

**Synopsis and Reclassification  
of the Ichneumoninae  
Stenopneusticae of Africa  
south of the Sahara  
(Hymenoptera)**

Volume II.

Synopsis of the Oedicephalini, Listrodromini, Compsophorini,  
Ctenocalini, Platylabini, Eurylabini, Acanthojoppini

*by*

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# Synopsis and Reclassification of the Ichneumoninae Stenopneusticae of Africa South of the Sahara

## Volume II.

By GERD H. HEINRICH

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### V. Tribe *Oedicephalini* Heinrich

Figs. 60-68

*Oedicephalini* Heinrich, 1934, Mitt. Zool. Mus. Berlin, pp. 67 and 118-119.

*Type genus*.—*Oedicephalus* Cresson

*Notosemini* Townes, 1960, Cat. Reclass. Indo-Austr. Ichn., p. 338.

*Type genus*.—*Notosemus* Foerster

#### *Distribution*

Neotropical, Oriental and Ethiopian regions; lowlands.

#### *Preamble*

This tribe was originally based on a number of fairly small and morphologically rather striking forms from the Neotropical region and the Oriental region. It has been known to occur in Madagascar since 1938. It will be recorded below in three species for the first time also from the continental Africa.

In 1960 Townes (loc. cit.) introduced a new name for the tribe, evidently in application of the principle of priority not to the given name of the tribe, but to the type genus. Such interpretation of the priority rule seems to be pernicious to the particularly desirable stability of the nomenclature of higher taxons. It is also contrary to the recommendations of the International Commission of Nomenclature. The controversial problem has been discussed in detail in the introduction to this paper.

I still believe that the tribal association of the Neotropical genus *Oedicephalus* Cresson with the Oriental-Ethiopian genus *Imeria* Cameron and its close relatives, is correct. The answer to the question whether *Aulojoppa* Cameron can also be included in the tribe has been doubtful from the beginning and still is, as the last 30 years have failed to produce any progress in our knowledge of the biology of this group.

#### *Morphological characters*

(Based on the Ethiopian fauna only.)

*Flagellum*.—Extremely long and slender, with very elongate segments; of females bristle-shaped, long and sharply attenuated, flattened ventrally beyond middle, but not widened; of males with small, inconspicuous tyloids, or without tyloids, not nodose.

*Head*.—Extremely thick, nearly cubical; occiput between ocelli and occipital carina not, or scarcely, slanting and very wide, also cheeks between outer orbits and carina genalis very wide; malar space shorter than

width of mandible base; clypeus gradually produced from lateral angles into a considerable triangular median projection; mandibles very short, with subequal, strong apical teeth separated from each other by a wide and deep gap; often mandibles strikingly twisted and turned up close beyond base in such a way that their upper surface is in the plane of face and clypeus; frons not at all concave.

*Thorax*.—Mesothorax short; mesoscutum about as long as wide, convex, steeply declivous in front; notauli obsolete, sternauli weakly indicated; collare simple, in *Imeriella* Heinrich from Madagascar with a very large backward-bent, quadripartite lamella; epomia pronounced; scutellum very strongly raised above postscutellum, laterally with high to lamelliform carinae, ascending from base to apex, vertically declivous and transverse at apex with the posterior ends of lateral carinae more or less strongly projecting on each side; posterior transverse carina of mesosternum interrupted or weak before base of coxae II; propodeum with narrow basal furrow behind postscutellum, fairly short, the area posteromedial much longer than horizontal part medially; carination usually not quite complete, particularly carina coxalis lacking or weak, and also carina metapleurals often weak or obsolete; area superomedial about as wide as long or wider than long.

*Legs*.—Fairly long and slender; claws rarely pectinate.

*Wings*.—Nervulus interstitial or slightly postfurcal; areolet pentagonal, but strongly narrowed in front; radius sinuate.

*Abdomen*.—Of females oxygygous, with the ovipositor distinctly projecting, usually as long as the seventh tergite, or as the two last tergites together; gastrocoeli fairly large and deep, transverse, the space between them narrow; postpetiole without defined median field, convex, punctate or rugose-punctate; tergites 3-7, sometimes only 4-7 weakly sclerotized, tending to be compressed, depressed or otherwise deformed in prepared specimens.

### Chromatic characters

Both African color types occur: the one with predominantly or entirely pale-orange or testaceous body and the one with predominantly black abdomen and extensive apical white bands. Sexual dichroism inconspicuous.

### Key to the genera of the *Oedicephalini* of Africa

1. Collare with striking, quadripartite lamella (fig. 66); mandibles not strongly twisted, their upper surface not turned up into plane of clypeus; mandible teeth longer than mandible body (fig. 63). (In type species tergites 5-7 with broad apical white bands.) ..... 29. *Imeriella* Heinrich  
Madagascar
- Collare without lamella; mandibles strongly twisted, their upper surface turned up into plane of clypeus; mandible teeth shorter than mandible body (fig. 60). (Abdomen usually without white anal pattern, in one species tergites 6 and 7 with broad apical white bands.) ..... 30. *Elasmognathias* Ashmead  
Continental tropical Africa

### 29. Genus *Imeriella* Heinrich, new status

*Caenojoppa* Cameron, subgenus *Imeriella* Heinrich, 1938, Mém. Acad. Malg., XXV, pp. 44-45.

*Type species*.—*Caenojoppa (Imeriella) Seyrigi* Heinrich

## Distribution

Madagascar.

## Preamble

Since three completely typical species of the *Imeria* Cameron group have been found in continental Africa, all showing the characteristic, "twisted" mandibles, I am convinced that the quite different structure of the mandibles of the Madagascan form should be considered a generic character rather than as subgeneric. This hypothesis is also supported by the striking specialization of the collare described below.

## Morphological characters

*Flagellum*.—As described for the tribe; flagellum of males without tyloids.

*Head*.—(Fig. 63); structure in general as described for the tribe, but mandibles not twisted beyond base, their upper surface not turned up into the plane of clypeus and face; gap between teeth extremely deep, the teeth thus distinctly longer than the abbreviated body of mandibles.

*Thorax*.—General structure as described for the tribe; collare with an extremely large, backward-curved lamella (fig. 66), which is divided by deep incisions into four apically rounded, separated lobes; lateral carinae of scutellum (figs. 64, 65) high, but not lamelliform, their posterior ends moderately projecting, the truncate apex of scutellum thus only slightly emarginate medially; apical slope of scutellum clear-cut, almost vertical, forming an even surface with sharp lateral edges; carination of propodeum not quite complete: all longitudinal carinae weak or obsolete, the transverse carinae of the horizontal part pronounced; carinae coxales fairly distinct.

*Legs and wings*.—As described for the tribe; claws not pectinate.

*Abdomen*.—As described for the tribe; also the third tergite normally sclerotized and fairly strongly punctured.

### 1. *Imeriella seyrigi* Heinrich

Figs. 63-66

*Caenojoppa (Imeriella) Seyrigi* Heinrich, 1938, Mém. Acad. Malg., XXV, pp. 45-46, ♀♂.

## Types

*Holotype*.—♀, "Madagascar, Rogez, 600 m, I-II.1931, leg. A. Seyrig." C.G.H. I.

*Allotype*.—♂, "Mad., Ankaratrageb., 1800 m, XII-II., leg. A. Seyrig." C.G.H. II.

## Distribution

Madagascar: Anivorano, Rogez, Perinet, Andreba, Ampandranda; usually not found above 1000 m.

## Host

A biological note added by Seyrig to my original description of this species contains the following information: Two specimens of *Imeriella seyrigi* were raised from two chrysalids found attached to leaves of *Eugenia parkeri*. The chrysalids were fastened to the leaves not only at their

### Morphological characters

*Flagellum*.—Of females always bristle-shaped, slender, moderately to very long, ventrally flattened beyond middle, but not, or at most very slightly widened, strongly attenuated toward apex; of males without tyloids, the segments with distinct, preapical transverse bristle-ridges, moderately nodose.

*Head*.—Always rather thick, with wide temples and wide cheeks; face, clypeus, malar space, and lower cheeks (as in *Listrodromini* and *Ischnojoppini*) entirely or almost entirely devoid of plastic features, that is, not separated from each other by sutures and completely without swellings or depressions; clypeal foveae obsolete; clypeus without lateral corners, its apex gently curved, nearly straight; occiput more or less deeply emarginate; labrum small, usually hidden; mandibles stout, short and very wide, with strong, subequal teeth, separated by a wide and deep gap.

*Thorax*.—Collare with tendency to develop backward-directed lamellae of varying extent, with median emargination of different shape and degree; mesoscutum short, not much longer than medially wide and almost always rather flat, with peculiar sculpture of extremely coarse rugosity, the rugae often in parallel zigzag lines or in curves, and forming various patterns, sometimes of specific significance; each lobe usually with a smooth and shiny longitudinal band, the median lobe sometimes medially depressed in front and thus bipartite, the exterior lobes often forming a raised carina on exterior side, parallel to and at a short distance from the exterior bordering carina of the mesoscutum; pronotal ridge often transversely crenulate; scutellum always laterally carinate and raised above postscutellum, either simply convex or pyramidal, in females as a rule less raised than in males, sometimes convex in females, pyramidal in the associated males; in males of *Eccoptosagellus*, new genus, with large apico-lateral projections similar to the Oriental genus *Eccoptosage* Kriechbaumer; propodeum rather short, sloping down from base to apex in gradual curve; carination more or less complete, at least area superomedia and lateral carinae of declivity distinct; basal furrow of propodeum narrow, if at all present; usually area superomedia medially contiguous to postscutellum; sculpture of propodeum usually coarsely rugose, the area superomedia, however, polished in most species, but in the genera *Compsophorus* Saussure and *Oxyjoppa* Cameron always as coarsely rugose as the rest of the propodeum; areae superoexternae often regularly longitudinally rugose; mesopleura with smooth, usually large speculum and often with transverse depression below it.

*Legs*.—Moderately long, femora fairly slender; claws not pectinate; coxae III of females tending to develop protrusions or carinae of specifically varying size and shape on the interior ventral side of their apices; tarsi III in one group of species thickened and abbreviated, with exteriorly flattened metatarsus.

*Wings*.—Nervulus postfurcal, rarely interstitial; areolet strongly narrowed or with intercubiti coalescent in front; radius distinctly sinuate; usually clear, often evenly and deeply infuscated, in a few species with deeply infuscated transverse bands.

### Distribution

Oriental and Ethiopian regions.

### Preamble

The two genera *Elasmognathias* Ashmead and *Caenojoppa* Cameron seem to be more closely related to each other than to *Imeria* Cameron. Nevertheless my synonymization of the two was not tenable. Townes (loc. cit.) has treated all three taxons as coordinated subgenera. This arrangement was in agreement with my own former opinion. In consideration of the new African species and on the basis of recent examination of the Oriental forms, I now prefer to treat all three taxons as full genera. Although their close relationship is evident, there seem to be no intergrades of doubtful position.

*Elasmognathias* differs from *Caenojoppa* mainly by the lack of apophyses or pointed projections on the areae dentiparae, which instead of being apically turned up and more or less strongly projecting, are apically slanting and downward-curved; in addition the notauli, basally fairly distinct in *Caenojoppa*, are obsolete in *Elasmognathias*; the prepectal carina in *Caenojoppa* usually shows a slight emargination at the sternauli, but is evenly curved in *Elasmognathias*.

All three species recorded below from Africa clearly belong to the genus *Elasmognathias*.

### Morphological characters

**Flagellum.**—As described for the tribe; of females with median part compressed, ventrally flattened beyond middle but not widened, apically extremely slender and attenuated; of males with distinct, though small tyloids.

**Head.**—As described for the tribe; clypeus laterally depressed, the lateral margin slightly curved upward; apex of cheeks constricted toward mandible base; mandibles, as in *Imeria* and *Caenojoppa*, twisted shortly beyond base, their upper surface turned up into the same plane with clypeus and face, incision between their teeth not as deep as in *Imeriella* Heinrich, teeth distinctly shorter than the mandible body, the latter considerably wider than in *Imeriella*.

**Thorax.**—As described for the tribe; collare (in contrast to *Imeriella*) simple, without lamella; lateral carinae of scutellum lamelliform, usually strongly projecting posteriorly on each side, the apex of scutellum thus emarginate, apical slope of scutellum not forming a clear-cut even surface; carination of propodeum nearly complete, only carina coxalis lacking, carina metapleuralis sometimes indistinct; area superomedia hexagonal, usually wider than long; areae dentiparae deeply sloping downward in a gentle curve, without apophyses or trace of apical projections; mesopleura more or less extensively longitudinally striate.

**Legs.**—Claws simple, weakly pectinate only in *berndi*, new species.

**Wings.**—As described for the tribe; areolet rather strongly narrowed in front, sometimes almost quadrangular.

**Abdomen.**—As described for the tribe.



Key to the species of *Elasmognathias* Ashmead

## Females and Males

1. Face and clypeus black; tergites 6 and 7 with apical white bands. (Basic color of abdomen black; thorax red, except prosternum; length 9 mm.) ..... 1. *berndi*, new species  
Tanganyika
- Face and clypeus white; abdomen without apical white pattern. (Basic color of abdomen orange; thorax orange combined with yellowish and black; ♀♀ with ♂♂ without flagellar annulus; length 9 mm.) ..... 2
2. Mesoscutum orange, lateral lobes with infuscated longitudinal bands (♀♀) or lateral lobes entirely black (♂♂); occipital region orange; horizontal part of propodeum uniformly orange. .... 2. *africanus*, new species  
Tanganyika
- Mesoscutum black with (♀♀) or without (♂♂) medio-apical bipartite yellow mark; occipital region black; horizontal part of propodeum except median areas (♀♀) or entirely (♂♂) black. .... 3. *erythrinus*, new species  
Angola

1. *Elasmognathias berndi* new species

Figs. 60, 61, 62

## Types

*Holotype*.—♀, "Tanganyika, Dar es Salaam, 20.IX.61" leg. Bernd Heinrich. C.G.H. II.

*Paratype*.—1 ♀, same data. C.G.H. II.

## Distribution

Coastal lowlands of eastern Tanganyika.

## Preamble

Distinguished from the two following species by black head, abdomen, and legs, all with white markings, and by the weakly pectinate basal part of claws.

## Female

*Black, thorax red (except prosternum), head and coxae white-marked; tergites 6 and 7 with apical white bands; flagellum with dorsal white annulus; length 9 mm.*

*Flagellum*.—With 39-40 segments, the first about 5 times as long as wide, all segments considerably longer than wide. Black, including scape, with dorsal white annulus on segments 7-11.

*Head*.—Structure as described for the genus (fig. 60). Black; the following white: mandibles except teeth, band on outer orbits, frontal orbits fairly broadly, sometimes a small mark on inner orbits opposite antennal sockets, a fairly conspicuous mark on temples near carina occipitalis.

*Thorax*.—Structure as described for the genus and tribe; scutellum (figs. 61, 62) comparatively short, the lateral lamellae moderately high and posteriorly rounded instead of angularly projecting; dorsal surface of scutellum extremely coarsely reticulate-rugose, in contrast to the two following species strongly convex and gradually curved downward at the apex; carina coxalis and carina metapleurals obsolete. Red, only prosternum and posterior margin of mesosternum black, collare partially white.

