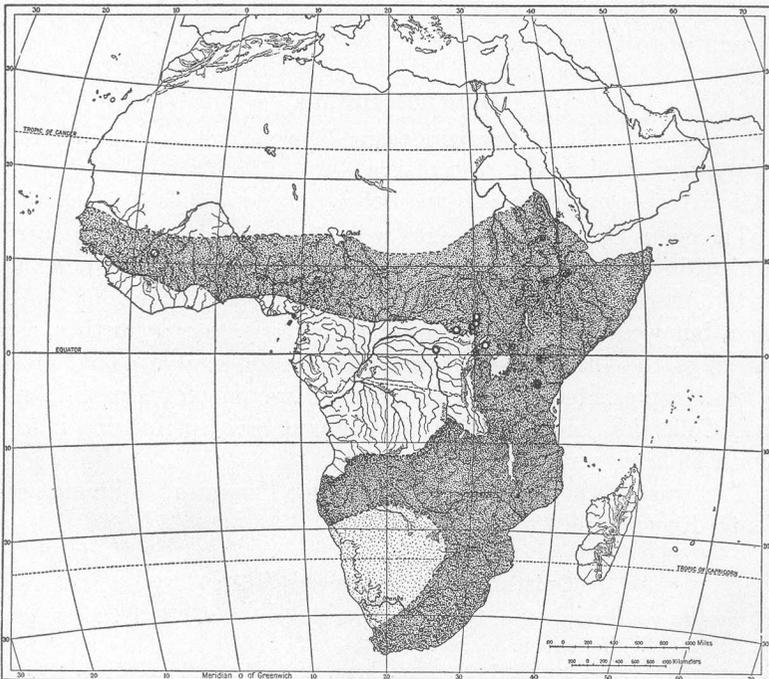


Fig. 32. Area of known distribution of *Forficula senegalensis* indicated by heavy stippling; area of possible but unproven occurrence indicated by light stippling. Localities from which *Forficula brolemanni* is known are indicated by circles.

**Forficula senegalensis** Serville

*Forficula senegalensis* SERVILLE, 1839, 'Hist. Nat. Ins., Orth.,' p. 39. ♂, ♀. Senegal.

Medje, January 22, 1910; one male. (Lang and Chapin.)

This specimen has been compared with material of the species from several localities in the Transvaal and found to be inseparable. The forceps in form are nearer the brachylabic than the macrolabic type, the proximal lamellate dilation of the internal margin comprising slightly more than one-half the length of the forceps, while the length of the forceps is subequal to that of the pronotum, tegmina, and exposed portion of the tegmina combined.

This species is widely distributed in Africa, although virtually absent from the Western Forest Province. It is a form of the Savannah Province, being found from Senegal to Kordofan, Eritrea, and Abyssinia, southward in eastern Africa to the Cape of Good Hope, and also in the Cape Verde Islands. The Medje record is the only one we are aware of from within the Forest Province. This probably represents an extension of range into forest conditions or an accidental introduction from the country to the north.

**Opisthocosmiinæ****OPISTHOCOSMIA** Dohrn

1865, Stettin. Entom. Zeitung, XXVI, p. 76.

GENOTYPE.—*Opisthocosmia centurio* Dohrn. (By designation of Rehn, 1903.)<sup>1</sup>

The genus *Opisthocosmia*, as now limited, contains but four species, of which three are Oriental and one African. There exists a possibility that the African species is not congeneric with the genotype of *Opisthocosmia*, but we are not in a position to investigate this further, as no material of the Oriental species is available for study. The African species is represented in The American Museum of Natural History Congo Collection, and we are, tentatively at least, permitting it to remain in Dohrn's genus.

The range of the genus embraces Borneo, Sumatra, and Siam in the Oriental Region, and Central Africa.

**Opisthocosmia pæcilocera** (Borg)

*Ancistrogaster pæcilocera* BORG, 1904, Arkiv för Zoologi, I, p. 577, Pl. xxvi, figs. 8 and 8a. ♀. Cameroon.

*Opisthocosmia formosa* BURR, 1905, Ann. Mag. Nat. Hist., (7) XVI, p. 492. ♂. Cameroon.

<sup>1</sup>1903, Proc. Acad. Nat. Sci. Philadelphia, p. 308.

Faradje, February to April, 1912; two males. (Lang and Chapin.)

This synonymy was established by Burr. The description of *formosa* is contradictory in certain features used in describing the male forceps, and its measurements of the same are clearly erroneous, i.e., 7.5 mm., with the body length given as 9 mm.<sup>1</sup>

Borelli has given<sup>2</sup> some useful comments on the color variation in this species, also very important notes on the structure of the male forceps, while Burr in several papers has emphasized the variation in coloration of the tegmina.

The two specimens show very decided differences in the form of the forceps. In one individual (Fig. 33) they are moderately robust at the base, the internal margins are arcuate sublamellate in the proximal third and appreciably crenulate; distad of this section the arms of the forceps are arcuate toward and crossing one another, rounded in section in the median third, the external margin convex, the internal concave; at distal third the internal margin has a distinct, flattened, lobiform tooth; distad of this the arms of the forceps are weakly falcate to the acuminate apices. The other type has the forceps somewhat more slender, tapering, straight and subparallel in the proximal half, then gently and regularly falcato-arcuate toward and crossing one another, the apices acute; internal margin in proximal third serrulate; no apparent indication of tooth at distal third. In both types the forceps are seen, in profile, to be curved dorsad in distal two-thirds, the tips very faintly decurved. There is no question in my mind as to the specific identity of the two specimens, but to aid future workers details have been given above.

In size the individuals are rather small, the body length being 8.5 mm. in one (i.e., first described type of forceps) and 7.4 in the other (with second type of forceps), the forceps measuring 2.4 mm. in length in both specimens.

Regarding coloration we would note that both specimens have the tegmina uniformly dark fuscous, with no trace of the humeral pale maculation occasionally found (see Burr). The exposed portions of the wings are yellowish with the sutural section broadly longitudinally margined with

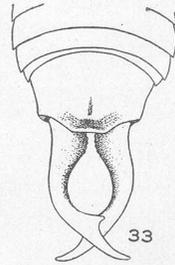


Fig. 33. *Opisthocosmia pædiculosa* (Borg). Male. Faradje, Congo. Apex of abdomen from dorsum, X9.

<sup>1</sup>Borelli later, in measuring the species, gave the forceps length of the male as three millimeters, which is more in accordance with the present material and with Borg's dimensions of the female forceps (i.e., 3 mm.). Probably Burr's figure is an error for 2.5 or 3.5.

<sup>2</sup>1907, Ann. Mus. Civ. Stor. Nat. Genova, XLIII, p. 385.

fuscous. The antennæ in both of the specimens are too imperfect for us to note the distribution of coloration on the respective segments, which is a feature apparently showing some variation in the species.

In distribution the species is known to range directly across Central Africa, from Portuguese Guinea (Bôlama) on the west to Amani, "German" East Africa (Tanganyika Territory), on the east, south as far as north-western Tanganyika and Amani, north to Portuguese Guinea,

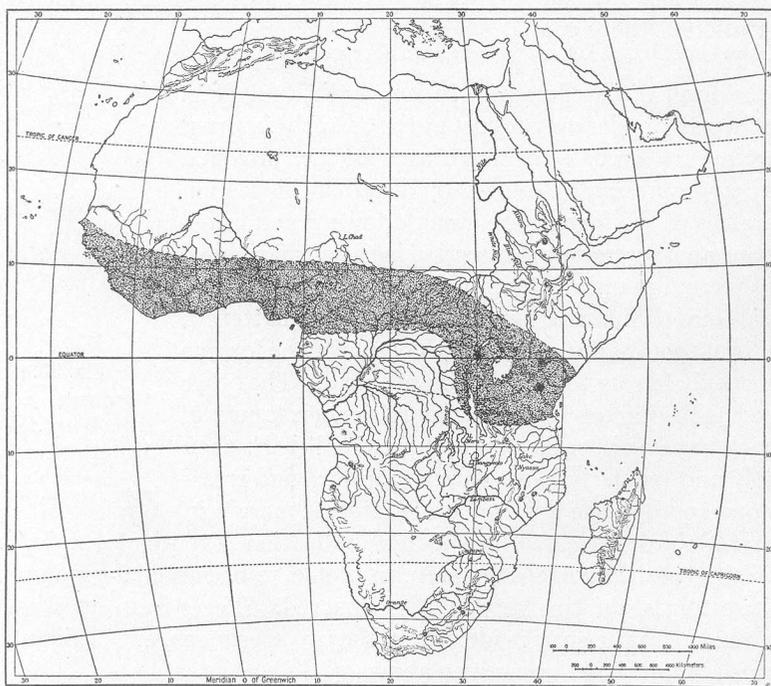


Fig. 34. Area of distribution of *Opisthocosmia pæcilocera*.