*Legs*.—Basal part of claws weakly pectinate. Black, including coxae and trochanters; tibiae and femora II brownish-black, tibiae and femora I

brown; white are: apices of coxae I and of trochanters I and II, dorsal marks on coxae II and III.

*Wings*.—As described for the tribe. Clear.

*Abdomen*.—Only the second tergite fairly strongly sclerotized, densely and coarsely punctured, the third tergite sparsely and very finely punctured, almost smooth like the following tergites and weakly sclerotized; postpetiole medially finely and irregularly rugose, laterally coarsely punctured. Black; the first and second tergites sometimes (paratype) dull-reddish-tinged; tergites 3-4 or to 5 with narrowly whitish apical margins, the sixth tergite with fairly wide apical white band, the seventh and eighth almost entirely white.

## 2. *Elasmognathias africanus*, new species

### *Types*

*Holotype*.—♀, "Tanganyika, Dar es Salaam, 20.IX.61." C.G.H. II.

*Allotype*.—♂, same data. C.G.H. II.

### *Distribution*

Coastal lowlands of eastern Tanganyika.

### *Preamble*

Distinguished by the uniformly orange color of the abdomen and predominantly orange head and thorax, with black restricted to a more or less distinct longitudinal band on each lateral lobe of the mesoscutum and to the frons; scutellar structure considerably different from the preceding and slightly different from the following species.

### *Female*

*Predominantly orange; pleura and sterna yellowish-tinged; clypeus, face, and frontal orbits white; black are only: an indistinct, longitudinal band on each lateral lobe of mesoscutum, frons including ocellar region, flagellum, and apical segments of tarsi III; flagellum with dorsal white annulus; length 9 mm.*

*Flagellum*.—With 41 segments, the first about 3 times as long as wide, all segments considerably longer than wide. Black, with dorsal white annulus on segments 7-12; scape and pedicel orange.

*Head*.—Structure as described for the genus. Orange; the following white: mandibles except teeth, clypeus, face, frontal orbits broadly, and lower part of cheeks indistinctly; black are: ocellar region and frons between white orbits down to antennal sockets.

*Thorax*.—Structure as described for the genus and tribe; scutellum dorsally gradually ascending from base to apex, the lateral lamella moderately high, apically distinctly projecting, the apex of scutellum thus distinctly emarginate, the emargination bordered by a low carina, apical declivity to the postscutellum vertical and deep; ascending dorsal surface of the scutellum with moderately coarse, irregular rugosities; carina coxalis obsolete, carina metapleuralis weak but recognizable. Orange; lower part of all pleura, prepectus, sterna, collare, subalarum, and speculum pale yellowish; a fairly indistinct longitudinal infuscated band on each lateral lobe of mesoscutum.

*Legs*.—Claws not pectinate. Orange; coxae and trochanters I and II pale yellowish; tarsi III from apex of first segment on blackish-infuscated.

*Abdomen*.—Only the second tergite normally sclerotized, densely and moderately strongly punctured, the third tergite sparsely and extremely finely punctured, almost smooth and weakly sclerotized; in type specimen the third tergite slightly, the following tergites strongly compressed; post-petiole medially finely and irregularly rugose, apically smooth, laterally with a few punctures. Uniformly orange, apex of ovipositor sheaths black.

#### Male

Black on frons extends backward beyond ocellar region; black bands on lateral lobes of mesoscutum pronounced, wider and deeper black than in female; tarsi III black, tarsi II blackish-infuscated; flagellum without annulus, black, including dorsal side of scape and pedicel; otherwise as female.

*Flagellum*.—With 39 segments, with very small and, in allotype, hardly recognizable narrowly oval tyloids on approximately segments 8-20. Black, including scape; scape ventrally ferruginous.

### 3. *Elasmognathias erythrinus*, new species

Figs. 67, 68

#### Types

*Holotype*.—♀, "Angola, 30 km N. of Quiculungo, Sept./Okt. 1957."  
C.G.H. II.

*Allotype*.—♂, same locality and date. C.G.H. II.

#### Distribution

Northeastern Angola (Cuanza Norte).

#### Preamble

Fairly closely related to *africanus* Heinrich. Distinguished by the dorsally predominantly black mesoscutum, propodeum, and head, combined in females with almost uniformly orange abdomen; scutellum in females more steeply ascending from base to apex than in *africanus*, the lateral lamellae considerably higher.

#### Female

Abdomen almost uniformly orange, except median infuscation on post-petiole; head predominantly white, dorsally extensively black; thorax ventrally and laterally yellowish and dull orange, dorsally predominantly black; mesoscutum black, with bipartite, medio-apical yellowish mark; lateral fields of horizontal part of propodeum blackish; flagellum with dorsal white annulus; length 9 mm.

*Flagellum*.—With 40 segments, the first about 5 times as long as wide, all segments considerably longer than wide. Black, including scape, with dorsal white annulus on segments 6 (apex) to 12; scape ventrally partially brown.

*Head*.—Structure as described for the genus. Black; the following white: base of mandibles, clypeus, face, orbits broadly all around eyes, the white band narrowed on vertex, level with ocelli, directly behind this con-

striction projecting triangularly onto occipital region; hind part of cheeks from temples to mandible base orange.

*Thorax*.—Structure as described for the genus and tribe; scutellum (figs. 67, 68) as in *africanus* Heinrich, but dorsally more steeply ascending from base to apex and the lateral lamellae very high; area coxalis obsolete, area metapleuralis weak but recognizable. Mesoscutum black, with a bipartite yellowish mark in front of scutellum, and with a short orange band on outer sides in front of prescutellar carinae, the latter yellowish; areae superoexternae and dentiparae predominantly blackish; the following pale yellowish: scutellum, postscutellum, collare, pronotal ridge and pronotal base broadly, subalarum, mesopleura (except median part), apex of areae metapleurales and areae spiraculiferae, declivity of propodeum, prosternum, prepectus and middle of mesosternum; the rest of pleura and mesosternum orange-tinged brown; middle of pronotum behind collare black.

*Legs*.—Claws not pectinate. Orange; coxae and trochanters I and II yellowish; very base of tibiae III and all tarsi infuscated, the tarsi III black.

*Abdomen*.—As described for *africanus*; postpetiole more coarsely rugose, laterally more extensively and more coarsely rugose-punctate. Uniformly orange, only the median part of postpetiole blackish-infuscated; sheaths of ovipositor black.

#### Male

Black more extended than in female; the following black: entire frons between white frontal orbits, ocellar region, entire vertex, occipital and temple regions (white on orbits in contrast to female interrupted on vertex and temples), hind part of cheeks, median dot on upper border of face, entire pronotum (except pronotal ridge and base), entire mesoscutum, postscutellum, horizontal part of propodeum (only the scutellum yellow), anterior, upper quarter of mesopleura, and area posteromedia; prosternum, median part of prepectus and mesosternum extensively infuscated; a white mark on temples near carina occipitalis; tergites 4-7 dorsally blackish-infuscated; flagellum without white annulus; otherwise as in female.

*Flagellum*.—With 39 segments; very small, inconspicuous, short-oval tyloids on approximately segments 6-21. Uniformly black, including scape.

### VI. Tribe *Listrodromini* Ashmead

*Listrodromini* Ashmead, 1894, Proc. Ent. Soc. Wash., 3:278.

Type genus.—*Listrodromus* Wesmael.

#### Distribution

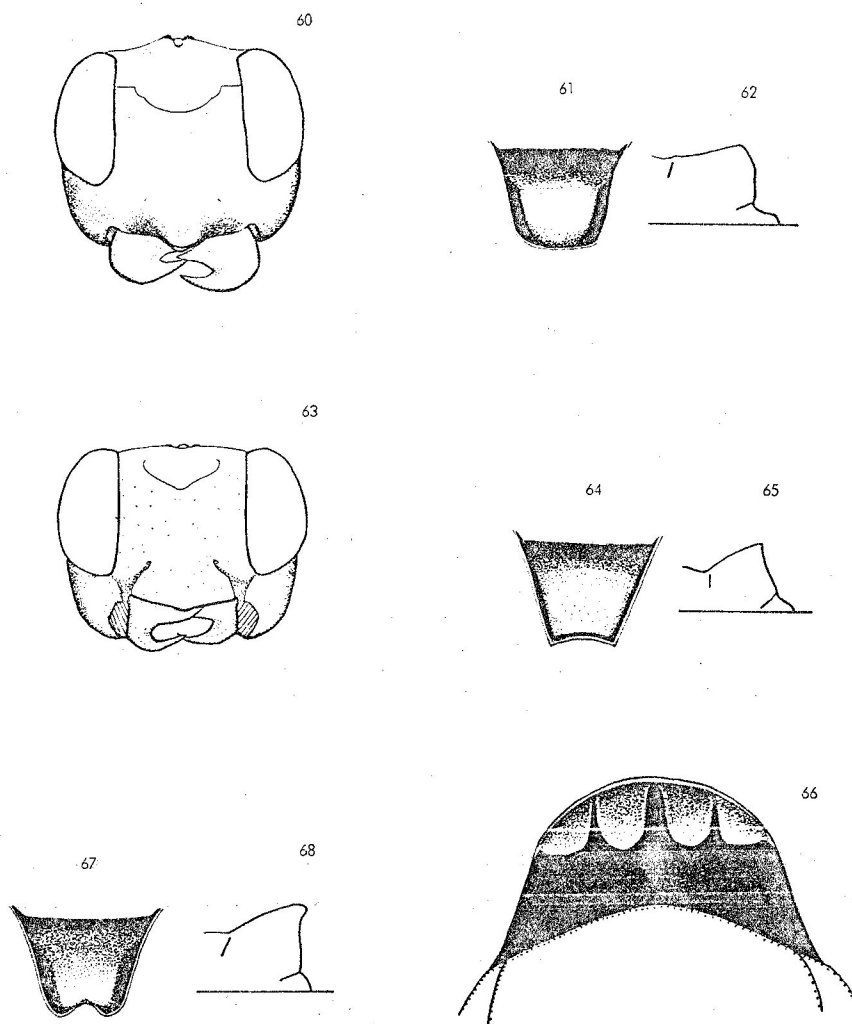
Holarctic, Oriental, and Ethiopian regions.

#### Hosts

Lycaenidae (Lepidoptera, Rhopalocera).

#### Preamble

The tribe is characterized especially by a peculiar structure of the head: face, clypeus, and malar space form together a single continuous, slightly convex plane, without sutures, elevations or depressions. Toge-



## XII

Figs. 60-68. 60, *Elasmognathias berndi* Heinrich, ♀, head (frontal); 61, same species, ♀, scutellum (dorsal); 62 same species, ♀, scutellum (lateral); 63, *Imeriella seyrigi* Heinrich, ♀, head (frontal); 64, same species, ♀, scutellum (dorsal); 65, same species, ♀, scutellum (lateral); 66, same species, ♀, collaral lamella; 67, *Elasmognathias erythrinus* Heinrich, ♀, scutellum (dorsal); 68, same species, ♀, scutellum (lateral).

ther with this feature goes a special structure of the mandibles, which are short and wide, bearing two strong, subequal teeth, separated from each other by a wide gap. Exactly the same combination of head and mandible characters occurs through convergence in two other tribes: the Ischnojoppini and the Compsophorini, both especially richly represented in the Ethiopian region. The Listrodromini differ structurally from the two tribes mentioned by their abbreviated propodeum and from the Ischnojoppini, in addition, by the structure of the flagellum of the females, which is never "lanceolate" (= considerably widened beyond middle and strongly attenuated toward apex) but morphologically simpler and more primitive. There is a valuable biological character of the Listrodromini: their restriction to Lycaenidae as hosts.

### *Morphological characters*

*Flagellum*.—Of females short, only slightly attenuated at apex, usually not, or little, widened beyond middle and usually not conspicuously flattened ventrally; of males without bristle-topped, transverse ridges, not nodose, usually without, sometimes with tyloids; first segment sometimes shorter than the second.

*Head*.—As described in preamble.

*Thorax*.—Mesoscutum about as long as wide, moderately convex; notauli obsolete, rarely fairly distinct at base, never sharply impressed; scutellum short, more or less strongly elevated above postscutellum, usually sharply carinate laterally, usually more or less strongly convex dorsally; propodeum abbreviated, with distinctly separated horizontal and declivous parts, the latter considerably longer than horizontal part, sometimes several times as long.

*Legs*.—Rather short and stout; coxae of females without scopa; claws in some genera pectinate.

*Wings*.—Areolet distinctly pentagonal; radius straight; nervulus usually antefurcal.

*Abdomen*.—Of females usually amblypygous or semiamblypygous and short-oval, in one genus (*Deuterotypus* Heinrich) extremely narrowed and elongate; sometimes tergites 2 and 3 conspicuously sclerotized and coarsely sculptured, contrasting strongly with the smooth and gradually narrowed cone of the following four tergites; gastrocoeli more or less deeply impressed, thyridia small to obsolete; hypopygium of males short and blunt.

### *Chromatic characters*

The tribe shows a tendency to have a rich white anal pattern in both sexes; white latero-apical markings of anterior tergites occur in addition, especially in the genus *Neotypus* Foerster; the thorax shows an erythristic tendency which is often more restricted in males than in females; except for such occasional differences in the color of the thorax, the degree of sexual dichroism is slight.

### Key to the genera of the *Listrodromini*

1. Carina coxalis complete; spiracles of propodeum almost circular; space between gastrocoeli short-aciculate. (Notauli at base and sternauli sharply impressed; abdomen of females short-oval; light markings bright yellow.) ..... *Listrodromus* Wesmael  
Palaeartic and Oriental regions;  
not recorded from Africa.
- Carina coxalis lacking; spiracles of propodeum distinctly oval, sometimes elongate; space between gastrocoeli not aciculate. .... 2
2. Gastrocoeli transverse, triangular, inner anterior angles confluent, forming a continuous furrow on the base of second tergite (fig. 74); abdomen of females apically blunt, regularly oval (as in *Pseudamblyteles* Ashmead), not considerably tapering from base of fourth tergite toward the more or less pointed apex; hind part of mesopleura along posterior marginal carina not unusually concave. (Claws I and II of females not always distinctly pectinate.) ..... 33. *Jacotitypus*, new genus  
Basutoland
- Gastrocoeli not transverse, about as long as wide, sometimes longer than wide, never medially confluent and not forming a transverse furrow on base of second tergite (figs. 69-73); abdomen of females more or less strongly tapering from base of fourth tergite toward apex, or, in one genus, extremely narrowed and elongate; posterior part of mesopleura usually very strongly concave. .... 3
3. Abdomen of females extremely elongate and narrowed, similar in structure to the genus *Limerodes* Wesmael; claws I and II of females not pectinate. (Area posteromedia deeply excavate; scutellum strongly convex, sometimes apically ascending into a pyramidal elevation.) ..... 32. *Deuterotypus* Heinrich  
Aden, Madagascar, Cape Province, Uganda, Congo
- Abdomen of females not strikingly elongate and not as whole unusually narrow, instead widest in the middle and tapering gradually from base of fourth tergite toward apex (figs. 69-73); claws I and II, or all claws of females pectinate. (Area posteromedia moderately or scarcely excavate; scutellum, as a rule, strongly convex, but never with pyramidal elevation, exceptionally dorsal surface flat.) ..... 31. *Neotypus* Foerster  
Holarctic and Ethiopian regions.

### 31. Genus *Neotypus* Foerster

*Neotypus* Foerster, 1868, Verh. naturh. Ver. preuss. Rheinl., XXV, p. 194.

*Type species*.—*Ichneumon lapidator* Fabricius, designated by Ashmead, 1900.

*Cillimus* Tosquinet, 1896, Mém. Soc. Ent. Belg., V, p. 122.

*Type species*.—*Cillimus adornatus* Tosquinet, designated by Ashmead, 1900.

#### Distribution

Four species occur in the Palaeartic region, only one is known from the Oriental region (Formosa), and only one from North America. The genus has reached the highest degree of speciation in the Ethiopian region, from where six species and a number of geographical subspecies have been recorded; most of them are inhabitants of the coastal lowlands.

#### Hosts

Lycaenidae.

#### Preamble

This genus is closely related to the type genus of the tribe, *Listrodromus* Wesmael (the latter genus not yet recorded from Africa). Perkins

distinguished the two genera in 1959 (Handbooks for the Identification of British Insects) by their differences in structure of the sternaulus, of the area coxalis, and of the subalarum. The African *Neotypus* forms show a remarkable interspecific variability in the structure of the sternauli, which are sometimes almost as deeply impressed as in *Listrodromus*. The lack of the area coxalis, however, is a reliable distinctive character of the genus *Neotypus* in the African fauna also. Additional characters distinguishing *Neotypus* from *Listrodromus* are the more elongate (instead of nearly circular) spiracles of the propodeum, the more moderately convex (not semiglobose) scutellum, the lack of notauli, the lack of striate sculpture on the space between gastrocoeli, and the white (instead of bright yellow) color of the markings on thorax and abdomen.

### *Morphological characters*

*Flagellum*.—Of females short, subbristle-shaped or subfiliform, moderately, sometimes scarcely, attenuated toward apex, ventrally not flattened and not widened beyond middle, with 19-23 segments; of males not at all nodose, without tyloids, in one species (*intermedius* Mocsary) with deep, though narrow, incisions between segments; in both sexes the first segment usually somewhat, to considerably, shorter than the second.

*Head*.—Wide; temple profile curved, not, or scarcely, narrowed behind eyes; outline of head, in front view, approaching a circular shape; malar space considerably longer than width of mandible base, often twice as long; face, clypeus, and malar space forming a single continuous, slightly convex plane, which is not interrupted by sutures or elevations; clypeus laterally rounded, apically nearly straight, often slightly projecting medially (less distinctly than in *Listrodromus*); mandibles very short and wide, curved, with strong, subequal apical teeth, separated from each other by a wide and deep gap.

*Thorax*.—Collare without lamella; mesoscutum convex, short, about as wide as medially long, or slightly longer; notauli obsolete, at the most weakly indicated at the base; scutellum, with one exception (*jacoti*, new species), more or less strongly elevated above postscutellum and rather strongly convex dorsally, but not semiglobose, always strongly carinate laterally; sternauli usually weak, in a few species, however, deeply impressed; propodeum abbreviated, with complete carination, only areae coxales always lacking; basal furrow behind postscutellum deep, but narrow; spiracles short-oval to elongate-oval; the steeply declivous, concave area posteromedia 2-3 times as long as the horizontal part medially, area superomedia usually several times as wide as long; areae dentiparae rather steeply declivous.

*Legs*.—Moderately long, sometimes fairly stout; in females at least claws I and II, sometimes all claws, distinctly pectinate; claws of males simple, or with indistinct, short pectination on the basal part only.

*Wings*.—Areolet regularly pentagonal, wide in front; nervulus as a rule distinctly antefurcal and oblique, sometimes interstitial.

*Abdomen*.—Of females fairly short, amblypygous, but in dorsal view always narrowed from the base of the fourth tergite toward the often seemingly pointed apex, the hypopygium covering the slit of the ovipositor entirely; the ovipositor usually hidden, projecting considerably only in



the Palaearctic species *melanocephalus* Gmelin and in the African species *intermedius* Mocsary, in *intermedius* nearly as long as the last three tergites together (genus *Cillimus* Tosquinet); postpetiole without defined median field, convex, laterally rounded, smooth, with coarse, scattered punctures; gastrocoeli about as wide as long, with approximately quadrangular or rounded outline, moderately impressed; thyridia small, sometimes indistinct; tergites 2 and 3 often considerably more strongly sclerotized than the following tergites, usually rather coarsely, though not very densely punctured, never aciculate, not even between gastrocoeli; tergites 4-7 nearly smooth, tapering gradually and more or less strongly toward the end of the abdomen; hypopygium of males bluntly triangular.

### Chromatic characters

Head and thorax more or less extensively red, usually with more or less extensive white markings and often with black marks, which tend to be more extensive in males than in females; abdomen black, sometimes basally to predominantly red, usually with rich white markings.

### Key to the species of *Neotypus* Foerster

#### a. Females

1. Flagellum with dorsal white annulus. (Sternauli sharply impressed; ovipositor hidden; head and thorax uniformly or predominantly red; small species, 5.5-7 mm long.) ..... 2  
 Flagellum without annulus. .... 5
2. Tergites 1-7 with continuous apical white bands which are narrowed in the middle and laterally considerably widened on the first and second tergite (fig. 68); area superomedia usually not much wider than long; head and thorax uniformly red, without white markings. (Claws III not pectinate; basic color of entire abdomen black; legs predominantly brownish-black; length 5-6.5 mm.) ..... 1. *amoenus* Heinrich  
 Madagascar
- The third tergite always, rarely also the first without white marking; area superomedia usually considerably wider than long; at least the post-scutellum, usually also the subalarum, apex of pronotal ridge, and base of mandibles white. (Tibiae I and II dorsally white.) ..... 3
3. Claws III distinctly pectinate; clypeus with distinct median projection; subalarum, apex of pronotal ridge, and base of mandibles not white-marked; apico-lateral white marks on postpetiole small and indistinct. (Length 6 mm.) ..... 3. *angolensis*, new species  
 Angola: Cuanza Sul
- Claws III not pectinate; median projection on clypeus scarcely indicated; subalarum, apex of pronotal ridge, and usually also base of mandibles white-marked; postpetiole with distinct white apical band or latero-apical marks. .... 2. *semirufus* Kriechbaumer
4. At the present time only males of the two subspecies of *semirufus* can be safely identified (see key for males); therefore for the females only the difference in distribution is mentioned here: Sudan, Zanzibar, Tanganyika, Comores Is., Cape Province, French Equatorial Africa, S.W. Africa.  
 ..... 2a. *semirufus semirufus* Kriechbaumer  
 Ethiopia, Eritrea. .... 2b. *semirufus formosus* (Tosquinet)
5. Ovipositor considerably projecting, nearly as long as the last three tergites together; tergites 2 and 3 strongly sclerotized and wider than usual, the second tergite about twice as wide as medially long, the third about 3-4 times as wide as long; tergites 4-7 often compressed, forming one narrowed and apically sharply pointed cone (fig. 72). (First flagellar segment considerably shorter than the second; spiracles of propodeum elongated.)

- gate-oval; sternauli strongly impressed; length 7-11 mm.) ..... 6. *intermedius* Mocsary 6
- Ovipositor not, or scarcely, projecting; tergites 2 and 3 not considerably widened and thus not particularly contrasting in width with the apical segments (figs. 70, 72, 73). ..... 8
6. Only tergites 4-7 basically black, often only on the dorsal parts of these segments, black sometimes entirely lacking. (White on temple orbits always present and usually fairly extensive.) 6b. *intermedius adornatus* (Tosquinet) Continental Africa south of the Sudan in the east, and south of Pointe Noire in the west.
- Tergites 1-7 or 2-7 basically black, either constantly or at least in a considerable percentage of the population. .... 7
7. Basic color of tergites 1-3 or 2-3 constantly black. (White on temple orbits constantly present.) ..... 6c. *intermedius sudanensis* Heinrich Sudan, Ethiopia
- Basic color of tergites 2-3 varying between black and red; tergite 1 always red. (White on temple orbits usually reduced or obsolete.) ..... 6a. *intermedius madegassa* Heinrich Madagascar
8. Scutellum dorsally flat, only slightly raised above postscutellum; scutellum, pronotal ridge, and part, sometimes most of metapleura white; all tergites with conspicuous apical white bands; large species, 13 mm long. (Femora III red or black, sometimes with dorsal white stripe.) 5. *jacoti*, new species Basutoland
- Scutellum dorsally strongly convex, fairly strongly raised above postscutellum; scutellum, pronotal ridge, and mesopleura uniformly red; tergites 1 and 4-7 with apical white bands, the second tergite with apico-lateral white marks, the third without white; small species, 8 mm long. (Femora III black, sometimes with short dorsal white stripe.) ..... 4. *cottrelli* (Benoit) South Africa, French Equatorial Africa
- ### b. Males
1. All tergites with continuous apical white bands. .... 2
- At least the third tergite without white band or marks. .... 3
2. Scutellum white, rather flat; metapleura extensively white-marked, pronotal ridge white; larger species, 11-12 mm long. (Sternauli weak.) ..... 5. *jacoti*, new species Basutoland
- Scutellum red, rather strongly raised above postscutellum and dorsally strongly convex; metapleura not white-marked, pronotal ridge not white; small species, 6 mm long. (Sternauli sharply impressed.) ..... 1. *amoenus* Heinrich Madagascar
3. Sternauli weak; tibiae III dorsally usually white-marked, cheeks nearly entirely white; first flagellar segment approximately as long as the second. (Length 8 mm.) ..... 4. *cottrelli* (Benoit) 4
- Sternauli pronounced; tibiae III dorsally never white-marked, cheeks extensively red and/or black; first flagellar segment distinctly shorter than the second. .... 5
4. Propodeum, pronotum, mesosternum, and prepectus entirely or predominantly black. .... 4a. *cottrelli cottrelli* (Benoit) Cape Province
- Propodeum, pronotum, mesosternum, and prepectus entirely or predominantly red. .... 4b. *cottrelli occidentalis*, new subspecies French Equatorial Africa
5. Claspers scarcely narrowed toward apex, their upper margin approximately straight, their apex broad, almost truncate (fig. 76); femora III slightly wider in lateral view than in alternative species (fig. 79); length 7-11 mm. .... 6. *intermedius* Mocsary 6
- Claspers considerably narrowed toward apex, their upper margin strongly curved down toward the apex, the latter not truncate (fig. 75); femora III in

- lateral view somewhat slenderer than in alternative species (fig. 80); length 5-7 mm). ..... 2. *semirufus* Kriechbaumer 8
6. At the most tergites 4-7 basically black; black often restricted to dorsum, sometimes lacking. (Scape ventrally not white; femora often red; basic color of head at least partially red.) ..... 6b. *intermedius adornatus* (Tosquinet)  
Continental Africa south of the Sudan in the east, south of Pointe Noire in the west.  
Black basic color on abdomen includes tergites 1-3 or 2 and 3 either constantly or at least in a considerable percentage of the populations. .... 7
7. Basic color of tergites 1-3 or 2-3 constantly black; basic color of head black, including cheeks, median band of face and of clypeus, frons, vertex, and usually occiput. (Scape only occasionally ventrally white.) ..... 6c. *intermedius sudanensis* Heinrich  
Sudan, Eritrea  
Basic color of tergites 2-3 varying between red and black, of first tergite constantly red; basic color of head red, only vertex and upper frons usually infuscated. (Scape ventrally white.) ..... 6a. *intermedius madegassa* Heinrich  
Madagascar
8. Propodeum and pronotum predominantly or entirely red. .... 2a. *semirufus semirufus* Kriechbaumer  
Africa, except Ethiopia and Eritrea; Comores Is., Zanzibar, Aden.  
Propodeum and pronotum predominantly or entirely black. .... 2b. *semirufus formosus* (Tosquinet)  
Ethiopia, Eritrea

### 1. *Neotypus amoenus* Heinrich

Fig. 69

*Neotypus amoenus* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 40.

#### Types

*Holotype*.—♀, "Madagascar, Bekily, ca. 600 m, III.-IV.1932, leg. A. Seyrig." C.G.H. I.

*Paratypes*.—1 ♀, Madagascar, Diego Suarez, Montagne d'Ambre. C.G.H. II.; 1 ♂, Madagascar, Bekily, 1 ♀, Madagascar, Ihosy. C.G.H. I.

#### Distribution

Madagascar: Ampandrandava, Bekily, Diego Suarez (Montagne d'Ambre), Ihosy, Imerimandroso (Lake Alaotra).

#### Preamble

One of the three smallest African species of the genus. In structure, distinguished by rather deeply impressed sternaui. In color, differing from all other African species by uniformly red head and thorax without any white or black markings (except white-marked anterior aspect of head of male), combined with black abdomen with continuous white bands on all tergites. Shares the white dorsal annulus on flagellum with *semirufus* Kriechbaumer, but differs by the above-mentioned color of abdomen and by the relatively narrower area superomedia.

#### Female

Head and thorax uniformly red; abdomen black with white apical bands on all tergites, which on the second and third tergite are considerably widened laterally; legs blackish-brown to black, the coxae usually predominantly red; flagellum with dorsal white annulus; length 5-6.5 mm.

*Flagellum*.—With 21, rarely 22 segments, fairly slender, slightly attenuated at apex; the first segment not shorter than the second, fully 4 times as long as wide, seen from the ventral side about the 10th square. Blackish, with dorsal white annulus on segments 4 (apex) or 5 to 9 or 10; the scape and usually the ventral side of segments before annulus ferruginous.

*Head*.—Structure as described for the genus; clypeus projecting a trifle apically in the middle. Uniformly red.

*Thorax*.—Structure as described for the genus; scutellum rather strongly raised above postscutellum and dorsally strongly convex; notauli obsolete; sternauli sharply impressed; area superomedia slightly wider than long, with costulae near base. Uniformly red.

*Legs*.—Claws I and II pectinate, claws III not pectinate. In type specimen coxae red, coxae III apically slightly infuscated; legs III blackish, legs I and II reddish-tinged; tibiae I and II not dorsally white; in specimen from Montagne d'Ambre, tibiae I and II dorsally white (except bases and apices narrowly) and coxae darker, coxae III almost black.

*Wings*.—Nervulus interstitial or slightly antefurcal. Clear.

*Abdomen*.—Oval, moderately tapered toward apex; ovipositor almost hidden; postpetiole nearly smooth, with very few punctures; gastrocoeli small, thyridia fairly indistinct; second and third tergites strongly but not densely punctured. Color as described above.

#### Male

The only known specimen was collected at Imerimandroso, Lake Alaotra; its flagella are lacking.