Cameroon and the north-eastern Belgian Congo (Faradje). It is doubtless a type of forest origin, its presence at Amani probably governed by the Usambara mountain forest, and at Faradje its occurrence may be explained as an extension from forest conditions.

#### THALPERUS Burr

1911, 'Genera Insectorum, Dermaptera,' pp. 89, 92.

GENOTYPE.—*T. kuhlgtzi* (Burr). (By original designation.)

The genus *Thalperus* is one of the two genera of the *Opisthocosmiinae*, a group which reaches its maximum development in the Oriental

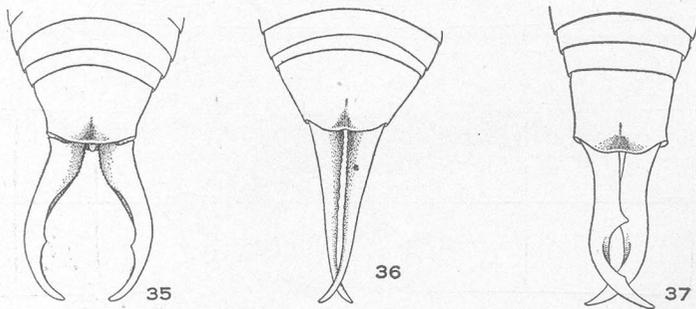
Region, known to occur on the African mainland. Four species of the genus have been described, one from Madagascar, *T. ova*<sup>1</sup> (Bormans), and three from the mainland of Africa, *T. kuhlkatzi*, *roccatii*, and *micheli*.<sup>2</sup> Of the three latter species two are included in the present series.

***Thalperus kuhlkatzi* (Burr)**

*Hypurgus* sp. n. BURR, 1907, Deutsche Entom. Zeitschr., p. 487. ♀. Togo; Cameroon.

*Hypurgus kuhlkatzi* BURR, 1909, Ann. Mag. Nat. Hist., (8) IV, p. 116. ♂, ♀. Togo; Bismarckburg, Togo (type locality<sup>3</sup>); Cameroon.

Faradje, January, 1913; March, 1911; three males, one female. (Lang and Chapin.)



Figs. 35-36. *Thalperus kuhlkatzi* (Burr).

Fig. 35. Male. Faradje, Belgian Congo. Apex of abdomen from dorsum,  $\times 7$ . Fig. 36. Female. Faradje, Belgian Congo. Apex of abdomen from dorsum,  $\times 8$ .

Fig. 37. *Thalperus roccatii* (Borelli). Male. Medje, Belgian Congo. Apex of abdomen from dorsum,  $\times 7\frac{1}{2}$ .

The original description of this species is very imperfect, with numerous typographical errors and contradictions in the diagnosis and the detailed description. We feel satisfied, however, in the reference of the present material to this species.

All three specimens have the wings well developed, projecting distad of the tegmina a distance subequal to one-half the tegminal length. The original material was described as having the "wings abbreviate," from which we presume they were not normally exposed in those Burr had before him. We feel that the alate condition of the present series indi-

<sup>1</sup>This name is generally written in the amended form *hova*, but it appears as *ova* in the original description and also in the explanation of the plates of the same paper (1883, Ann. Soc. Entom. Belgique, XXVII, pp. 80, 90). It seems best to us to use the original spelling.

<sup>2</sup>1904, Trans. Entom. Soc. London, pp. 303, 307. ♂, ♀. Abyssinia.

<sup>3</sup>Selected as the type locality as it is the only original locality represented by the male sex, which in this species possesses more distinctive characters than the female.

cates nothing more than the presence of dimorphism in wing development in the species. The antennæ are described as having "about 10 segments." The March male is the only specimen we have with the antennæ complete and the number present in this specimen is twelve.

The arms of the male forceps may or may not have a distinct tooth present at the distal third. In the March male this is decided in its indication, as is true of one of the January males, while the other one has

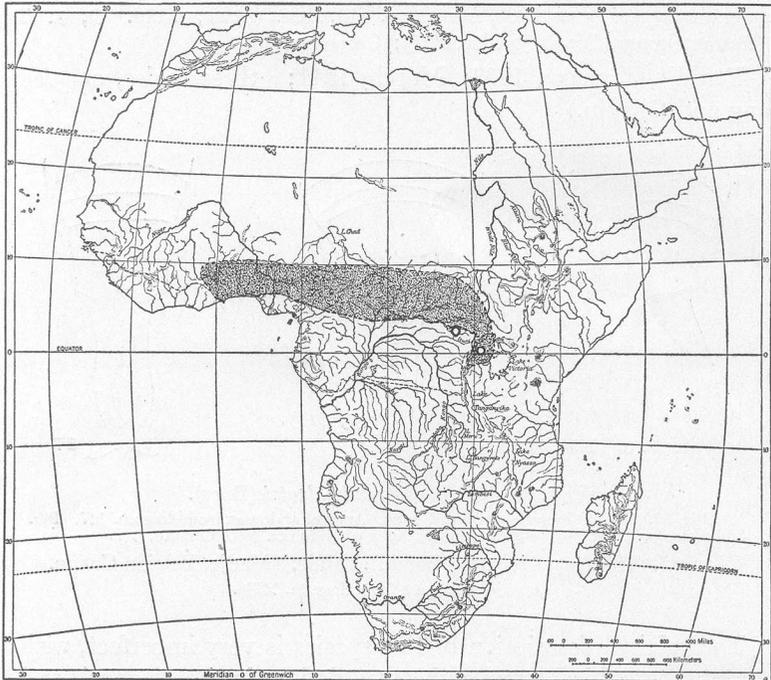


Fig. 38. Probable area of distribution of *Thalperus kuhlgtzi* indicated by stipple. Localities from which *Thalperus roccatii* is known are indicated by circles.

but the faintest swelling of the margin to indicate the position of the usual tooth. The forceps of the same sex have the proximal half of the internal margin faintly lamellate and very faintly serrulate, there being in addition a faint serrulation of the same margin distad of the distal tooth, when the latter is present. The figure of the forceps (Fig. 35) well illustrates their character.

The species is apparently a Sudanese one, not entering the Forest Region as far as the exact records for it show. It has been recorded from

Togo and Cameroon without further details, while it has been definitely recorded from Bismarckburg, Togo, and Kirima on the north-western coast of Lake Albert Edward. These localities with the present Faradje record give our total knowledge of the species' distribution. Kirima is east of the eastern edge of the Congo forest, Bismarckburg is outside of the Rain Forest, while we have no knowledge of the portion of Cameroon to which the general record applies.

***Thalperus roccatii* (Borelli)**

*Opisthocosmia roccatii* BORELLI, 1906, Boll. Mus. Zool. Anat. Comp. Torino, XXI, No. 541, p. 2. ♂, ♀. Ibanda, east side of Ruwenzori, Uganda.

*Opisthocosmia roccatii* BORELLI, 1909, in Luigi Amedeo Duca Abruzzi, 'Il Ruwenzori, Relazione Scientifiche,' I, p. 288, fig. 4.

Medje, January 22, 1910; one male. (Lang and Chapin.)

This specimen fully agrees with Borelli's description and clearly represents his species. Our individual is somewhat smaller in body length, 8.5 mm., but this difference is probably due to variation in the amount of abdominal extension, as the forceps length is identical, 2.9 mm. We are figuring the apex of the male abdomen (Fig. 37) on a larger scale and with more detail than in the sketch given by Borelli in 'Il Ruwenzori.'

The species is known only from the original locality, Ibanda, which is at an elevation of 4540 feet in the Mobuku Valley, on the north-eastern slope of Ruwenzori, and Medje. Ibanda is in open country, so it is possible that at Medje the species is a forest invader from the Sudanese savannah region.

**Diaperasticinæ**

**DIAPERASTICUS** Burr

1907, Trans. Entom. Soc. London, p. 98.

GENOTYPE.—*Sphingolabis sansibarica* Karsch. (By original designation.)