*The following white: face and clypeus except longitudinal median line, band on outer orbits, frontal orbits up to vertex, base of mandibles, scape ventrally, tibiae I and II dorsally, all coxae apically; legs III including coxae blackish; otherwise as female; length 6 mm.*

#### Remark

It seems possible that the female (paratype) with dorsally white tibiae I and II and the similarly colored male described above represent a different subspecies or even a sibling species.

## 2. *Neotypus semirufus* Kriechbaumer

#### Distribution

In East Africa, recorded from Sudan, Ethiopia, Eritrea, Tanganyika, and Cape Province; in West Africa, from French Equatorial Africa (Pointe Noire) and South-West Africa; also Aden, Zanzibar and Comores Is. Inhabits mainly the coastal lowlands.

#### Preamble

Another small species, closely related to *amoenus* Heinrich. As in the latter, the flagellum of females has a dorsal white annulus, sternauli are rather deeply impressed, ovipositor is almost hidden, and claws III of females are not pectinate. In contrast to *amoenus*, the area superomedia is considerably wider than long, second and third tergites are without apical white bands (the second tergite with apico-lateral white marks in-

stead), and the postscutellum, subalarum, and apex of pronotal ridge are white.

The type specimens of the four species treated below under the name *semirufus semirufus* Kriechbaumer (all females) show certain minor chromatic differences from each other, as for example, in the black or reddish-tinged basic color of the anterior tergites, in the presence or lack of black on the mesosternum and in the color of the apices of anterior coxae, which may be white-marked or not. All these characters are well within the limits of the individual variability of the species. Whether one or the other of them may have become prevailing or even constant in one or another population, thus indicating its subspecific differentiation, can not be judged, as the material at hand is too scanty. Therefore, in this paper, the four species have tentatively been synonymized. Their specific identity is beyond doubt, while their subspecific status needs final confirmation.

Only a fifth name of the species (*formosus* Tosquinet), based on a male from Ethiopia, is retained with subspecific status, as the male populations from the type locality and from Eritrea have been found to differ constantly by more extensively black thorax from males from all other parts of Africa.

The one known female of *semirufus* from the type region of *formosus* can not with certainty be distinguished from females of the nominate form.

#### Female

*Head and thorax red, with very restricted white markings, mesosternum sometimes partially black; abdomen black, tergites 1 and 2 with latero-apical white marks, tergites 4-7 with laterally abbreviated apical white bands, basic color of tergite 1 or 1-2 sometimes reddish; legs black, including coxae, varying to predominantly red; tibiae I and II always dorsally predominantly white, coxae I and II sometimes apically white-marked; flagellum with dorsal white annulus, length 5-7 mm.*

*Flagellum.*—With 21, sometimes only 20 segments, fairly slender, scarcely attenuated at apex; the first segment somewhat shorter than the second, seen from ventral side the 11th or 12th approximately square. Blackish, with dorsal white annulus on segments 6 (apex) to 9; scape, ventral side and apices of segments before annulus, and usually segment 1, or 1 and 2 also dorsally, ferruginous.

*Head.*—Structure as described for the genus; clypeus projecting a trifle apically in the middle. Almost uniformly red, only base of mandibles almost always white.

*Thorax.*—Structure as described for the genus; scutellum rather strongly raised above postscutellum and dorsally strongly convex; notauli obsolete; sternauli sharply impressed; area superomedia usually abbreviated, about 2-2.5 times as wide as long, but variable in shape; spiracles fairly small, short-oval. Red; the following white: postscutellum, subalarum, apex of pronotal ridge; middle of mesosternum sometimes black, particularly toward apex.

*Legs.*—Claws I and II pectinate, claws III usually not pectinate. Black; the following white: always dorsal side of tibiae I and II (except extreme base and apex), inner side of femora I apically or entirely, inner side of

femora II apically, sometimes apices of coxae I and II; basic color of legs and coxae varying to extensively red (one specimen from South-West Africa, a second from southern Tanganyika).

**Wings.**—Nervulus usually distinctly though not strongly antefurcal. Clear.

**Abdomen.**—Structure as described for *amoenus* Heinrich. Black, sometimes basic color of first tergite, rarely of tergites 1-3, reddish; tergites 1-2 with apico-lateral white marks, tergites 4-7 with apical white bands, which are laterally abbreviated and slightly widened toward middle.

### Male

The following white: face and clypeus except longitudinal blackish or red median line (which in rare cases is indistinct), frontal orbits up to vertex broadly, stripe or band of varying extent on upper part of outer orbits, mandibles except teeth, scape below, apex of pronotal ridge, subalarum, marks on tegulae, postscutellum, coxae I and II usually predominantly, coxae III apically on ventral and on dorsal side more or less extensively; flagellum without annulus; otherwise as female; extent of black on thorax and head varying individually and geographically, but always larger than in female; length 5-6 mm.

### 2a. *Neotypus semirufus semirufus* Kriechbaumer

Figs. 71, 76, 77, 80

*Neotypus semirufus* Kriechbaumer, 1884, Ann. Mus. Civico, Genova, I, p. 527, ♀.

*Cillimus scitulus* Tosquinet, 1896, Mém. Soc. Ent. Belg., V, pp. 128-129, ♀; new synonymy.

*Neotypus Michaelsoni* Enderlein, 1914, Beitr. Kenntn. Land- u. Süßwasserfauna, D.S.W. Afrika, I, p. 212, ♀; new synonymy.

*Anisobas rabula* Morley, 1916, Ann. S. Afr. Mus., XV, p. 360, ♀; new synonymy.

### Types

**Holotypes.**—*Neotypus semirufus* Kriechbaumer, ♀, "Coll. P. Magnati, Aikota, 3.3.83." M.C.H.N. Type locality according to original description: "Aikota, sulle rive del torrente Gash"; eastern Sudan; *Cillimus scitulus* Tosquinet, ♀, "Zanguebar". I.R.S.N.; *Neotypus Michaelsoni* Enderlein, ♀, type locality according to original description: Neudamm, South-West Africa, (about 42 km ENE of Windhoek); holotype was originally in the natural history museum at Hamburg, Germany; destroyed during World War II; *Anisobas rabula* Morley, ♀, "Cape Colony, Stellenbosch, R.M. Lightfoot, Sept. 1913." S.A.M.

### Distribution

Sudan (type locality); South-West Africa; Cape Colony; Zanzibar (holotypes); French Equatorial Africa: Pointe Noire (C.G.H. II.); northern Tanganyika: Eastern Usambara Mts., Amani (C.G.H. II.); southern Tanganyika, at Lake Nyasa (Z.M.H.U.); Comores Is.: Mohéli (Z.M.H.U.); Aden (Z.M.H.U.); Uganda (Collection H. Townes).

### Host

*Cupido rhespis* (L.), (S.A.M.).

### Female

As described for the species.

### Male

As described for the species; black on thorax, if present, restricted to sterna; propodeum and pronotum never predominantly or entirely black; white on head as described for the species; basic color of head varying from entirely red to predominantly black or blackish-brown; the cheeks in overwhelming majority of specimens red or red-brown.

### 2b. *Neotypus semirufus formosus* (Tosquinet), new combination

*Cillimus formosus* Tosquinet. 1896, Mém. Soc. Ent. Belg., V, p. 125, ♂.

### Types

Holotype.—♂ "Scioa, Sciotalit, Ragazzii, VII.87." M.C.H.N.

### Distribution

Ethiopia (type locality); Eritrea (U.S.N.M. and C.G.H. II.).

### Male

Black on thorax includes the dorsal surface of the propodeum, sometimes the entire propodeum, more rarely also the pronotum; head, except for the white parts described for the species, uniformly black.

### Female

The only known female from Ethiopia (in Canadian National Collection, Ottawa) agrees almost exactly with *semirufus semirufus*, except that apex of pronotum and subalarum are not white.

### 3. *Neotypus angolensis*, new species

### Types

Holotype.—♀, "Angola, südl. Gabela, 5.VIII.54." C.G.H. II.

### Distribution

Angola: Cuanza Sul.

### Preamble

The only known specimen, the type, agrees nearly completely in structure and color with *semirufus* Kriechbaumer, but in contrast to all 8 females of the latter species examined, its claws III are densely and completely pectinate. This seems to indicate specific distinction unless further research should reveal that the pectination of claws III varies individually. The median projection on the apex of the clypeus is slightly longer than in *semirufus*.

### Female

Head and thorax red, without white markings; mesosternum medially black; abdomen black, tergite 2 with latero-apical white marks; lateral white marks on first tergite only small and indistinct whitish dots; tergi-

white: postscutellum, apex of pronotal ridge, usually mark on subalarum, sometimes marks on tegulae; in South African population sterna, pronotal base and sometimes lower belt of metapleura, black.

*Legs*.—Femora, tibiae, and tarsi rather stout (fig. 78), distinctly thicker than in the preceding three species; claws III not pectinate. Black; the following white: tibiae I and II dorsally, sometimes dorsal stripe on femora III and/or tibiae III, apices of femora I and II ventrally, coxae I and II apically extensively, large dorsal and dorso-lateral patches on coxae III, narrow apical margins of trochanters I or I and II.

*Wings*.—Nervulus interstitial or slightly antefurcal. Clear.

*Abdomen*.—Structure as described for the genus; ovipositor hidden; postpetiole polished, with scattered punctures, second tergite coarsely but not densely, the third tergite rather finely and sparsely punctured, polished. Black; tergites 1 and 2 with latero-apical white marks (usually medially confluent on the first tergite), tergites 4-7 with laterally abbreviated apical white bands (fig. 70).

#### Male

In specimen from South Africa, propodeum and pronotum black, except apex of pronotal ridge white; white dorsal mark on tibiae III reduced; black on mesosternum and prepectus more extensive than in female; white on coxae III more extensive than in female, including also apical part of ventral side; face and clypeus almost entirely white; flagellum and scape black, except ventral side of the latter; otherwise as in female.

In specimen from coastal Tanganyika, thorax almost entirely red, flagellum dorsally blackish-brown, ventrally ferruginous.

#### 4a. *Neotypus cottrelli cottrelli* (Bénoit), new combination

*Cratichneumon cottrelli* Bénoit, 1962, Rev. Zool. Bot. Afr., 45, p. 78, ♀.

#### Types

*Holotype*.—♀, ex *Lepidochrysops variabilis* Cottrell, Grahamstown, South Africa, December 1956, C.B. Cottrell. C.M.

*Allotype*.—♂, same data. C.M.

*Paratype*.—1 ♀, same data. C.M.

#### Distribution

Cape Province: Grahamstown (type locality).

#### Host

*Lepidochrysops variabilis* Cottrell.

#### Female

Thorax ventrally extensively black; the following black: prosternum, mesosternum from sternauli to middle, pronotal base, sometimes lower belt of metapleura.

#### Male

Propodeum, pronotum, and flagellum black; mesosternum and prepectus more extensively black than in female.



#### 4b. *Neotypus cottrelli occidentalis*, new subspecies

Figs. 70, 78

##### Types

*Holotype*.—♀, "French Equatorial Africa, Pointe Noire, June 12/13, 1957." C.G.H. II.

*Paratypes*.—4 ♀♀, same data. C.G.H. II.; 2 ♀♀, 1 ♂, Uganda, Kampala. Coll. H. Townes.

##### Distribution

West African coast: Pointe Noire (type locality); perhaps also East African coast: Dar es Salaam (C.G.H. II., ♂); Uganda (Coll. H. Townes).

##### Female

*Thorax, including sterna and entire pronotum, red (at the most anterior part of prosternum infuscated).*

##### Remark

In the only male of this species known from the East African coast (Dar es Salaam) the entire thorax is likewise red with only the collare black. It thus differs distinctly from *cottrelli cottrelli* Benoît, and appears rather to belong to *occidentalis*, new subspecies.

#### 5. *Neotypus jacoti*, new species

Fig. 73

##### Types

*Holotype*.—♀, "Mamathes, Basutoland, 25.XII.1946"; leg C. Jacot-Guillarmod. C.G.H. II.

*Allotype*.—♂, same locality, 23.XI.1946. C.G.H. II.

*Paratypes*.—1 ♂, 1 ♀, same locality, 2.II.1950 and 6.I.1952. C.G.H. II.

##### Distribution

South Africa, Basutoland (type locality).

##### Preamble

The largest species of the genus and a typical one in structural characters. Strikingly distinguished by extremely rich white pattern, and by the dorsally flat, scarcely raised scutellum.

##### Female

*Head white, partially black; thorax orange-red with rich white markings; scutella, metapleura extensively, and pronotal ridge white; abdomen black, all tergites with broad apical white bands, basic color of tergites 1-2 predominantly red; legs red, all coxae extensively white, all tibiae and the femora III dorsally white; flagellum without annulus; length 13 mm.*

*Flagellum*.—Short, subbristle-shaped, slightly attenuated toward apex, with 22 segments, the first approximately as long as the second, about the 13th square. Ventrally obscure ferruginous, dorsally blackish-brown, without annulus; segments apically obscure ferruginous, except on about apical fourth of flagellum; scape and pedicel blackish.

*Head*.—Structure as described for the genus; medio-apical projection on clypeus only very slightly indicated. Black; the following white: face and clypeus (except longitudinal median black band and black apex of clypeus); frontal orbits broadly up to lower ocellus, outer orbits broadly from vertex down to beyond middle of eyes, base of mandibles.

*Thorax*.—Structure as described for the genus; sternauli weak, notauli obsolete; scutellum, in contrast to all other African species, dorsally flat, scarcely raised above postscutellum; spiracles large and elongate; mesopleura posteriorly much less excavated than in the preceding species. Orange-red with rich white markings; the following white: pronotal ridge entirely, scutellum (except the very base), postscutellum, subalarum, tegulae partially to entirely, metapleura partially or predominantly, sometimes mark on apex of pronotal base, sometimes mark on upper end of areae posteroexternae; mesosternum from sternauli to middle, and prosternum entirely, black.

*Legs*.—Moderately slender; claws III not pectinate. Orange-tinged red, varying to black; the following white: tibiae I, II, and III dorsally (except base and apex of tibiae III), apex of femora I and II or I-III ventrally, sometimes femora III dorsally, coxae I and II predominantly, coxae III dorsally entirely, ventrally toward apex, sometimes ventrally in whole length along inner edge.

*Wings*.—Nervulus somewhat antefurcal or interstitial. Clear.

*Abdomen*.—(Fig. 73); normally shaped, pointed toward apex; postpetiole polished, with scattered punctures; tergites 2-3 coarsely and rather densely punctured, the fourth tergite sparsely and finely punctured; ovipositor almost hidden. Black, the first tergite, sometimes also the second, red; all tergites with broad apical white bands, which are laterally strongly widened on the second and third tergites, laterally abbreviated on tergites 4-7.