This genus is the sole component of the subfamily, and it is most remarkable in having the head sexually dimorphic. The males have the lateral portions of the occiput inflated and elevated above the level of the face and interocular region; a median extension of the latter extends to the caudal occipital margin and separates the inflated sections, which are generally sharply defined. The male forceps in the genotypic species show considerable variation, developing brachylabic and macrolabic extremes, although no such decided variation is indicated in the widely distributed *D. erythrocephalus*. The broadly transverse and rectangulate male pygidium is a feature which aids readily in recognizing this genus.

The species are all African, and of them one, *bonchampsii*, may prove to be a variant of *erythrocephalus*, which possibility we have discussed below under the former name.

#### Key to the Species of *Diaperasticus*

1. Occiput of male with lateral inflated portions separated caudad by more than one-third of width of occiput at caudal margin. Antennæ very slender, joints greatly elongate; fifth joint hardly shorter than the proximal joint. Forceps of male distinctly sigmoid, subcerviform; of female very slender, elongate, as long as abdomen, internal margins serrulate proximad.
 

*sansibaricus* (Karsch).

 Occiput of male with lateral inflated portions separated caudad by less than one-fourth of width of occiput at caudal margin. Antennæ of more normal type, joints much less elongate, fifth joint distinctly shorter than the proximal joint. Forceps of male not distinctly sigmoid, branches moderately arcuate convergent; of female much shorter than the abdomen, more robust, internal margins serrulate for nearly entire length. . . . . 2.
2. Head of male with lateral occipital areas evident but not sharply delimited. Forceps of male with proximal internal lamellations having margins minutely crenulate. . . . . *bonchampsii* (Burr).
 

Head of male with lateral occipital areas decidedly and very sharply delimited. Forceps of male with proximal internal lamellations having margin coarsely and distinctly crenulate. (Forceps of female tricolored.)

*erythrocephalus* (Olivier).

#### *Diaperasticus sansibaricus* (Karsch)

*Sphingolabis sansibarica* KARSCH, 1886, Berlin. Entom. Zeitschr., XXX, p. 90, Pl. III, fig. 8. ♂. Zanzibar.

*Apterygida mackinderi* BURR, 1900, Ann. Mag. Nat. Hist., (7) VI, p. 83, Pl. IV, figs. 3 and 3a. ♂. Nairobi, 5500 feet, British East Africa (Kenya Colony); Kikuyu Country, British East Africa (Kenya Colony).

This synonymy was established some years ago by Burr, and appears to us to be correct.

Niagara, November, 1910; one male (Lang and Chapin.)

This specimen has the forceps much as figured by Borelli,<sup>1</sup> but their length is slightly greater in the Niagara specimen, although the body length is less. Our individual measures 11 mm. in length of body, 6 mm. in length of forceps. The wings are well developed; the medio-caudal impressed portion of the occiput is over twice as wide proportionately as in *D. erythrocephalus*, as has been well figured by Burr.<sup>2</sup>

This species is one of the Savannah Subprovince, ranging from Niagara to Zanzibar, south to the northern Transvaal (Zoutpansberg)

<sup>1</sup>1909, 'Il Ruwenzori, Relazione Scientifiche,' I, p. 290, fig. 5.

<sup>2</sup>'Genera Insectorum, Dermaptera,' Pl. IX, fig. 11. (Compare with Pl. VII, fig. 11a.)

and the coast of Natal (Port Natal). It has been recorded from within the Forest Province but once, then from the Moëra Forest, near Beni, Semliki Valley. The only previous Belgian Congo record is the last mentioned one.



Fig. 39. Area of known distribution of *Diaperasticus sansibaricus*.

***Diaperasticus bonchampsii* (Burr)**

*Apterygida bonchampsii* BURR, 1904, Trans. Entom. Soc. London, p. 317. ♂, ♀. Abyssinia.

Elisabethville; one male. (J. M. Springer.) [Hebard Collection.]

The present specimen shows certain differences which distinguish it from a quite extensive series of the widely distributed *D. erythrocephalus*, and which apparently associate it with Burr's species. The author of the species has recently stated that *bonchampsii* is, in his opinion, a variant of *erythrocephalus*.<sup>1</sup> This may prove to be the case, but the present specimen agrees quite well with his description of *bonchampsii*, and also shows several features of difference from a large series of the older species.

<sup>1</sup>1916, Journ. Royal Microsc. Soc., p. 18.

These features are: the head has the lateral inflated portions of the occiput poorly defined, in no way as clearly and sharply marked as in *erythrocephalus*, although their form is essentially the same as in the latter; inter-ocular region apparently more inflated and less deplanate than in *erythrocephalus*; forceps of the males with the proximal internal lamellate tooth having its margins minutely crenulate, instead of coarsely and distinctly crenulate as in *erythrocephalus*. These features may prove to be of little importance, particularly those of the forceps, but the head characters in this genus, as far as our present knowledge goes, are quite fixed.

The Elisabethville specimen has the tegmina without a dark sutural line. The wings are well developed and uniformly pale yellowish, similar to the tegmina.

This species is one of the Savannah Province, and has been taken only on the eastern border of the Sudanese Subprovince. The records extend from Abyssinia and the Nile between Khartum and Gondokoro, south to Nyasaland and Katanga (Elisabethville), east to the Ukambi Mountains, "German" East Africa (Tanganyika Territory).

#### **Diaperasticus erythrocephalus** (Olivier)<sup>1</sup>

*Forficula erythrocephala* OLIVIER, 1791, 'Encycl. Méthod. Ins.,' VI, p. 468. ♀. Cape of Good Hope.

*Forficula jackeryensis* PALISOT DE BEAUVOIS, 1805, 'Ins. Rec. Afriq. Amér.,' p. 36, Orth. Pl. I, fig. 4. ♀. Buonopozo, Oware (Wari, southern Nigeria).

*Forficula serrata* SERVILLE, 1839, 'Hist. Nat. Ins., Orth.,' p. 40. ♂. Senegal.

*F[orficula] natalensis* STÅL, 1855, Öfv. Kongl. Vetensk. Akad. Förhandl., XII, p. 348. ♂. Port Natal (Durban), Natal.

*F[orficula] africana* DOHRN, 1865, Stettin. Entom. Zeitung, XXVI, p. 86. ♂, ♀. Senegal; Cape (of Good Hope); Port Natal (Durban), Natal.

*Forficula variana* SCUDDER, 1876, Proc. Boston Soc. Nat. Hist., XVIII, p. 253. ♀. Liberia.

*Chelis [oches] pulchella* GERSTÆCKER, 1883, Mitth. Naturw. Ver. Neu-Vorpomm. und Rügen, Greifswald, XIV, p. 42. ♂, ♀. Abó, Cameroon; Lambarené, Ogowe, French Congo.

*Apterygida cagnii* BORELLI, 1906, Boll. Mus. Zool. Anat. Comp. Torino, XXI, No. 541, p. 3. ♂. Ibanda, Ruwenzori district, Uganda.

[*Apterygida erythrocephala*] var. *aptera* BORELLI, 1907, Ann. Mus. Civ. Stor. Nat. Genova, XLIII, p. 386. ♂, ♀. Musola and Basilé, Fernando Po; Lambarené (Limbareni), French Congo.

[*Diaperasticus erythrocephalus*] var. *maculipes* BORELLI, 1914, Boll. Lab. Zool. Gen. Agrar. Portici, VIII, p. 274. ♂. Mamou, French Guinea.

<sup>1</sup>Borelli (1909, in 'Il Ruwenzori, Relazione Scientifiche,' I, p. 292), gives a "Var. *dietzi* Borm.," of this species, the reference to and description of which we have been unable to locate. It is stated by Borelli to differ chiefly in the absence of the wings, and probably represents the same condition as that described by him, in 1907, as variety *aptera*.

The synonymy given above has already in large part been established in print, while that of *cagnii* also has been suggested. There is no question in my mind as to the correctness of the reference of Palisot's *jackeryensis* to this species, the description and the figure, as well as the additional comments made by Serville<sup>1</sup> from Palisot's type, being conclusive. The naming of a melanistic phase such as *cagnii*, an abbreviate winged type like *aptera*, and an unusually marked phase such as *maculipes*



Fig. 40. Area of known distribution of *Diaperasticus erythrocephalus* indicated by heavy stipple, of possible but unproven distribution by light stipple.

do not, to my mind, help the future of entomological science. The mere feature of fully developed wings or abbreviate wings is such an evident condition of dimorphism in many genera of Dermaptera, as also in many members of the orthopterous family Gryllidæ, and to a lesser extent in the Blattidæ, that it seems to us to be crowding the literature to provide them with names. The author's policy has been not to give names to these phases, as to consistently do so would mean the bestowal of thou-

<sup>1</sup>1839, 'Hist. Nat. Ins., Orth.,' p. 42.

sands of similar names on other forms where equal dimorphism is known to occur, and where such dimorphism is often complicated by dichromatism and also the development of consistently uniform geographic races, based upon structural features. To recognize all of these tendencies by name would require polynomials, and we prefer to withhold names from cases of pure dimorphism and dichromatism, which we know are expressions of similar underlying tendencies in a number of groups.

Yakuluku, November, 1911; one male, one female. Faradje, January, 1913; thirty-six males, thirty females. Medje, January 22, 1910; two males, two females. Risimu, September 7 to 8, 1909; one male. Stanleyville, February to April, 1915; five males, ten females. Zambézi, June, 1915; one male. (All Lang and Chapin.)

This quite extensive series exhibits very well the great range of variation in size and wing development of this widely distributed species. Of the Faradje series, nine males and six females have the wing abbreviated and not evident distad of the tegmina, the remainder from that locality having well-developed and evident wings. The Stanleyville representation has one male and two females without evident wings, the remainder (four males, eight females) having them well developed. The other specimens, with the exception of the Zambézi male, have fully developed wings.

In size the series shows a very great amount of variation, even in material from the same locality. Males from Faradje range from 7.7 to 10.5 mm. in length of body; from 2 to 2.6 mm. in length of forceps. The Zambézi male and several of the same sex from Stanleyville have greater body length than the maximum given above, the former being 11 mm. in body length; a Medje male has forceps 4.5 mm. in length, this being approached by males from Stanleyville and Medje.

The male forceps show an appreciable amount of variation in the exact curve of the branches and also in the degree of robustness of the same. The general form of the forceps remains the same throughout the series. The internal margin of the branches is always distinctly and coarsely crenulato-denticulate on the deplanate basal lamellation, but the internal margin distad of the tooth varies in the number and disposition of the denticulations normally present upon it.

The shape and proportions of the inflated lateral portions of the occiput have been well illustrated by Burr.<sup>1</sup>

The present series contains no melanistic individuals such as those upon which the name *cagnii* was based. There is an appreciable amount

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<sup>1</sup>1911, 'Genera Insectorum, Dermaptera,' Pl. VII, fig. 11a.

of variation in the depth of the general color tones, but the normal pattern of the species is well marked in all except several teneral specimens. The strongly particolored pattern of the forceps, in both sexes, is uniformly indicated in the series.

This species is widely distributed over Africa south of the Sahara, the most northern records being from Senegal; Mamou, French Guinea; Kete, Togo; Ibadan, Lagos; Buonopozo, southern Nigeria; Faradje, north-eastern Belgian Congo, and Massaua, Eritrea. From these localities the species ranges southward to the Cape of Good Hope, occurring also in Madagascar, Nossi Bé, in the Comoros (Moheli) and on the eastern African coastal island of Pemba. The previous records of the species from the Belgian Congo were from Avakubi and Luebo.

#### A SYNONYMIC CATALOGUE OF THE DERMAPTERA OF THE BELGIAN CONGO

The following catalogue brings together the original references and those of the synonyms of the species of Dermaptera known from the Belgian Congo at the present time, together with a summary of the African distribution of the species and the type localities of the same. In addition to those forms which have been definitely recorded from the Belgian Congo, we are including a number of species which have been reported from localities in Uganda and East Africa within extremely short distances of the Belgian Congo, and which will in all probability be found in the area under consideration. The recent adjustment of boundary lines has thrown within the Belgian Congo many of the localities which were considered to be neighboring but outside of the Belgian Congo when the manuscript of this catalogue was prepared. No effort has been made to determine the exact position of the division of old German East Africa, and that area as a whole is referred to as "German" East Africa (Tanganyika Territory).<sup>1</sup>

Definitely recorded from the Belgian Congo we have twenty genera and thirty-eight species, while from immediately adjacent sections of the surrounding regions we have four other genera and eighteen additional species. In addition to the species here included a very considerable number of species have been described or recorded from the Cameroon, and of these we feel certain a large portion will, in the future, be found within the Belgian Congo.

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<sup>1</sup>The following localities listed under "German" East Africa are in Ruanda, which is at present (1924) under Belgian mandate: Rugege, Ufumbiro Volcanoes, Kisenje, and Sabinyo.

**HEMIMERINA****Hemimeridæ****HEMIMERUS** Walker

1871, 'Catal. Dermapt. Salt. Brit. Mus.,' V, Suppl., p. 2

**Hemimerus hansenii** SHARP, 1895, 'Cambridge Nat. History,' V, p. 217, Figs. 114-116.

Gold Coast, Cameroon, Belgian Congo (Ituri, Uele), Uganda, "German" East Africa (Tanganyika Territory), ? Portuguese East Africa. TYPE LOCALITY: Kitta, Gold Coast.

**PROTODERMAPTERA****Pygidicranidæ****Diplatyinæ****DIPLATYS** Serville

1831, Ann. Sci. Nat., XXII, p. 33

GENOTYPE: *Diplatys macrocephalus* (Palisot de Beauvois).

*Cylindrogaster* STÅL, 1855, Öfv. Kongl. Vetensk.-Akad. Förhandl., XII, p. 350. [Type by monotypy, *C. gracilis* Stål.]

*Nannopygia* DOHRN, 1863, Stettin. Entom. Zeitung, XXIV, p. 60. [Type by monotypy, *N. gerstæckeri* Dohrn.]

*Dyscritina* WESTWOOD, 1881, Trans. Entom. Soc. London, p. 603. [Type by monotypy, *D. longisetosa* Westwood.]

*Verhæffiella* ZACHER, 1910, Entom. Rundsch., XXVII, p. 105. [Type by designation, *Diplatys æthiops* Burr.]

*Paradiplatys* ZACHER, 1910, idem, p. 105. [Type by designation, *Diplatys conradti* Burr.]

**Diplatys macrocephalus** (PALISOT DE BEAUVOIS).

*Forficula macrocephala* PALISOT DE BEAUVOIS, 1805, 'Ins. Rec. Afriq. Amér.,' p. 36, Orth. Pl. I, fig. 5, (♂).

*Diplatys macrocephala* BURR, 1900, Ann. Soc. Entom. Belgique, XLIV, p. 47; 1904, Trans. Entom. Soc. London, p. 282.

*Diplatys macrocephalus* BURR, 1911, Trans. Entom. Soc. London, p. 29.

Southern Nigeria, Fernando Po, Belgian Congo (Boma and Stanley Pool), Uganda. TYPE LOCALITY: "Benin."

**Diplatys quæsitus** REHN. See page 355.

Belgian Congo. TYPE LOCALITY: Faradje.

**Diplatys raffrayi** DUBRONY (Bormans), 1879, Actas Soc. Españ. Hist. Nat., VIII, p. 91, (♂). BORELLI, 1915, 'Résultats Scientif., Voy. Alluaud et Jeannel en Afriq. Orient.,' Orth., I, p. 5, Pl. I, fig. 1, (♂).

Portuguese Guinea, Uganda (Katende, 1500-2000 meters elev.), British East Africa (Kenya Colony), East Africa. TYPE LOCALITY: "Zanzibar."

**Karschiellinae****KARSCHIELLA** Verhoeff1902, *Zoolog. Anzeiger*, XXV, p. 183GENOTYPE: *Karschiella büttneri* (Karsch). (By selection of Kirby, 1904.)***Karschiella büttneri*** (Karsch).*Pygidicrana büttneri* KARSCH, 1886, Berlin. *Entom. Zeitschr.*, XXX, 1886, p. 86, Pl. III, fig. 4, (♂).

Belgian Congo. TYPE LOCALITY: "Kuako to Kimpoko."

***Karschiella camerunensis*** VERHOEFF, 1902, *Zoolog. Anzeiger*, XXV, p. 183, (♂).*Bormansia lictor* BURR, 1907, *Deutsche Entom. Zeitschr.*, p. 487, (♂).*Bormansia meridionalis* REHN (not of Burr, 1904), 1905, *Proc. U. S. Nat. Mus.*, XXIX, p. 504.*Karschiella camerunensis* BURR, 1910, *Proc. U. S. Nat. Mus.*, XXXVIII, p. 444. Cameroon, Belgian Congo (Luebo).<sup>1</sup> TYPE LOCALITY: "Cameroon."***Karschiella neavei*** BURR, 1909, *Ann. Soc. Entom. Belgique*, LIII, p. 96 (♂, ♀).<sup>2</sup>

Belgian Congo (Katanga). TYPE LOCALITY: "Katanga."