#### Male

*Face, clypeus, and cheeks almost uniformly white (except median narrow black line on face, sometimes black apico-median mark on clypeus and black mark on malar space at lower border of eyes); flagellum black, including scape, the latter ventrally white; on the thorax only mesonotum and mesopleura, sometimes also base of metapleura red; in addition to white pattern of the female, are white: large, irregular mark on lower part of mesopleura and sometimes collare; basic color of abdomen black, including tergites 1-2; white bands on tergites as in female, but more extended along sides of second and third tergites; femora varying as in female from black to red; trochanters I and II ventrally more or less extensively white; length 11-12 mm.*

#### 6. *Neotypus intermedius* Mocsary

Figs. 72, 76, 79

*Neotypus intermedius* Mocsary, 1888, Hym. Nov. Eur.

#### Distribution

Spain and eastern Africa from the Sudan south to Cape Province; also Madagascar and Aden; in West Africa recorded from French Equatorial Africa.

*Host*

*Cupido boeticus* L. (in Madagascar).

*Preamble*

Females are strikingly distinguished from all other known species by the considerably projecting ovipositor, which is nearly as long as the last three tergites together, and also by their strongly widened tergite 2 and particularly tergite 3 (fig. 72); African males are extremely similar to the males of *semirufus* Kriechbaumer, though on the average slightly larger; they can be distinguished from the latter species by the shape of claspers and of femora III (figs. 75, 76, 79, 80). In both sexes sternauli pronounced.

*Female*

*Basic color of head varying geographically from partially black (Europa) to entirely red (Africa), with bases of mandibles and frontal orbits always broadly white, temples usually white banded; thorax red, with restricted white pattern, mesosternum always extensively black; abdomen black, with latero-apical white marks on tergites 1-2 (marks on first tergite usually confluent) and with laterally abbreviated apical white bands on tergites 4-7; basic color of tergites 1-3 varying geographically from black to red; tibiae I and II dorsally white; all coxae extensively white; general color of legs varying geographically and individually from black to red; flagellum without annulus; length 8-11 mm.*

*Flagellum.*—Short, subbristle-shaped, scarcely attenuated toward apex, with 22-23 segments, the first distinctly shorter than the second, about twice as long as wide, the 12th approximately square. Without annulus; ventrally light ferruginous throughout, dorsally somewhat darker ferruginous; scape, pedicel, the apex of flagellum and, usually also a few basal segments dorsally slightly infuscated.

*Head.*—Structure as described for the genus. The following white: base of mandibles, frontal orbits broadly, broad band or line on temple orbits (sometimes lacking in Madagascan populations); basic color entirely red in African subspecies, red and black in European specimens.

*Thorax.*—Structure as described for the genus; sternauli pronounced, notauli obsolete; posterior part of mesopleura very strongly concave; scutellum much raised above postscutellum, strongly convex; spiracles longish-oval; area superomedia abbreviated, considerably wider than long. Red; mesosternum from sternauli to middle, usually also middle of prepectus, rarely also prosternum partially, black; in European subspecies also some black on pronotum and propodeum; the following white: postscutellum, subalarum, tegulae more or less extensively, very apex of pronotal ridge.

*Legs.*—Claws I and II pectinate, claws III not pectinate. The following white: tibiae I and II dorsally, tip of femora I and II on interior side, coxae I and II predominantly, apex of coxae III extensively on ventral and dorsal side, the white on the dorsal side medially interrupted by a black mark; basic color varying from black to red.

*Wings.*—Nervulus antefurcal. Clear.

*Abdomen.*—Tergites 2 and 3 considerably widened and strongly sclerotized; second tergite apically more than three times as wide as ba-

sally and distinctly wider than medially long, the third tergite 3-4 times as wide as long; both tergites densely and rather coarsely punctured; tergites 4-7 smooth, forming together a cone, often compressed, shorter than tergites 1 and 2 together; ovipositor considerably projecting, about as long as the last two or three tergites together. The following white: continuous band, more rarely two separated marks on the apex of first tergite, latero-apical marks on second tergite, laterally abbreviated apical bands on tergites 4-7; basic color black, on tergites 1-3 varying geographically to red.

### Male

In addition to white pattern of female, face and clypeus also white, except narrow longitudinal median band of red or partially black color; rarely (Madagascar) scape ventrally white; basic color of head varies geographically, but not always in accordance with female, from black to partially or entirely red; otherwise as in female.

### Subspecific classification

In its vast area of distribution the species shows a considerable degree of geographical variation; an attempt at subspecific classification, however, reveals a problem.

In the European nominate form, head, abdomen, and legs are black, except for the constant, specific white pattern. Quite different are the populations inhabiting the entire central part of Africa from coast to coast and also southern Africa. Here the basic color of tergites 1-3 is red, as it seems constantly in both sexes, and except for the typical white markings, the head is entirely red in females, at least partially red in males. This is undoubtedly a prominent subspecies (subspecies *adornatus* Tosquinet). In northeastern Africa the populations from the Sudan and from Eritrea differ strongly from the central and southern African subspecies by black or brownish-black basic color of the entire abdomen, or at least of tergites 2-7, in this regard being closely related to the European nominate form, from which the females are well distinguished by their red heads (subspecies *sudanensis* Heinrich).

The above-mentioned problem arises in Madagascar, where the species varies between the coloration of *adornatus* and *sudanensis*. As "subspecies" is generally considered the name for a genetic unit rather than for a certain color phase, the mere fact of the mutability of the Madagascan population may justify its naming as a subspecies. In the Madagascan males the ventral side of the scape is (constantly?) white-marked, in contrast to the other subspecies.

### 6a. *Neotypus intermedius madegassa* Heinrich

*Neotypus intermedius madegassa* Heinrich, 1933, Mitt. Zool. Mus. Berlin, XIX, p. 158, ♀.

*Neotypus intermedius madegassa* Heinrich, 1938, Mém. Acad. Malg., XXV, pp. 38-39, ♀♂; comprehensive redescription.

### Types

*Holotype*.—♀, "Madagascar, Bekily, ca. 600 m, III.-IV.1932, leg. A. Seyrig." C.G.H. I.

Allotype.—♂, same data. C.G.H. II.

Paratype.—1 ♀, same data. C.G.H. I.

#### Distribution

Madagascar; evidently throughout the island.

#### Host

*Cupido boeticus* L.

#### Female

Basic color of head and thorax red, except predominantly black mesosternum and sometimes partially black prosternum and prepectus; basic color of tergite 1 red, of tergites 2-7 black, varying to red on the second and third tergites; basic color of legs including coxae III black or blackish; all white markings as described for the species, but white on temples usually restricted, sometimes obsolete.

#### Male

White pattern generally as described for the species; in allotype scape ventrally white, basic color of tergites 2-7 and of legs black; basic color of tergites 2 and 3 varying, as in female, from black to brownish-red.

#### Remark

Individuals with black basic color of the second and third tergites seem not to occur in the populations from West and South Africa (subspecies *adornatus* Tosquinet). They are rather frequent in Madagascar, and this difference in the two populations is the main reason for the assumption they are subspecifically distinct, which is not evident in all individuals.

#### Biological notes

According to observations made by André Seyrig (Mém. Acad. Malg., 1938, XXV, p. 39) this subspecies, in contrast to other ichneumonids, is more frequent during the winter (= dry season) than during the summer. Although usually fairly rare, it occasionally becomes very common in restricted areas for a short period of time.

The rearing of great numbers of collected chrysalids of two different species of Lycaenidae indicated that this subspecies is probably monophagous. From 127 chrysalids of *Cupido boeticus* L., 83 parasites emerged, from 150 chrysalids of *Virachola antalus* Hp. none.

### 6b. *Neotypus intermedius adornatus* (Tosquinet)

Figs. 72, 76, 79

*Cillimus adornatus* Tosquinet, 1896, Mém. Soc. Ent. Belg., V, pp. 123-125, ♀.

*Cratichneumon adornatus* Berthoumieu, 1904, Gen. Ins., XVIII, p. 39, ♀.

*Neotypus conflatus* Morley, 1916, Ann. S. Afr. Mus., XV, p. 359, ♀; new synonymy.

*Epijoppa tricolor* Morley, 1926, Ann. S. Afr. Mus., XXIII, p. 440, ♀; new synonymy.

*Neotypus adornatus* Heinrich, 1930, Konowia, IX, p. 10, ♀; *Cillimus* Tosquinet synonymized with *Neotypus* Foerster.

*Neotypus intermedius adornatus* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 38, ♀.

### Types

*Holotypes*.—*Cillimus adornatus* Tosquinet, ♀, "Delagoa Bay." Z.M. H.U. No. 26342; *Neotypus conflatus* Morley, ♀, "Chinde, Mozambique, Portug. Afr., K. H. Bernard. Nov. 1912." S.A.M.; *Epijoppa tricolor* Morley, ♀, "Bulawayo, S. Rhodesia, May, 1917, R. W. Tucker." S.A.M.

### Distribution

In East Africa from Tanganyika south to Cape Province, in West Africa so far recorded only from French Equatorial and from South-West Africa.

Mozambique and Southern Rhodesia (type localities); Tanganyika (C.G.H. II.); Natal: Durban (S.A.M.); Cape Province (S.A.M. and C.G.H. II.); Basutoland (C.G.H. II.); Aden, ♂ only (Z.M.H.U.); South-West Africa (B.M.); French Equatorial Africa (C.G.H. II.).

### Female

Basic color of head and thorax red, except extensively black mesosternum and sometimes medially black prepectus; basic color of tergites 1-3 always red (or red-brown), of tergites 4-7 in majority of specimens dorsally black, laterally more or less extensively red or reddish; sometimes basic color of tergites 4-7 entirely black or entirely red; basic color of coxae III and of femora III varying from red to black; all white markings as described for the species.

### Male

White pattern generally as described for the species; scape ventrally ferruginous; vertex usually partially blackish, sometimes vertex and frons between white orbits entirely black; otherwise as in female.

## 6c. *Neotypus intermedius sudanensis* Heinrich

*Neotypus intermedius sudanensis* Heinrich, 1933, Mitt. Zool. Mus. Berlin, XIX, p. 157, ♀.

### Types

*Lectotype*.—♀, "British Sudan, Shendi, 12.III.1927, H. B. Johnston, Well T. R. Labs., parasite on lepidopterous insect feeding on *Dolichos lablab*." B.M. By present designation.

### Distribution

Sudan: north of Khartoum, Shendi (type locality) and Ethiopia: Asmara (Canadian National Collection); Uganda (Collection H. Townes).

### Female

Basic color of head and thorax red, except predominantly black mesosternum and medially black prepectus, prosternum varying from red to black; basic color of tergites 1-7, sometimes only 2-7, black; basic color of legs, including coxae, black; all white markings as described for the species.

### Male

White pattern generally as described for the species; scape ventrally brownish or white; basic color of head black, including longitudinal median band on face and clypeus; sometimes occiput dark red; otherwise as in female.

### 32. Genus *Deuterotypus* Heinrich

*Deuterotypus* Heinrich, 1930, Mitt. Zool. Mus. Berlin, XV. pp. 546-547.

Type species.—*Deuterotypus elongatus* Heinrich.

### Distribution

Aden, Madagascar, Cape Province, Uganda, Congo.

### Host

Lycaenidae.

### Preamble

A highly specialized genus of the tribe Listrodromini, particularly distinguished by the extremely narrowed and elongate abdomen of females, recalling the abdominal structure of the genus *Limerodes* Wesmael. Evidently related and similar in color pattern to *Neotypus* Foerster, differing from the latter genus not only by the shape of the abdomen of females, but also by the lack of pectination of female claws, and in addition in both sexes in the structure of the thorax; the first flagellar segment is in both sexes much shorter than the second.

### Morphological characters

*Flagellum*.—Of females short, bristle-shaped, only moderately attenuated toward apex, ventrally not flattened beyond middle and not at all widened. Of males not at all nodose, with a long row of elongate-oval tyloids. In both sexes the first segment not much more than half the length of the second.

*Head*.—Wide; temple profile not, or scarcely narrowed behind eyes, curved; outline of head in front view nearly circular; malar space considerably longer than width of mandible base; face, clypeus, and malar space together forming a single continuous, slightly convex plane, not interrupted by sutures or convexities except for the median field of face which, in contrast to *Neotypus*, is slightly elevated; in the only known male the area covering the base of clypeus and apex of face is slightly depressed (perhaps accidental?); clypeal foveae obsolete; mandibles very short, wide, with strong, subequal teeth separated by a wide gap.

*Thorax*.—Mesoscutum about as long as wide, strongly punctured; anterior fifth of notauli fairly distinct; pronotal ridge short, its anterior part more or less swollen; scutellum strongly to very strongly elevated above postscutellum, dorsally convex with curved apical slope or ascending apically into a pyramidal elevation, laterally always strongly to lamelliformly carinate; propodeum unusually short, the very steep declivity several times longer than the horizontal part medially; area posteromedia deeply excavated; area superomedia extremely short, transverse and several times wider than long; areae dentiparae of females (except of type species) strongly slanting downward apically, of males and of type species nearly

horizontal; mesopleura all along the elevated posterior rim deeply and broadly concave, including area of speculum; apex of propodeum produced downward somewhat between coxae III toward base of petiole: spiracles short-oval.

*Legs*.—Moderately long and slender; femora III in lateral view fairly wide and gradually narrowed toward base and apex, their inner side flat: claws of both sexes not pectinate.

*Wings*.—Areolet regularly pentagonal; nervulus slightly antefurcal; radius straight.

*Abdomen*.—Shiny; anterior tergites sparsely and strongly punctured; gastrocœli longer (in females much longer) than wide, with narrow, distinct thyridia; postpetiole without clearly defined median field; abdomen of females extremely narrowed and elongate, all tergites much longer than wide, amblypygous, with very long, apically narrowed hypopygium: ovipositor nevertheless slightly projecting; last tergites apico-medially more or less distinctly membranous; abdomen of males comparatively short, only the first and second tergites distinctly longer than wide: hypopygium short and blunt.

### *Chromatic characters*

Corresponding to the genus *Neotypus*: head and thorax partially to predominantly ferruginous; abdomen black, with apical white marks on most tergites.

### *Remark*

I suppose that all forms of this genus replace each other geographically and that probably nowhere will two of them be found in the same area; but, I have the impression that the isolation of the Aden, Madagascar, and South African populations has lasted so long that their differentiation has reached specific status.

## **Key to the species and subspecies of *Deuterotypus* Heinrich**

### **Females and Males**

1. Scutellum dorsally simply convex, with indistinct, medio-apical summit, slanting posteriorly toward postscutellum in a rather gentle curve; anterior part of pronotal ridge scarcely swollen; in female areae dentiparae not distinctly slanting toward apex but nearly horizontal; head without white markings; small, slender species, 10 mm long. (Head uniformly red; tergites 2-7 with apical white marks; all coxae white-marked.) ..... 1. *elongatus* Heinrich, ♀  
Aden
- Scutellum ascending into a medio-apical pyramidal elevation, slanting almost vertically from its summit toward postscutellum; anterior part of pronotal ridge distinctly swollen; in female areae dentiparae rather strongly slanting toward apex of propodeum; head with restricted white markings; slightly larger and more robust species, 11-13 mm long. .... 2
2. Head uniformly ferruginous, with short white bands on temple orbits; scutellum strongly pyramidal, with lamelliform lateral carinae; tergites 2-7 with apical white marks; anterior part of pronotal ridge rather strongly swollen. (Thorax red, with black restricted to mesosternum, reaching from middle to sternauli; coxae I and II white, III not white-marked; length 13 mm.) ..... 2. *lycaenarum*, new species, ♀  
Madagascar



- Head predominantly black, with temple and sometimes frontal orbits white-marked; medio-apical elevation of scutellum less pronounced, lateral carinae less elevated; tergites 3-7 with apical white marks; anterior part of pronotal ridge less strongly swollen. .... 3. *aethiopicus*, new species 3
3. All coxae uniformly black; temple orbits, as well as frontal orbits with white band; thorax predominantly red, with only prosternum and mesosternum, the latter from middle to sternali, black, and base of propodeum infuscated; head black, except red spot on middle of upper part of face. (Length 12 mm.) .... 3a. *aethiopicus aethiopicus*, new subspecies, ♀  
Uganda
- Coxae I and II white-marked; only temple orbits with white band, frontal orbits without; thorax more extensively black, the black including also prepectus, entire mesosternum, lower part of mesopleura and metapleura, and at least entire horizontal part of propodeum; lateral fields of face, except their lower part (female) or entire face (male) red. (Length [♀] 12 mm and [♂] 10 mm.) .... 3b. *aethiopicus capensis*, new subspecies, ♀ ♂  
Cape Province

### 1. *Deuterotypus elongatus* Heinrich

*Deuterotypus elongatus* Heinrich, 1930, Mitt. Zool. Mus. Berlin, XV, p. 547, ♀; fig. 3: abdomen, fig. 4: propodeum.

#### Types

*Holotype*.—♀, "Aden, Col. Bingham, 9.III.1895." Z.M.H.U.

#### Distribution

Aden.

#### Preamble

Smaller and slenderer than the two following species; differing from them by: (1) the lack of conical or pyramidal elevation on scutellum, (2) pronotal ridge not noticeably swollen, (3) areae dentiparae not slanting.

#### Female

*Head and thorax nearly uniformly ferruginous, without white markings; abdomen black, second and seventh tergites with small, third to sixth with larger apical white marks; all coxae white-marked; flagellum brownish, without annulus; length 10 mm.*

*Flagellum*.—Apices broken off in type. Second segment nearly twice as long as first. Pale brownish (ochreous), the basal segments dorsally darker.

*Head*.—Structure as described for genus; malar space about one and one-half times as long as width of mandible base; sparsely and not strongly punctured. Uniformly ferruginous, without white markings.

*Thorax*.—Structure as described for genus; anterior part of pronotal ridge scarcely swollen; mesoscutum shiny, strongly and sparsely punctured; scutellum moderately strongly convex, shiny and not densely punctured; areae dentiparae nearly horizontal. Ferruginous, middle and posterior end of mesosternum black.

*Legs*.—I and II ferruginous, legs III brownish-black; the following ivory: coxae I and II ventrally predominantly, coxae III ventro-apically, tibiae I and II and apices of femora I and II on inner side.

*Abdomen*.—Structure as described for the genus; about twice as long as the thorax; extremely narrow, its maximal width (at second tergite) scarcely wider than base of scutellum; all tergites much longer than wide; second tergite parallel-sided, about 3.5 times as long as wide; abdomen very gradually narrowed from apex of second tergite toward ovipositor; postpetiole scarcely wider than petiole, medially smooth, laterally with scattered, strong punctures; gastrocoeli narrow and elongate, nearly as long as width of second tergite; third tergite with few, strong, scattered punctures on basal third and sides, the following tergites practically smooth; hypopygium approximately as long as the seventh tergite. Black; tergite 2 with smaller, tergites 3-7 with large apical white marks which medially reach to about the middle of segments or farther.

## 2. *Deuterotypus lycaenarum*, new species

### *Types*

*Holotype*.—♀, "Madagascar, Behaia, XI.40, A. Seyrig." M.N.H.N.

### *Distribution*

Madagascar.

### *Host*

*Deudorix (Virachola) dinochares* Gr. Smith. (Lycaenidae), Stempffer det.

### *Preamble*

The type specimen is larger and more robust in appearance than *elongatus* Heinrich; structurally differing from the latter mainly by the scutellum which ascends from base to apex into a pointed, pyramidal elevation, with vertically sloping posterior surface; lateral carinae of scutellum much more strongly raised than in *elongatus*, lamelliform; anterior part of pronotal ridge rather strongly swollen; areae dentiparae steeply sloping; chromatically similar to *elongatus*, but temple orbits with white band.

### *Female*

Head red with short white band on temple orbits; thorax red, the mesosternum medially and posteriorly black; coxae I and II white, III dull ferruginous, without white markings; abdomen black with apical white marks on tergites 2-7; flagellum without annulus; length 13 mm.

*Flagellum*.—Structure as described for genus; with 28 segments; about the 15th square. Dorsally dark brownish, ventrally dull ferruginous, without annulus; scape ferruginous.

*Head*.—Structure as described for genus. Red, with short white band on temple orbits.

*Thorax*.—Structure as described for the genus and in preamble. Uniformly ferruginous-red, with only the mesopleura and hind end of mesosternum black.

### Preamble

Similar in appearance to *obtusa* Heinrich, but larger, differing as a distinct species mainly by nearly horseshoe-shaped area superomedia, which is not contiguous to the postscutellum but separated from it by ample space. Flagellum longer than in *obtusa* and more attenuated toward apex, and in contrast to *obtusa*, adorned with an extended white annulus. Almost no white markings on thorax.

### Female

*Head white with some black markings; thorax ferruginous, without black and without clearly white markings, except white collare; pronotal ridge and sterna yellow-tinged; abdomen ferruginous, tergites 5-7 black with broad apical white bands; legs nearly uniformly ferruginous; flagellum black with broad dorsal white annulus; length 14 mm.*

*Flagellum.*—Structure as described for the genus; with 40 segments, the first about 2.5 times as long as wide, in lateral view about the 14th square, none wider than long. Black, including scape; apices of 6 basal segments narrowly brownish; segments 7-14 with dorsal white annulus.

*Head.*—Structure as described for the tribe and genus. White; the following black: a small median longitudinal mark on upper part of face, middle of frons broadly, ocellar region and area around and behind it (the black on vertex projecting laterally on each side in a narrow band to the very border of eyes), a broad band along carina occipitalis, extending on each side far beyond temple region.

*Thorax.*—Structure as described for the tribe and genus; only the very base of notauli distinct; mesoscutum coarsely and moderately densely punctured, finely coriaceous between punctures; scutellum and propodeum coarsely and densely punctured, area superomedia and space of area basalis nearly smooth; scutellum very strongly convex, laterally carinate; area superomedia broadly horseshoe-shaped, somewhat wider than long, separated in front from the postscutellum by the area basalis, which is not defined laterally and is contiguous to the postscutellum in front; mesopleura strongly and very densely rugose-punctate, with large, concave speculum. Ferruginous, collare white; apex of pronotal ridge, subalarum, and sterna yellow-tinged.

*Legs.*—Comparatively short; claws not pectinate. Nearly uniformly ferruginous; tarsi III blackish, tarsi II less strongly infuscated.

*Wings.*—As described for the genus. Clear.

*Abdomen.*—Structure and sculpture as described for the genus. Ferruginous; tergites 5-7 predominantly black, with broad apical white bands.

### 3. *Magwengiella congica*, new species

#### Types

*Holotype.*—♀, "Congo Belge, Kaniama, 6.XI.1939, H. I. Bredo."  
C.G.H. II.

#### Distribution

Congo.

### 3a. *Deuterotypus aethiopicus aethiopicus*, new subspecies

#### Types

Holotype.—♀, "Buera, Uganda, 4.IV.1913." B.M. No. 3b-2122.

#### Distribution

Uganda.

#### Female

Head black including face, except a small red mark in the uppermost part of its middle field; temple orbits and in addition also frontal orbits with white bands; coxae I and II not white-marked; thorax predominantly red; black are only: prosternum, middle of prepectus, mesosternum from middle to sternauli; base of propodeum infuscated; length 12 mm.

### 3b. *Deuterotypus aethiopicus capensis*, new subspecies

#### Types

Holotype.—♀, "Wittenberg Vall., 3500 ft., Ceres District, Cape Province, 21.-23.XII.1930. R.E. Turner." B.M. No. 3b-2123.

Allotype.—♂, same data. B.M.

#### Distribution

Cape Province.

#### Female

Head black, lateral fields of face, except their lower part, red; frontal orbits without, temple orbits with white band; coxae I with small white mark, coxae II with larger one; thorax extensively black; the following red: pronotal ridge, mesopleura (except lower part), mesoscutum (the 3 lobes medially extensively infuscated), scutella; metapleura medially indistinctly dull-reddish-tinged; length 12 mm.

#### Male

Head black, entire face and cheeks below temple region red; frontal orbits without, temple orbits with white band; coxae I and II ventrally, coxae III ventro-apically white; thorax extensively black; the following red: apical part of pronotal ridge broadly, mesopleura (except lower part), metapleura (except lower part), mesoscutum (except anterior part), scutella, declivity of propodeum (except upper part); length 10 mm.

### 33. *Jacotitypus*, new genus

Type species.—*Jacotitypus obscuricolor*, new species.

#### Distribution

South Africa.

#### Preamble

Closely related to *Neotypus* Foerster and *Listrodromus* Wesmael. As in these two genera, claws I and II of females are pectinate, although not in all specimens. Differs from *Listrodromus* by the lack of the area coxalis, by obsolescence of sternauli and notauli, and by elongate spi-

racles of the propodeum. Differs from *Neotypus* by oval shape of abdomen of females, as described below. Distinguished from the two genera mainly by the structure of gastrocoeli, which are triangular and transverse, with their inner anterior angles sharply pointed and medially confluent, forming a narrow, continuous, transverse furrow at the base of the second tergite. A particular characteristic of the genus is seen in its pronounced sexual dichroism. White markings, particularly on legs and abdomen, are considerably more extensive in males than in females (in contrast to *Neotypus* and *Listrodromus*); and in the species *exquisitus* Tosquinet, males with black basic color of most of the body are associated with females with orange-red basic color of the entire body.

### *Morphological characters*

*Flagellum*.—Of females fairly short, somewhat slenderer than in *Neotypus* and apically more distinctly attenuated, ventrally not flattened and not widened beyond middle, with 23-25 segments; of males without tyloids.

*Head*.—As described for the genus *Neotypus*; the continuous, slightly convex plane formed by face, clypeus, and malar space together not quite as perfectly homogeneous as usually in *Neotypus*, sometimes with a very faint indication of the median field of face.

*Thorax*.—Generally as described for the genus *Neotypus*; spiracles of propodeum elongate-oval; area superomedia, on the average, less abbreviated and less wide than in *Neotypus*, in the species *exquisitus* even longer than wide; areae dentiparae only moderately or scarcely declivous; posterior part of mesopleura much less concave than in *Neotypus*.

*Legs*.—Moderately long; in females claws I and II usually, but not constantly, pectinate; claws of males simple.

*Wings*.—Areolet pentagonal, wide in front; nervulus interstitial or antefurcal.

*Abdomen*.—Of females fairly short, amblypygous, quite different in appearance from *Neotypus*, as tergites 4-7 are not gradually narrowed from the base of the fourth tergite to the apex of the abdomen, but form together with the basal segments a regular oval, very much as in the genus *Pseudamblyteles* Ashmead or in *Listrodromus*; gastrocoeli, in contrast to *Neotypus*, triangular and transverse, connected medially by a basal furrow on the second tergite.

### *Chromatic characters*

In contrast to *Neotypus*, females without conspicuous white markings on apical tergites; anterior tergites with white bands or latero-apical marks. Males, in striking contrast to females, with extensive and conspicuous apical white bands on all, or nearly all, tergites. In the type species basic color of the body black in both sexes; in *exquisitus* basic color of the entire body orange-red in females, predominantly black in males. In the type species wings moderately infuscated.

## Key to the species of *Jacotitypus*, new genus

### Females

1. Basic color of body black, only mesoscutum, pronotum, mesopleura, and scutellum red; wings moderately infuscated; length 9-10 mm. .... 1. *obscuricolor*, new species  
Basutoland
- Basic color of entire body orange-red; wings clear; length 11 mm. .... 2. *exquisitus* (Tosquinet)  
Basutoland

### Males

1. Face and all coxae black; scutellum black, with apical white marks. (Femora black, with narrowly white apex; length 9-10 mm.) ..... 1. *obscuricolor*, new species  
Basutoland
- Face and all coxae extensively white; scutellum uniformly white. .... 2
2. Femora III red, apically infuscated, thicker than in *empeyi*; upper part of mesopleura more or less extensively red, no white marks on mesopleura and propodeum; temple profile scarcely narrowed, strongly curved; anterior fourth of notauli rather distinct; white on orbits interrupted at temples. (Length 11 mm.) ..... 2. *exquisitus* (Tosquinet)  
Basutoland
- Femora III black, apically white, slenderer than in *exquisitus*; mesopleura black, with white mark on lower anterior part, without red part; propodeum white-marked; temple profile strongly narrowed, scarcely curved; notauli indistinct; white on orbits not interrupted at temples. (Length 10 mm.) ..... 3. *empeyi*, new species  
Transvaal

### 1. *Jacotitypus obscuricolor*, new species

Fig. 74

#### Types

*Holotype*.—♀, "Mahlatla, Basutoland, 1.1.1953"; leg. Jacot-Guillarmod. C.G.H. II.

*Allotype*.—♂, "Matékas, Basutoland, 29.III.1951"; leg. Jacot-Guillarmod. C.G.H. II.

*Paratypes*.—1 ♀, type locality, 30.XII.1951; 2 ♂♂, type locality, 16.I.48 and 30.XII.1951. C.G.H. II.

#### Distribution

Basutoland.

#### Preamble

Distinguished by distinctly, though not strongly infuscated wings, predominantly black color of the entire body including antennae and legs, and in females by restriction of white abdominal markings to narrow apical bands on the first and second tergites.

#### Female

Black; wings distinctly infuscated; pronotum, mesoscutum, mesopleura, and scutellum red; a white line on frontal orbits, a second one on temple orbits; narrow apical white bands on first and second tergites; flagella and legs III uniformly black; length 9-10 mm.

*Flagellum*.—Fairly slender, bristle-shaped, moderately attenuated toward apex, with 23 segments, the first distinctly longer than the second, the 14th approximately square. Uniformly black including scape.

*Head*.—Structure as in *Neotypus*, the median field of face very slightly indicated; face, clypeus, and cheeks shiny, finely and sparsely punctured; clypeus without median projection. Black; a white band on frontal and on upper outer orbits.

*Thorax*.—Structure as described for the genus; scutellum strongly raised above postscutellum, strongly convex; spiracles longish-oval; area superomedia about 1.5 times as wide as long; areae dentiparae scarcely slanting. Black; the following red: pronotum except pronotal base, mesoscutum, scutella, mesopleura, exterior part of prepectus; postscutellum sometimes yellow.