**BORMANSIA** Verhoeff1902, *Zoolog. Anzeiger*, XXV, p. 184GENOTYPE: *Bormansia africana* Verhoeff.***Bormansia africana*** VERHOEFF, 1902, *Zoolog. Anzeiger*, XXV, p. 184, (♂). BORELLI, 1915, 'Résultats Scientif., Voy. Alluaud et Jeannel en Afriq. Orient.,' Orth., I, p. 5, Pl. I, figs. 2 and 3, (♂, ♀).

Belgian Congo (Medje and Garamba), Uganda, "German" East Africa (Tanganyika Territory). TYPE LOCALITY: "German" East Africa (Tanganyika Territory).

***Bormansia impressicollis*** VERHOEFF, 1902, *Zoolog. Anzeiger*, XXV, p. 184, (♀). BORELLI, 1915, 'Résultats Scientif., Voy. Alluaud et Jeannel en Afriq. Orient.,' Orth., I, p. 5, Pl. I, fig. 4, (♀).

Uganda (Butiti), British East Africa (Kenya Colony), "German" East Africa (Tanganyika Territory). TYPE LOCALITY: Taita, "German" East Africa (Tanganyika Territory).

**Pygidicraninae****DICRANA** Burr1908, *Ann. Mag. Nat. Hist.*, (8) II, pp. 384, 387GENOTYPE: *Dicrana frontalis* (Kirby). (Type by indication.)***Dicrana caffra*** (DOHRN).*Pygidicrana caffra* DOHRN, 1867, *Stettin. Entom. Zeitung*, XXVIII, p. 343, (♀).

Cameroon, Uganda (Fort Portal and Kitagueta), Somaliland, East Africa, South Africa. TYPE LOCALITY: "Caffraria."

<sup>1</sup>Recorded by Rehn (1905, *Proc. U. S. Nat. Mus.*, XXIX, p. 504) as *Bormansia meridionalis*, as later shown by Burr (1910, *idem*, XXXVIII, p. 444).<sup>2</sup>According to Burr (1914, *Ann. Mag. Nat. Hist.*, (8) XIII, p. 378; 1915, *Journ. Royal Microsc. Soc.*, p. 429) Zacher's *Karschiella bidentata* (1911, *Zool. Jahrb. Abt. Syst.*, XXX, pp. 349, 350, fig. Z) from Cameroon may equal *neavei*.

**Dicrana biaffra** (BORMANS).

*Pygidicrana biaffra* BORMANS, 1903, in Burr, Ann. Mag. Nat. Hist., (7) XI, p. 232, (♂).

*Kalocerania biafra* BURR, 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 338. Cameroon, Belgian Congo (Ukaika-Mawambi). TYPE LOCALITY: "Cameroon."

**Dicrana separata** BURR, 1908, Ann. Mag. Nat. Hist., (8) II, p. 387, (♂); 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 338; 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 455.

Belgian Congo (Ruzizi Valley, Rutshuru Valley and North-west Tanganyika), "German" East Africa (Tanganyika Territory), South-west Africa. TYPE LOCALITY: "Nguru."

**Dicrana livida** (BORELLI).

*Pygidicrana livida* BORELLI, 1907, Boll. Mus. Zool. Anat. Comp. Torino, XXII, No. 558, p. 1, (♀).

Uganda (Ibanda), "German" East Africa (Tanganyika Territory). TYPE LOCALITY: Ibanda, Uganda.

**Dicrana wigginsii** BURR, 1914, Ann. Mag. Nat. Hist., (8) XIV, p. 422, (♂, ♀). Uganda. TYPE LOCALITY: Entebbe, Uganda.

**Echinosomatinae****ECHINOSOMA** Serville

1839, 'Hist. Nat. Ins., Orth.,' p. 34

GENOTYPE: *Echinosoma afrum* (Palisot de Beauvois).

**Echinosoma afrum** (PALISOT DE BEAUVOIS) BURR, 1909, Bull. Soc. Entom. Italiana, LX, p. 175; 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 338.

*Forficula afrum* PALISOT DE BEAUVOIS, 1805, 'Ins. Rec. Afriq. Amér.,' p. 53, Orth. Pl. I, fig. 1, (♀).

*Echinosoma fuscum* BORELLI, 1907, Ann. Mus. Civ. Stor. Nat. Genova, XLIII, p. 350, (♂). BURR, 1915, Journ. Royal Micros. Soc., 1915, p. 438.

*Echinosoma afri* RODZIANKO, 1897, Wiener Entom. Zeit., XVI, p. 154.

Portuguese Guinea, Ivory Coast, Gold Coast, Togo, Nigeria, Cameroon, Fernando Po, Spanish Guinea, French Congo, Belgian Congo (Stanley Pool, Kuako, Medje, Ukiaka-Mawambi, and Barobiti<sup>1</sup>), Uganda. TYPE LOCALITY: "Kingdom of Oware and Benin," Nigeria.

**Echinosoma wahlbergi** DOHRN, 1863, Stettin. Entom. Zeitung, XXIV, p. 64, (♂). BURR, 1900, Ann. Soc. Entom. Belgique, XLIV, p. 48; 1908, idem, LIII, p. 35; 1909, Bull. Soc. Entom. Italiana, LX, p. 175.

Portuguese Guinea, Liberia, Togo, Cameroon, Fernando Po, French Congo, Belgian Congo (Popokabaka, Buta [Rubi], and Lingunda), Gallaland, British East Africa, "German" East Africa (Tanganyika Territory), Delagoa Bay, Zululand, Natal, Transvaal, Cape Colony. TYPE LOCALITY: "Caffraria."

**Echinosoma occidentale** BORMANS, 1893, in Bolivar, Ann. Soc. Entom. France, LXII, p. 170, (♂). BURR, 1911, Stettin. Entom. Zeitung, LXXII, p. 331; 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 338.

Ivory Coast, Togo, Cameroon, French Congo, Belgian Congo (Medje and Ukaika-Mawambi), Uganda. TYPE LOCALITY: Assinie, Ivory Coast.

<sup>1</sup>This locality, given on the authority of Burr, we are unable to place. Possibly the spelling is erroneous.

**Labiduridæ****Psalinæ****ANISOLABIS** Fieber1853, *Lotos*, III, p. 257GENOTYPE: *Anisolabis maritima* (Géné).**Anisolabis pagana** BURR, 1915, *Journ. Royal Microsc. Soc.*, p. 535, fig. 61, Pl. x, fig. 8, (♂).<sup>1</sup>

Cameroon, Belgian Congo (Stanleyville). TYPE LOCALITY: "Cameroon."

**APOLABIS** Burr1915, *Journ. Royal Microsc. Soc.*, pp. 536, 558GENOTYPE: *Apolabis hottentotta* (Dohrn). (Type by indication.)**Apolabis picea** (BORELLI).*Gonolabis picea* BORELLI, 1907, *Boll. Mus. Zool. Anat. Comp. Torino*, XXII, No. 572, p. 1, (♂, ♀).

Uganda. TYPE LOCALITY: Butiti, Uganda.

**EUBORELLIA** BurrGENOTYPE: *Euborellia mæsta* (Géné).*Borellia* BURR, 1909, *Deutsch. Entom. Zeitschr.*, p. 325.*Euborellia* BURR, 1910, *Proc. U. S. Nat. Mus.*, XXXVIII, p. 448, footnote.**Euborellia cincticollis** (GERSTÆCKER).*Brach[ylabis] cincticollis* GERSTÆCKER, 1883, *Mitth. Naturwiss. Ver. Neu-Vorpomm. und Rügen, Greifswald*, XIV, p. 44, (♂, ♀).*Psalis* (?) *picina* KIRBY, 1891, *Journ. Linn. Soc. London, Zoöl.*, XXIII, p. 516, (♂, ♀).*Psalis cincticollis* BURR, 1909, *Ann. and Mag. Nat. Hist.*, (8) IV, p. 115; 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 456; 1912, *Ann. Naturhist. Hofmus. Wien*, XXVI, p. 338.*Psalis picina* KIRBY, 1904, 'Synon. Catal. Orth.,' I, p. 14.

Gambia, Liberia, Cameroon, French Congo, Belgian Congo (Stanley Pool, Risimu, Medje, Niapu, Mawambi and Moëra Forest), Uganda and Victoria Nyanza. TYPE LOCALITY: Bonjongo, Cameroon.

**Euborellia compressa** (BORELLI).*Anisolabis compressa* BORELLI, 1907, *Boll. Mus. Zool. Anat. Comp. Torino*, XXII, No. 558, p. 3, (♂, ♀).

Uganda. TYPE LOCALITY: Bimbia, Uganda.

**Euborellia debilis** (BURR).*Psalis debilis* BURR, 1907, *Berlin. Entom. Zeitschr.*, LII, p. 202, (♂, ♀); 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 456; 1912, *Ann. Naturhist. Hofmus. Wien*, XXVI, p. 338.

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<sup>1</sup>Burr has described *Anisolabis quærens* (1915, *Journ. Royal Microsc. Soc.*, p. 530, fig. 60, (♂)) from "Mundane, Congo," which is in every probability a typographical or pen error for Mundame, Cameroon, a well-known locality.

Belgian Congo (Avakubi, Ukaika-Mawambi and North-west Tanganyika), Uganda and "German" East Africa (Tanganyika Territory). TYPE LOCALITY: Ngomeni, "German" East Africa (Tanganyika Territory).

**Euborellia annulipes** (LUCAS).

*Forficesila annulipes* LUCAS, 1847, Ann. Soc. Entom. France, (2) V, Bull., p. lxxxiv (sex not indicated). (The synonymy, which is based wholly on extra continental African records, is omitted.)

*Anisolabis annulipes* BURR, 1900, Ann. Soc. Entom. Belgique, XLIV, p. 48.

Widely distributed within the tropics and subtropics of both the Old and New Worlds. In Africa: Azores, Madeira Islands, Canary Islands, Cape Verde Islands, Morocco, Algeria, Tunis, Egypt, Eritrea, Gallaland, British East Africa (Kenya Colony), Kilimanjaro, Pemba Island, Victoria Nyanza, Uganda, Cameroon, Belgian Congo (Popokabaka), Cape of Good Hope, Comoro Islands and Madagascar. TYPE LOCALITY: "Jardin des Plantes, Paris" (introduced).

### Labidurinae

#### LABIDURA Leach

1815, 'Edinburgh Encycl.,' IX, p. 118

GENOTYPE: *Labidura riparia* (Pallas).

**Labidura riparia** (PALLAS).

*Forficula riparia* PALLAS, 1773, 'Reise Russischen Reichs,' II, Buch 2, Anhang, p. 727, (♂).

*Labidura riparia* BOLIVAR, 1892, Bull. Soc. Zool. France, XVII, p. 47. BURR, 1900, Ann. Soc. Entom. Belgique, XLIV, p. 49. REHN, 1905, Proc. U. S. Nat. Mus., XXIX, p. 502. BURR, 1908, Bull. Mus. Hist. Nat. Paris, (1907), p. 511; 1908, Ann. Soc. Entom. Belgique, LII, p. 35; 1909, Boll. Soc. Entom. Italiana, LX, p. 175; 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 456; 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 338.

*Labidura crenata* BURR, 1908, Bull. Mus. Hist. Nat. Paris, (1907), p. 511.

(The synonyms based upon African material are given in full on page 372.)

Tropical and subtropical regions of most of the world. In Africa: Morocco, Algeria, Tunis, Egypt, Canary Islands, Cape Verde Islands, Senegal, Portuguese Guinea, Ivory Coast, Niger River, Nigeria, Cameroon, French Congo, Belgian Congo (Stanley Pool, Luebo, Hiri (error for Itiri or Semliki River), Kindu Forest, Garamba, Faradje, Niangara, Niapu, Medje, Batama, Stanleyville, Malela, Mawambi, Ukaika-Mawambi, Beni, North-west Tanganyika and Lusambo), Uganda, Gallaland, Abyssinia, Somaliland, French Somaliland, Eritrea, Rhodesia, Transvaal, Orange River Colony, Zululand, Natal, Cape Colony, Comoro Islands, Madagascar, Mauritius and Sokotra. TYPE LOCALITY: "Shores of the Irtysh River," western Siberia.

#### FORCIPULA Bolivar

1897, Ann. Soc. Entom. France, LXVI, p. 283

GENOTYPE: *Forcipula quadrispinosa* (Dohrn). (Type by monotypy.)

**Forcipula congo** BURR, 1900, Ann. Soc. Entom. Belgique, XLIV, p. 49.

Belgian Congo (Bena-Bendi). TYPE LOCALITY: "Bena Bendi, Sankourou."

**Forcipula gariazzi** BORELLI, 1900, Boll. Mus. Zool. Anat. Comp. Torino, XV, No. 381, p. 1, fig. (♂); BURR, 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 79. Gold Coast, Cameroon, French Chad Region, Belgian Congo (Stanley Pool and Madimba). TYPE LOCALITY: Madimba, Belgian Congo.

### Brachylabinæ

#### ISOLABIS Verhoeff

1902, Sitzungsab. Gesell. Naturf. Freunde Berlin, pp. 11, 14

GENOTYPE: *Isolabis braueri* Verhoeff. (Type by monotypy.)

**Isolabis braueri** VERHOEFF, 1902, Sitzungsab. Gesell. Naturf. Freunde Berlin, p. 14, (♂).

Belgian Congo (Kimpoko). TYPE LOCALITY: "Kuako to Kimpoko."

### Apachyidæ

#### APACHYUS Serville

1831, Ann. Sci. Nat., XXII, p. 35

GENOTYPE: *Apachyus depressus* (Palisot de Beauvois).

**Apachyus depressus** (PALISOT DE BEAUVOIS).

*Forficula depressa* PALISOT DE BEAUVOIS, 1805, 'Ins. Rec. Afriq. Amér.,' p. 36, Orth. Pl. I, fig. 5, (♂).

*Apachyus reichardi* KARSCH, 1886, Berlin. Entom. Zeitschr., XXX, p. 85, Pl. III, fig. 3, (♂). BURR, 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 339.

Portuguese Guinea, Liberia, Ivory Coast, Gold Coast, Southern Nigeria, Cameroon, Fernando Po, Spanish Guinea, French Congo, Belgian Congo (Niagara, Akenge, Stanleyville, Medje and Ukaika-Mawambi), Benguela, Tanganyika, western "German" East Africa (Tanganyika Territory), Portuguese East Africa, Transvaal. TYPE LOCALITY: "Oware," Nigeria.

**Apachyus murrayi** DOHRN, 1863, Stettin. Entom. Zeitung, XXIV, p. 44, (Sex?).

BORMANS AND KRAUSS, 1900, 'Das Tierreich,' Lief. 11, p. 14. BURR, 1908, Ann. Soc. Entom. Belgique, LII, p. 34; 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 457.

Southern Nigeria, French Congo, Belgian Congo (Luki, Stanley Pool, Stanleyville, Avakubi, Medje, Ukaika-Mawambi, and Kwidjwi Island in Lake Kivu). TYPE LOCALITY: "Old Calabar."

## Superfamily EUDERMAPTERA

### Labiidæ

#### Vandicinæ

#### VANDEX Burr

1911, Deutsche Entom. Nat. Bibl., II, p. 59

GENOTYPE: *Spongiphora schubotzi* Burr. (Type by designation.)

**Vandex schubotzi** (BURR).

*Spongiphora schubotzi* BURR, 1909, Ann. Mag. Nat. Hist., (8) IV, p. 121, (♂, ♀). "German" East Africa (Ruanda). TYPE LOCALITY: Rugege Forest, 6000 feet.

**Spongiphorinæ****Spongovostox Burr**

1911, Deutsche Entom. Nat. Bibl., II, p. 59

GENOTYPE: *Spongovostox quadrimaculatus* (Stål). (Type by designation.)***Spongovostox quadrimaculatus* (Stål).***Forficula 4-maculata* STÅL, 1855, Öfv. Kongl. Vetensk.-Akad. Förhandl., XII, p. 348.*Forficula protensa* GERSTÆCKER, 1883, Mitth. Naturwiss. Ver. Neu-Vorpomm. und Rügen, Greifswald, XIV, p. 45, (♂, ♀).

Ivory Coast, Gold Coast, Cameroon, Fernando Po, Spanish Guinea, French Congo, Uganda (Entebbe), Kilimanjaro, Zululand, Natal, Cape Colony. TYPE LOCALITY: "Port Natal."