*Legs*.—Fairly slender, tarsi long; claws I and II pectinate, claws III not pectinate. Black, including coxae; tibiae and tarsi I and II blackish-brown; the following whitish: inner side of tibiae I, inner side of tibiae II partially, sometimes mark in the middle of outer side of tibiae I and II, apical margins of trochanters I and II.

*Wings*.—Nervulus interstitial; distinctly infuscated.

*Abdomen*.—(Fig. 74); fairly short, oval; postpetiole moderately convex, fairly wide, sparsely punctured; second tergite rather densely and coarsely, the third much less strongly punctured. Black; first tergite with short latero-apical white bands, second tergite with continuous narrow apical white band; apical margin of sixth and seventh tergites indistinctly and very narrowly whitish.

### Male

*Color of head and flagellum as in female; black on thorax more extensive than in female, only the mesoscutum and sometimes the anterior upper part of mesopleura red; apex of scutellum and the postscutellum white; white markings on abdomen and legs much more extensive than in female; white are: continuous broad apical bands on tergites 1 and 2, laterally abbreviated apical bands on tergites 3-7 (sometimes lacking on third tergite), dorsal side of tibiae I-III and of segments 1 or 1 and 2 of tarsi I-III, apices of femora I-III narrowly.*

*Flagellum*.—With 23-24 segments. Uniformly black, including scape.

## 2. *Jacotitypus exquisitus* (Tosquinet), new combination

*Ichneumon exquisitus* Tosquinet, ♂, 1896, Mém. Soc. Ent. Belg., pp. 15-17.

*Amblyteles apiatus* Tosquinet, ♀, 1896, Mém. Soc. Ent. Belg., p. 95; new synonymy.

*Cratichneumon exquisitus* Berthoumieu, ♂, 1904, Gen. Ins., XVIII, p. 39.

*Physcoteles apiatus* Berthoumieu, ♀, 1904, Gen. Ins., XVIII, p. 52.

### Types

*Holotypes*.—*Ichneumon exquisitus* Tosquinet, ♂, "Capland, Krebs." Z.M.H.U. No. 9637; *Amblyteles apiatus* Tosquinet, ♀, "Capland, Krebs." Z.M.H.U. No. 9517.

### Distribution

South Africa: Cape Province, probably, region north of Grahamstown (type locality); Basutoland (C.G.H. II.).

### Preamble

In two of the five females at hand, and in the type of *Amblyteles apiatius* Tosquinet, the claws I and II are rather distinctly pectinate, in the other three specimens they are not pectinate. As I can not find any other tangible difference between the series with and without pectination, I assume that the pectination is individually variable in this species.

Distinguished from the type species by larger size and by orange-red basic color of the entire body of females, with white scutella and rich white markings on the abdomen. Males of *exquisitus* and of *obscuricolor* Heinrich are more similar to each other in color pattern than the females are, but *exquisitus* is much more richly white-marked, having the sides of face and clypeus, pronotal ridge, and scutella white.

### Female

*Orange-red, with rich, yellowish-white markings; yellowish-white are: apico-lateral marks on tergites 1-3 (sometimes medially confluent), the apical margins of tergites 4-7 more or less distinctly, dorsal marks on all coxae, all tibiae dorsally in the middle, scutella, pronotal ridge, and other markings; flagellum without annulus; length 11 mm.*

*Flagellum.*—Fairly slender, bristle-shaped, distinctly attenuated toward apex, with 23-25 segments, the first about 2.5 times as long as wide and somewhat shorter than the second, all segments longer than wide. Orange-red, without annulus, pedicel and apex slightly infuscated.

*Head.*—Structure as described for the genus; apex of clypeus projecting a trifle medially. Orange-red; the following yellowish-white: facial and frontal orbits broadly, outer orbits from temples down to beyond middle of eyes very extensively, bases of mandibles.

*Thorax.*—Structure as described for genus; areae dentiparae distinctly slanting; spiracles elongate; area superomedia comparatively small, except in one specimen clearly longer than wide, subhexagonal or semioval. Orange-red; the following yellowish-white: pronotal ridge, subalarum, tegulae, scutellum (except lateral slopes), postscutellum; the crenulated lateral parts of postscutellum black.

*Legs.*—Claws I and II pectinate, or not pectinate. Orange-red, all coxae with large, yellowish-white dorsal marks; all tibiae dorsally yellowish-white, the tibiae I and II predominantly, tibiae III only in the middle.

*Wings.*—Nervulus somewhat antefurcal. Clear.

*Abdomen.*—Structure as described for the genus; postpetiole, second and third tergites fairly strongly and densely punctured. Orange-red; yellowish-white are: latero-apical marks on tergites 1-3, the marks on the first and second tergites usually, on the third sometimes, narrowed and extended toward the middle and confluent; apical margins of tergites 4-7 more or less distinctly yellow-tinged, sometimes with distinct, laterally abbreviated, yellowish-white apical bands.

### Male

*In contrast to female, basic color of head and abdomen black; thorax black, with predominantly red mesoscutum and with partially to entirely*



red mesopleura; metapleura varying from black to red; all tergites with broad apical white bands; legs white and black, the femora predominantly red; flagellum black; length 10-11 mm.

*Flagellum*.—With 23-25 segments. Black, ventrally slightly brownish-tinged; scape black, sometimes ventrally white-marked.

*Head*.—Black; the following white: face and clypeus (except longitudinal median black band), frontal orbits broadly, outer orbits from temples down to nearly apex of eyes, backward almost to hind margin of cheeks, base of mandibles.

*Thorax*.—Black; red are: mesoscutum, except exterior margins and usually sutures between median and lateral lobes, mesopleura, usually on anterior, upper part only, sometimes entirely, sometimes marks on metapleura, exceptionally metapleura entirely; the following white: pronotal ridge, posterior mark on pronotal base, subalarum, tegulae, scutellum, postscutellum.

*Legs*.—Basic color of coxae and trochanters black; coxae I and II apically extensively, coxae III dorsally predominately, ventrally only apically, white; black are furthermore: tip of femora III or III and II on dorsal side, tibiae III basally and apically on dorsal side, and sometimes tarsi III: all tibiae ventrally and the femora red; all tibiae dorsally white, the tibiae III except base and apex; tips of femora I and II ventrally white; tarsi reddish-brown, tarsi III usually black.

*Abdomen*.—Black, with broad apical white bands on all tergites, the bands on tergites 1-3 continuous from side to side and medially narrowed, the ones on tergites 4-7 laterally abbreviated.

### 3. *Jacotitypus empeyi*, new species

#### *Types*

*Holotype*.—♂, "Discovery, Transvaal, 8.11.1961, H. N. Empey."  
C.G.H. II.

#### *Distribution*

Transvaal.

#### *Preamble*

Extremely similar in color and appearance to *exquisitus* Tosquinet. Differs chromatically by black basic color of femora, white markings on propodeum, mesopleura, and prepectus, by white dorsal side of all tarsi, and by the white band on orbits not interrupted at temples. Different from *exquisitus* in structure as follows: (1) femora markedly slenderer; (2) area superomedia considerably larger, and wider than long, broadly truncate in front; (3) temple profile distinctly narrowed behind eyes, only slightly curved (in *exquisitus* scarcely narrowed and strongly curved); (4) scutellum stronger convex; (5) notauli barely indicated at the very base (anterior fourth of notauli rather distinct in *exquisitus*).

In the treatment of the preceding species, *exquisitus*, a female was mentioned which differs from the rest of the series examined by a larger, and not longer than wide, area superomedia. If *empeyi* should show a strong sexual dichroism, parallel to the pattern of *exquisitus*, this female could perhaps belong to *empeyi*.

### Male

Black, with extremely rich white markings and without red parts, except uniformly ferruginous-orange mesoscutum; small white marks on prepectus, mesopleura, and propodeum; scutella white; all tergites with broad apical white bands which on tergites 1-3 extend along the sides of these tergites close toward their bases; apices of all femora and nearly entire dorsal sides of all tibiae and tarsi white; all coxae white-marked; length 10 mm.

**Flagellum.**—With 25 segments. Black, scape ventrally white.

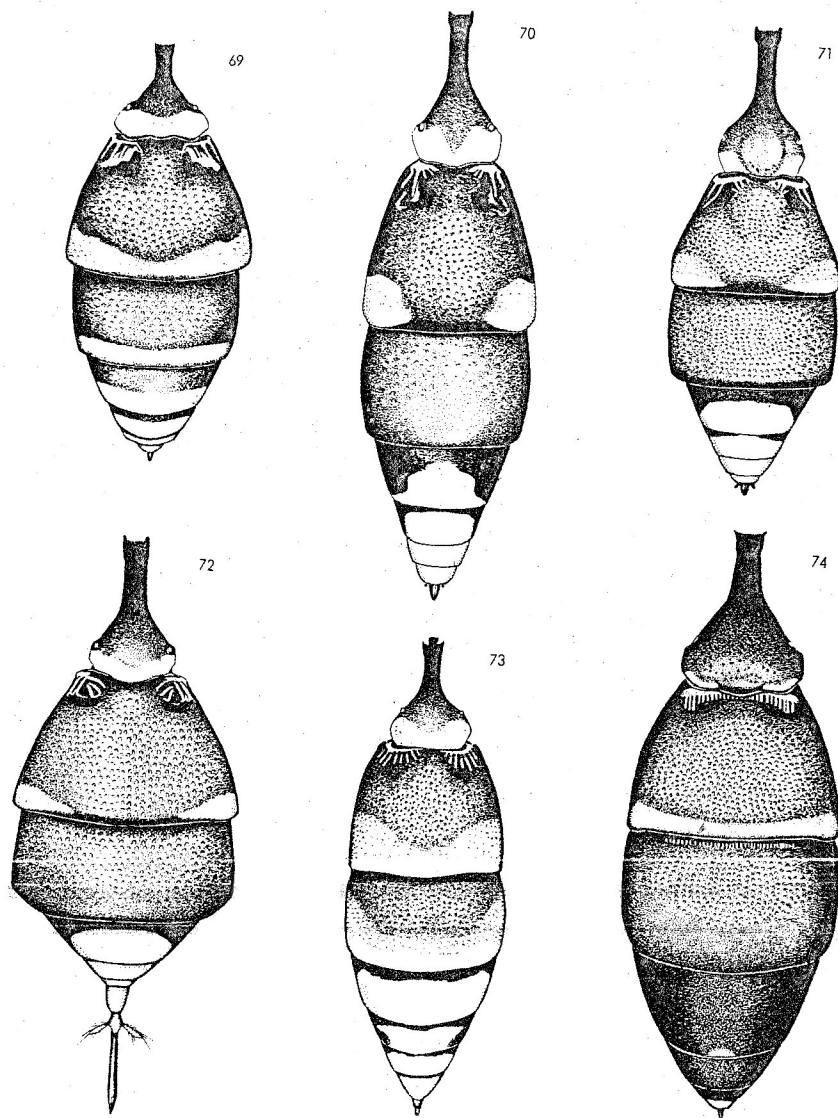
**Head.**—Temple profile distinctly narrowed behind eyes, slightly curved; clypeus with a minute projection apically in the middle; median field of face slightly more distinctly limited than in *exquisitus*. Black; sides of face and orbits around eyes broadly white, the white band interrupted only on malar space; white on sides of face extending downward close to the (white) mandible base.

**Thorax.**—Notauli obsolete, barely indicated at the very base; mesoscutum coarsely and moderately densely punctured, polished between punctures; scutellum strongly convex, somewhat more strongly still than in *exquisitus*, laterally weakly carinate at the base; area superomedia large, wider than long, with costulae about in the middle, not narrowed from costulae toward area basalis, broadly truncate in front, moderately narrowed toward apex; carinae dentiparæ exteriores and interiores indistinct; pleura coarsely and moderately densely punctured, speculum large, flat, and smooth. Black, mesoscutum ferruginous-orange, with two indistinct longitudinal median whitish stripes; the following white: scutella, pronotal ridge, subalarum, margin of prepectus partially, a mark on lower anterior part of mesopleura, and marks on apices of areae dentiparæ.

**Legs.**—Femora distinctly slenderer than in *exquisitus*; claws not pectinate. Black, the following white: coxae I apically, exterior side of coxae II except base, dorsal side of coxae III except base with apical third of their exterior side, apical margins of all trochanters, apices of all femora (on dorsal side more extensively than on ventral side), dorsal side of all tibiae and tarsi except narrowly black apex of tibiae III and the black fifth segment of all tarsi.

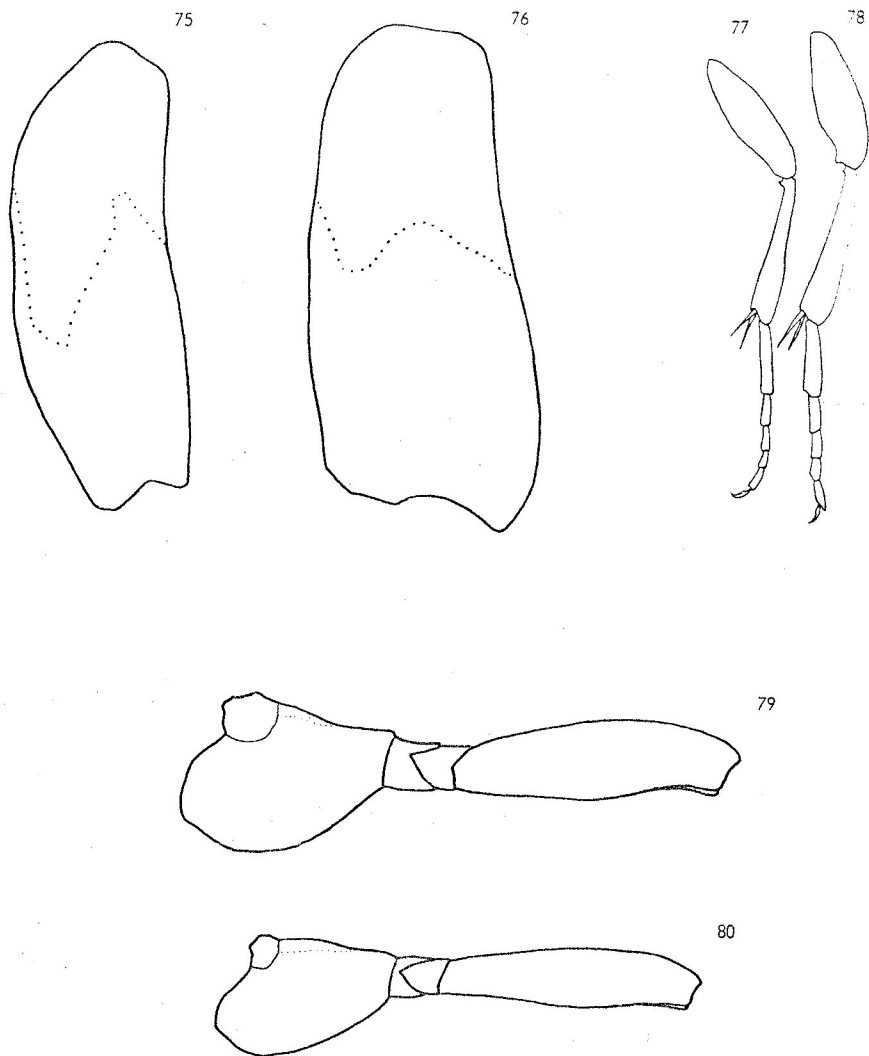
**Wings.**—Nervulus interstitial; areolet pentagonal; radius straight.