***Spongovostox assiniensis* (BORMANS).***Spongiphora assiniensis* BORMANS, 1893, in Bolivar, Ann. Soc. Entom. France, XLII, p. 170, (♀).*Spongiphora ochracea* BORG, 1904, Arkiv för Zoologi, I, p. 569, Pl. xxvi, fig. 6, (♂, ♀).*Spongiphora robur* BURR, 1906, Mem. Soc. Españ. Hist. Nat., I, p. 293, (♂).

Ivory Coast, Gold Coast, Cameroon, Fernando Po, Spanish Guinea, French Congo, Uganda, Victoria Nyanza and "German" East Africa (Tanganyika Territory). TYPE LOCALITY: "Assinie," Ivory Coast.

***Spongovostox gestroi* (BURR).***Apterygida feæ* BORELLI, 1907, Ann. Mus. Civ. Stor. Nat. Genova, XLIII, p. 387, (♂, ♀). (Not *Spongovostox feæ* (Dubrony), 1879.)?*Spongiphora tripunctata* BURR, 1909, Bull. Soc. Ent. Italiana, LX, p. 179.*Spongiphora gestroi* BURR, 1909, Ann. Mag. Nat. Hist., (8) IV, p. 122, (♂, ♀). Portuguese Guinea, French Guinea, Belgian Congo (Ibembo). TYPE LOCALITY: Ibembo ("Ibambo"), Belgian Congo.***Spongovostox tripunctata* (BORELLI).***Spongiphora tripunctata* BORELLI, 1907, Ann. Mus. Civ. Stor. Nat. Genova, XLIII, p. 367, (♂).*Labia tripunctata* BURR, 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped.,' III, Lief. 14, p. 458.

Cameroon, French Congo, Belgian Congo (Ibembo) and Lake Kivu. TYPE LOCALITY: "Fernand-Vaz," French Congo.

***Spongovostox aloysii-sabaudiæ* (BORELLI).***Spongiphora aloysii-sabaudiæ* BORELLI, 1906, Boll. Mus. Zool. Anat. Comp. Torino, XXI, No. 541, p. 1, (♂, ♀).

Ruwendori district, Uganda. TYPE LOCALITY: "Ibanda."

**Labiinæ****CHÆTOSPANIA Karsch**

1886, Berlin. Entom. Zeitschr., XXX, p. 87

GENOTYPE: *Chætospasia inornata* Karsch. (By monotypy.)*Sparattina* VERHOEFF, 1902, Zoologischer Anzeiger, XXV, p. 198. (Based on *Sparattina flavicollis* Verhoeff.)

**Chætospania pæderina** (GERSTÆCKER).

*Forficula pæderina* GERSTÆCKER, 1883, Mitth. Naturw. Ver. Neu-Vorpomm. und Rügen, Greifswald, XIV, p. 46, (♀).

*Sparatta bongiana* BORG, 1904, Arkiv för Zoologi, I, p. 573, Pl. xxvi, figs. 3, 3b, (♂).

*Chætospania escaleræ* BURR, 1906, Mem. Soc. Españ. Hist. Nat., I, p. 295, (♂, ♀).

Gold Coast, Togo, Cameroon, Fernando Po, French Congo, Spanish Guinea and Uganda (Ibanda). TYPE LOCALITY: "Aburi, Gold Coast."

**Chætospania rodens** BURR, 1907, 'Wiss. Ergebn. Schwed. Zool. Exp. Kilimandjaro,' III, 17, Orth., 1, p. 7, Pl. I, fig. 5, (♂, ♀); 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 339.

Belgian Congo (Ukaika-Mawambi), Kilimanjaro, "German" East Africa (Tanganyika Territory). TYPE LOCALITY: "Kibonoto," Kilimanjaro.

**Chætospania ugandana** BORELLI, 1907, Boll. Mus. Zool. Anat. Comp. Torino, XXII, No. 558, p. 4, (♂, ♀).

Cameroon, Uganda. TYPE LOCALITY: "Ibanda," Uganda.

**LABIA** Leach

1815, 'Edinburgh Encycl.,' IX, p. 118

GENOTYPE: *Labia minor* (Linnæus).

**Labia minor** (Linnæus) BURR, 1900, Ann. Soc. Ent. Belgique, XLIV, p. 50; 1908, idem, LII, p. 35.

*Forficula minor* LINNÆUS, 1758, 'Syst. Nat.,' 10th Ed., p. 423.

*Labia minuta* SCUDDER, 1862, Boston Journ. Nat. Hist., VII, p. 415, (♂, ♀).

Cosmopolitan. Records in Africa from: Morocco, Algeria, Egypt, Madeira Islands, Canary Islands, Togo, Cameroon, Spanish Guinea, Belgian Congo (Kinshasa), Uganda, Victoria Nyanza and Cape Colony. TYPE LOCALITY: "Europe."

**Labia borellii** BURR, 1909, Bull. Soc. Entom. Italiana, XL, p. 178, (♂, ♀).

Victoria Nyanza. TYPE LOCALITY: "Bugala, Sesse Archipelago, Victoria Nyanza."

**Labia curvicauda** (MOTSCHULSKY).

*Forfiscelia curvicauda* MOTSCHULSKY, 1868, Bull. Soc. Nat. Moscou, XXXVI, part 2, p. 2, (♂, ♀).

Synonymy based on African material is as follows:

*Platylabia guineensis* DOHRN, 1867, Stettin. Entom. Zeitung, XXVIII, p. 348, (♂, ♀).

*Platylabia camerunensis* BORG, 1904, Arkiv för Zoologi, I, p. 570, Pl. xxvi, figs. 4, 4a and 4b, (♂, ♀).

*Platylabia bihastata* BORG, 1904, idem, p. 572, Pl. xxvi, fig. 5, (♂).

Circumtropical. Records in Africa from: Madeira Islands, Portuguese Guinea, French Guinea, Southern Nigeria, Cameroon, Island of Principe, Island of Annobon, Uganda (Ibanda), "German" East Africa (Tanganyika Territory), Comoro Islands and Seychelles Islands. TYPE LOCALITY: "Nura-Ellia Mts.," Ceylon.

**Labia ochropus** (STÅL).

*Forficula ochropus* STÅL, 1855, Öfv. Kongl. Vetensk.-Akad. Förhandl., XII, p. 348, (♂, ♀).

*Labia marginalis* BURR, 1908, Ann. Soc. Entom. Belgique, LII, p. 35; 1909, Bull. Soc. Entom. Italiana, LX, p. 179.

Ivory Coast, French Congo, Belgian Congo (Leopoldville, Buta (Rubi) and Bengamisa), Uganda, "German" East Africa (Tanganyika Territory), Portuguese East Africa, Zululand, Natal, Transvaal and Comoro Islands. TYPE LOCALITY: "Port Natal" (Durban), Natal.

*Labia owenii* BURR, 1911, Ann. Mag. Nat. Hist., (8) VIII, p. 49, (♂, ♀); 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 339.

Liberia and Belgian Congo (Ukaika-Mawambi). TYPE LOCALITY: Liberia.

### Chelisochidæ

#### CHELISOCHES Scudder

1876, Proc. Boston Soc. Nat. Hist., XVIII, p. 295

GENOTYPE: *Forficula morio* (Fabricius).

*Lobophora* SERVILLE, 1839, 'Hist. Nat. Ins., Orth.,' p. 32. (Not of Curtis, 1825.)

*Enkrates* BURR, 1907, Trans. Entom. Soc. London, p. 131.

**Chelisoches flavipennis** (FABRICIUS).

*Forficula flavipennis* FABRICIUS, 1793, 'Entom. Syst.,' II, p. 5, (sex?).

*Forficula plagiata* FAIRMAIRE, 1858, in Thomson, 'Archives Entom.,' II, p. 257, Pl. IX, fig. 3, (♀).

Senegal, Gold Coast, Cameroon, Fernando Po, French Congo and Belgian Congo (Stanleyville and Medje). TYPE LOCALITY: "Senegal."

### Forficulidæ

#### Anechurinæ

#### PSEUDOCHELIDURA Verhoeff

1902, Zoolog. Anzeiger, XXV, pp. 187 and 196

GENOTYPE: *Pseudochelidura sinuata* (Germar).

**Pseudochelidura** species, BURR, 1907, 'Wiss. Ergebn. Schwed. Zool. Exped. Kilimandjaro,' III, 17, Orth., I, p. 12, (♀).

*Pseudochelidura* species, BORELLI, 1909, 'Il Ruwenzori, Relazione Scientifiche,' I, p. 289, (♀).

Ruwenzori district of Uganda, Kilimanjaro.

### Forficulinæ

#### APTERYGIDA Westwood

1840, 'Introd. Classif. Ins.,' Generic Synopsis, p. 44

GENOTYPE: *Chelidura albipennis* Stephens.

**Apterygida cavallii** BORELLI, 1906, Boll. Mus. Zool. Anat. Comp. Torino, XXI, No. 541, p. 4, (♂, ♀). BURR, 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 458.

Uganda (Buhengo, Fort Portal and Ibanda) and western "German" East Africa (Volcanic region north-east of Lake Kivu, and Rugege Forest, south-west Ruanda). TYPE LOCALITY: "Buhengo," Uganda.

**FORFICULA** Linnæus

1758, 'Syst. Nat.,' 10th Ed., p. 423

GENOTYPE: *Forficula auricularia* Linnæus.

**Forficula brolemanni** BORELLI, 1907, Boll. Mus. Zool. Anat. Comp. Torino, XXII, No. 573, p. 1, (♂, ♀). BORELLI, 1915, 'Résultats Scientif., Voy. Alluaud et Jeannel en Afriq. Orient.,' Orth., I, p. 15, Pl. II, fig. 11 (♂).

Upper Senegal, Belgian Congo (Garamba, Faradje, Vankerekhovenville, Medje and Stanleyville), and Uganda. TYPE LOCALITY: "Bougounni," Upper Senegal.

**Forficula senegalensis** SERVILLE, 1839, 'Hist. Nat. Ins., Orth.,' p. 39, (♂, ♀).

Cape Verde Islands, Senegal, Togo, Eritrea, Kordofan, Senaar, Egyptian Sudan, Gallaland, Abyssinia, Belgian Congo (Medje), Uganda, British East Africa (Kenya Colony), "German" East Africa (Tanganyika Territory), Ovampoland, Southern Rhodesia, Transvaal, Zululand, Griqualand and Cape Colony. TYPE LOCALITY: "Senegal."

**Forficula rodziankoi** SEMENOFF, 1901, Revue Russe d'Entom., I, p. 48. BURR, 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 459.

Abyssinia, Belgian Congo (Kasindi and western slope of Ruwenzori), British East Africa (Kenya Colony), "German" East Africa (Tanganyika Territory) and Tanganyika region. TYPE LOCALITY: "Harrar, Abyssinia."

**Forficula sjöstedti** BURR, 1907, Trans. Entom. Soc. London, p. 116, (♂, ♀); 1912, Sitzungsber. Gesell. Naturf. Freunde, Berlin, p. 327.

"German" East Africa (Tanganyika Territory) (Ufumbiro Volcanoes, Kisenje, Ruanda and Kilimanjaro region), British East Africa (Kenya Colony) (Kenya and Aberdare Mountains). TYPE LOCALITY: "Kiboscho," Kilimanjaro.

**Neolobophorinæ****ARCHIDUX** Burr

1909, Ann. Mag. Nat. Hist., (8) IV, p. 123

GENOTYPE: *Archidux adolfi* Burr. (By designation.)

**Archidux adolfi** BURR, 1909, Ann. Mag. Nat. Hist., (8) IV, p. 124, (♂, ♀); 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 459; 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 339. BORELLI, 1915, 'Résultats Scientif., Voy. Alluaud et Jeannel en Afriq. Orient.,' Orth., I, p. 16, Pl. II, figs. 12-15 (♂, ♀).

Belgian Congo (North-western Tanganyika and western Tanganyika), "German" East Africa (Tanganyika Territory) (Ufumbiro Volcanoes), and British East Africa (Kenya Colony) (Kenya and Aberdare Mountains). TYPE LOCALITY: "Bamboo Forest, 3000 meters, Sabinyo," Ufumbiro Volcanoes.

**Opisthocosmiinæ****OPISTHOCOSMIA** Dohrn

1865, Stettin. Entom. Zeitung., XXVI, p. 76

GENOTYPE: *Opisthocosmia centurio* Dohrn.

**Opisthocosmia pœcilocera** (BORG) BURR, 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 339.

*Ancistrogaster pæcilocera* BORG, 1904, Arkiv för Zoologi, I, p. 577, Pl. xxvi, figs. 8 and 8a, (♀).

*Opisthocosmia formosa* BURR, 1905, Ann. Mag. Nat. Hist., (7) XVI, p. 492, (♂).

Portuguese Guinea, Cameroon, Belgian Congo (Medje, Ukaika-Mawambi and North-western Tanganyika) and "German" East Africa (Tanganyika Territory).  
TYPE LOCALITY: "Cameroon."

### THALPERUS Burr

1911, 'Genera Insectorum, Dermaptera,' pp. 89, 92

GENOTYPE: *Thalperus kuhlgatzi* (BURR).

**Thalperus kuhlgatzi** (BURR), 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 459.

*Hypergus kuhlgatzi* BURR, 1909, Ann. Mag. Nat. Hist., (8) IV, p. 116, (♂, ♀).

Togo, Cameroon, and Belgian Congo (Faradje and Kirima, north-west coast of Lake Albert Edward). TYPE LOCALITY: Bismarckburg, Togo.

**Thalperus roccatii** (BORELLI).

*Opisthocosmia roccatii* BORELLI, 1906, Boll. Mus. Zool. Anat. Comp. Torino, XXI, No. 541, p. 2, (♂, ♀).

Belgian Congo (Medje) and Uganda (Ruwenzori district). TYPE LOCALITY: Ibanda, Uganda.

**Thalperus micheli** (BURR), 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 339.

*Opisthocosmia micheli* BURR, 1904, Trans. Entom. Soc. London, p. 307, (♂, ♀).

Abyssinia, Belgian Congo (Moëra Forest near Fort Beni) and Southern Rhodesia.  
TYPE LOCALITY: "Abyssinia."

### Diaperasticinæ

#### DIAPERASTICUS Burr

1907, Trans. Entom. Soc. London, p. 93

GENOTYPE: *Diaperasticus sansibaricus* (Karsch).

**Diaperasticus sansibaricus** (KARSCH).

*Sphingolabis sansibarica* KARSCH, 1886, Berlin. Entom. Zeitschr., XXX, p. 90, Pl. III, fig. 8, (♂).

*Apterygida mackinderi* BURR, 1900, Ann. Mag. Nat. Hist., (7) VI, p. 83, Pl. IV, figs. 3 and 3a, (♂); 1912, Ann. Naturhist. Hofmus. Wien, XXVI, p. 339.

Belgian Congo (Niagara and Moëra Forest near Fort Beni), Uganda (Ruwenzori district and Unyoro), British East Africa (Kenya Colony), "German" East Africa (Tanganyika Territory), Zanzibar, Natal and Transvaal. TYPE LOCALITY: "Zanzibar."

**Diaperasticus bonchampsii** (BURR).

*Apterygida bonchampsii* BURR, 1904, Trans. Entom. Soc. London, p. 317, (♂, ♀).

Abyssinia, Egyptian Sudan, Belgian Congo (Elisabethville), British East Africa (Kenya Colony), "German" East Africa (Tanganyika Territory) and Nyassaland. TYPE LOCALITY: "Abyssinia."

**Diaperasticus erythrocephalus** (OLIVIER).

*Forficula erythrocephala* OLIVIER, 1791, 'Encycl. Méthod., Ins.,' VI, p. 468, (♀).

*Apterygida erythrocephala* BURR, 1900, Ann. Soc. Entom. Belgique, XLIV, p. 52.  
REHN, 1905, Proc. U. S. Nat. Mus., XXIX, p. 501.

*Elaunon erythrocephala* BURR, 1910, Proc. U. S. Nat. Mus., XXXVIII, p. 464; 1911, 'Wissensch. Ergebn. Deutschen Zentr.-Afr.-Exped., 1907-1908,' III, Lief. 14, p. 458.

(The synonymy is given in full on page 398.)

Senegal, Portuguese Guinea, French Guinea, Liberia, Slave Coast, Togo, Southern Nigeria, Cameroon, Fernando Po, French Congo, Belgian Congo (Luebo, Stanleyville, Risimu, Avakubi, Medje, Yakuluku and Faradje), Uganda, Victoria Nyanza, Eritrea, Somaliland, British East Africa (Kenya Colony), "German" East Africa (Tanganyika Territory), Zanzibar, Portuguese East Africa, Nyassaland, Angola, Transvaal, Natal, Cape Colony, Comoro Islands, Nossi-Bé and Madagascar. TYPE LOCALITY: "Cape of Good Hope."