**Abdomen.**—Gastrocoeli as described for the genus; second and third tergites comparatively wider than in *exquisitus*: the second tergite apically considerably wider than medially long, the third more than twice as wide as long; postpetiole shiny, with a few coarse, scattered punctures, mainly on lateral fields. Color as described above; apical white bands on tergites wider than in *exquisitus*, covering on first tergite about half of postpetiole, on the second tergite fully a third of its length; white on sides of postpetiole projecting forward to beyond spiracles in holotype.



## XIII

Figs. 69-74. Abdomina: 69, *Neotypus amoenus* Heinrich, ♀; 70, *Neotypus cottrelli* (Bénoit) (ssp. *occidentalis* Heinrich), ♀; 71, *Neotypus semirufus* Kriechbaumer, ♀; 72, *Neotypus intermedius* Mocsary (ssp. *adornatus* Tosquinet), ♀; 73, *Neotypus jacoti* Heinrich, ♀; 74, *Jacotitypus obscuricolor* Heinrich, ♀.



## XIV

Figs. 75-80. 75, *Neotypus semirufus* Kriechbaumer, ♂, valva; 76, *Neotypus intermedius* Mocsary (ssp. *adornatus* Tosquinet), ♂, valva; 77, *Neotypus semirufus* Kriechbaumer, ♀, leg III; 78, *Neotypus cottrelli* (Benoit) (ssp. *occidentalis* Heinrich), ♀, leg III; 79, *Neotypus intermedius* Mocsary (ssp. *adornatus* Tosquinet), ♂, coxa with femur III; 80, *Neotypus semirufus* Kriechbaumer, ♂, coxa with femur III.

### VII. Tribe *Compsophorini* Heinrich

Subtribe *Compsophorina* Heinrich, 1962, Can. Ent., Suppl. XXVII, p. 688.

Type genus.—*Compsophorus* Saussure.

Goedartiini Townes, 1961, Cat. Reclass. Indo-Austr. Ich., p. 399. (Partim).

Type genus.—*Goedartia* Boie.

#### Distribution

An abundance of forms in the Ethiopian region, a restricted number of species in the Oriental region.

#### Preamble

When Townes (loc. cit.) created the tribe Goedartiini, in it he associated his type genus *Goedartia* Boie with the Oriental relatives of the African genus *Compsophorus*. The nomenclatorial problem in this case is whether *Goedartia* can indeed be considered related to *Compsophorus* and hence united with the latter genus in the same tribe. I cannot agree with this view, because in my opinion the morphological discrepancy of the two genera is much too great and too significant to permit their tribal association. Their most important characters: the structure of head, mesothorax, and propodeum, are fundamentally different; so is the structure of the male flagellum. The zoogeographical pattern too seems to point in the same direction: the *Compsophorini* abound in Africa in an extraordinarily large number and variety of forms, but no species remotely similar to *Goedartia* has been found in the Ethiopian region. I therefore prefer to keep the *Compsophorini* separated from the genus *Goedartia* Boie as a distinct tribe.

One of the fundamental characters of this tribe is the featureless structure of the head, which it shares with the *Listrodromini*. This was the main reason why I originally included the *Compsophorini* in the latter tribe. Unfortunately none of the many species of *Compsophorini* has ever been reared, but their great number and considerable size indicate beyond doubt that *Lycaenidae* cannot be their hosts. There is thus an important biological difference between the two groups. Morphologically the *Compsophorini* differ from the *Listrodromini* by the very long and slender, bristle-shaped flagella of the female, by the downward-curved propodeum with peculiar areolation (see below), and by a characteristic very coarse sculpture of mesoscutum and propodeum. The claws are never pectinate, as they so often are in *Listrodromini*, and the coxae III of females show a tendency to develop projecting carinae or teeth.

Although the numerous species of this tribe are comparatively easy to distinguish, the attempt to find a feasible generic classification runs into difficulties. One reason is that in this tribe the conventional group characters fail, as the structure of head, mandibles, flagella, propodeum, gastrocoeli, legs, and hypopygium is amazingly uniform in all species. Those differences, between species as well as between genera, that do occur are found mainly in the sculpture and structure of the mesoscutum, propodeum, and tergites 2 and 3. These then, and in addition the structure of the scutellum, are nearly the only characters applicable to the generic classification of the *Compsophorini*.

*Morphological characters*

*Flagellum*.—Of females always bristle-shaped, slender, moderately to very long, ventrally flattened beyond middle, but not, or at most very slightly widened, strongly attenuated toward apex; of males without tyloids, the segments with distinct, preapical transverse bristle-ridges, moderately nodose.

*Head*.—Always rather thick, with wide temples and wide cheeks; face, clypeus, malar space, and lower cheeks (as in *Listrodromini* and *Ischnojoppini*) entirely or almost entirely devoid of plastic features, that is, not separated from each other by sutures and completely without swellings or depressions; clypeal foveae obsolete; clypeus without lateral corners, its apex gently curved, nearly straight; occiput more or less deeply emarginate; labrum small, usually hidden; mandibles stout, short and very wide, with strong, subequal teeth, separated by a wide and deep gap.

*Thorax*.—Collare with tendency to develop backward-directed lamellae of varying extent, with median emargination of different shape and degree; mesoscutum short, not much longer than medially wide and almost always rather flat, with peculiar sculpture of extremely coarse rugosity, the rugae often in parallel zigzag lines or in curves, and forming various patterns, sometimes of specific significance; each lobe usually with a smooth and shiny longitudinal band, the median lobe sometimes medially depressed in front and thus bipartite, the exterior lobes often forming a raised carina on exterior side, parallel to and at a short distance from the exterior bordering carina of the mesoscutum; pronotal ridge often transversely crenulate; scutellum always laterally carinate and raised above postscutellum, either simply convex or pyramidal, in females as a rule less raised than in males, sometimes convex in females, pyramidal in the associated males; in males of *Eccoptosagellus*, new genus, with large apico-lateral projections similar to the Oriental genus *Eccoptosage* Kriechbaumer; propodeum rather short, sloping down from base to apex in gradual curve; carination more or less complete, at least area superomedia and lateral carinae of declivity distinct; basal furrow of propodeum narrow, if at all present; usually area superomedia medially contiguous to postscutellum; sculpture of propodeum usually coarsely rugose, the area superomedia, however, polished in most species, but in the genera *Compsophorus* Saussure and *Oxyjoppa* Cameron always as coarsely rugose as the rest of the propodeum; areae superoexternae often regularly longitudinally rugose; mesopleura with smooth, usually large speculum and often with transverse depression below it.

*Legs*.—Moderately long, femora fairly slender; claws not pectinate; coxae III of females tending to develop protrusions or carinae of specifically varying size and shape on the interior ventral side of their apices; tarsi III in one group of species thickened and abbreviated, with exteriorly flattened metatarsus.

*Wings*.—Nervulus postfurcal, rarely interstitial; areolet strongly narrowed or with intercubiti coalescent in front; radius distinctly sinuate; usually clear, often evenly and deeply infuscated, in a few species with deeply infuscated transverse bands.

*Abdomen.*—Of females, generally semiamblypygous, elongate-oval to stout and broadly oval, in *Pyramidamblys*, new genus, nearly parallel-sided and amblypygous, apically blunt; petiole gradually widening into postpetiole, the latter usually wider than long, without defined median field, usually laterally sparsely punctured and medially more or less extensively aciculate or longitudinally rugose; gastrocoeli always deep and transverse, triangular, with pronounced thyridia, the space between them narrowed and aciculate; tergites 2 and 3 strongly sclerotized and very coarsely sculptured, either aciculate or rugose-punctate, separated from each other by a pronounced suture; the following tergites rather smooth; second sternite always with a large, transverse, oblique, elongate-oval, very slightly depressed area in about the middle of each side, of a nature very similar to the thyridia on the second tergite (a character also present for example in the Holarctic genera *Stenichneumon* Thomson and *Patrocloides* Heinrich).

### *Chromatic characters*

Dark metallicblue, or in a few cases metallicgreen basic color of abdomen prevails in the tribe, usually combined with ferruginous-red head or head and thorax and often with white anal markings; white bands on anterior tergites found only in the genera *Compsophorus* and *Oxyjoppa*; ferruginous-red basic color of the abdomen or of several tergites occurs frequently throughout the entire tribe.

### *Sexual dimorphism*

Generally slight; scutellum always more raised in males than in females, sometimes only convex or gibbose in females, clearly pyramidal or apico-laterally projecting in the associated males; appendices of coxae III found in females (following the general rule) absent in males.

White markings on head following the general rule—usually more extensive in males than in females; white abdominal markings either equal in both sexes or slightly reduced in males; black on head and thorax often more extended in males than in females; white annulus of flagellum either present in both sexes or, frequently, lacking in males.

### *Interrelationship between Ethiopian and Oriental genera of the tribe*

The African species of this tribe have been divided in this paper into 6 genera. Only one of them, *Oxyjoppa* Cameron, is represented by an exactly typical species in the Oriental region also (unnamed species from Java in C.G.H. II.), while three further African genera have similar and closely related, but not quite identical counterparts in Asia: *Epijoppa* Morley corresponding somewhat to *Charitojoppa* Cameron from the Oriental region, *Tosquinetia* Ashmead to *Xenojoppa* Cameron from the Oriental region, and *Compsophorus* Saussure to *Habrojoppa* Cameron. All three Oriental genera can be distinguished from their Ethiopian counterparts by the sculpture and structure of the propodeum and/or thorax, and should therefore, I think, be considered distinct genera, as in this extraordinarily homogeneous tribe differences in sculpture seem to offer the best generic characters.

### Key to the genera of *Compsophorini*

1. Abdomen of females nearly parallel-sided, elongate, in dorsal view apically truncate, amblypygous; apices of tergites 2 and 3 more or less extensively smooth, with scattered punctures only (fig. 104). (The type species is the largest of the tribe, more than 20 mm long; males unknown.) ..... 39. *Pyramidamblys*, new genus
- Abdomen of females normal, longish-oval to broad-oval, apically not truncate, semiamblypygous; tergites 2 and 3 coarsely rugose-punctate to the apex. 2
2. Scutellum pyramidal in both sexes. .... 38. *Epijoppa* Morley 3
- Scutellum not pyramidal in females, sometimes in males.
3. Median lobe of mesoscutum medially depressed in front and distinctly bipartite (fig. 90); second sternite predominantly membranous, its sclerotization reduced to small, oddly shaped plates. (Scutellum simply convex in both sexes; apical white bands on abdomen extensive, in females on tergites 4-7.) ..... 34. *Compsophorus* Saussure
- Median lobe of mesoscutum not bipartite; second sternite more extensively, usually predominantly sclerotized. .... 4
4. Frons in females and trough behind collare in both sexes strongly transversely rugose (figs. 88, 89); mesoscutum coarsely, densely, and irregularly rugose-punctate throughout, without any indication of smooth longitudinal bands. (Scutellum simply convex in both sexes; second and third tergites coarsely rugose-punctate, without striation except between gastrocoeli; at least the second tergite always with white or yellow apical band.) ..... 35. *Oxyjoppa* Cameron
- Frons and trough behind collare in both sexes smooth, exceptionally weakly and irregularly rugose; mesoscutum with smooth longitudinal bands at least on outer lobes, usually on all three lobes. .... 5
5. Area superomedia and areae superoexternae coarsely and irregularly rugose; in females scutellum with one or several transverse rugae from side to side at apex above declivity (fig. 91); in males the lamelliform lateral carinae of scutellum strongly produced apically, as in the Oriental *Eccoptosage* Kriechbaumer (fig. 92). (Areae coxales obsolete; small species of 9-11 mm length.) ..... 36. *Eccptosagellus*, new genus
- Area superomedia usually smooth, rarely rugose; areae superoexternae at least in part longitudinally rugose; in females scutellum convex, without apical transverse rugae from side to side; in males scutellar carinae not projecting apically, scutellum gibbose to pyramidal. (Areae coxales distinct, except in *hildegardae* group; on the average larger species, except *hildegardae* group.) ..... 37. *Tosquinetia* Ashmead

### 34. Genus *Compsophorus* Saussure

Figs. 81-83, 90

*Compsophorus* Saussure, 1890, Grandidier Hist. Phys. Nat. Polit. Madag., XX, pl. XIII, figs. 9 and 9a (figures without description).

*Compsophorus* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 33 and pl. IV, fig. 28 (scutellum), pl. V, fig. 31 (propodeum).

*Type species.*—*Compsophorus mirandus* Saussure, monobasic.

#### Distribution

Madagascar.

#### Preamble

In this paper, the definition of the genus *Compsophorus* is changed considerably from my interpretation given loc. cit 1938. According to the new concept, only those species are included in the genus which have a medially distinctly depressed and thus bipartite median lobe of the mesoscutum (fig. 90), a predominantly membranous second sternite with strongly reduced, irregularly shaped sclerotized plates, and a simply convex scu-



tellum in both sexes. Under this restriction the genus is confined to the fauna of Madagascar and the distinction of the Oriental genus *Habrojoppa* Cameron is maintained. The combination of the following seven characters distinguishes the genus *Compsophorus* from the rest of the tribe:

1. Median lobe of mesoscutum medially depressed in front and clearly bipartite.
2. Second sternite membranous, with comparatively very small, irregularly shaped sclerotized plates.
3. Scutellum not pyramidal either in females or in males.
4. Tergites 2 and 3 without prominent longitudinal striation (except on space between gastrocoeli).
5. Entire propodeum, including area superomedia, *irregularly*, coarsely, and densely rugose.
6. Carination of propodeum fairly complete, including costulae, but lacking carinae coxales (details below).
7. Frons below ocelli and trough behind collare not fairly strongly rugose and striate.

Characters 1, 2, and 7 separate *Compsophorus* from the otherwise closely related genus *Oxyjoppa* Cameron. The genus *Tosquinetia* Ashmead is linked with *Compsophorus* by a group of three unusually small species from the African Continent (*hildegardae* group) which is in some respects intermediate between the two genera. Only characters 1, 2, and 4 separate *Compsophorus* from this group and characters 1 and 2 alone from its species *instriata*, new species. The overwhelming majority of the *Tosquinetia* species can, however, easily be distinguished from *Compsophorus* by characters 1-2 and 4-6.

#### *Morphological characters*

*Flagellum*.—As described for the tribe; long.

*Head*.—As described for the tribe; frons not distinctly transversely striate.

*Thorax*.—As described for the tribe; collare with rather extended, backward-directed lamella, with narrow, fairly deep median emargination; median lobe of mesoscutum medially depressed and thus distinctly bipartite; no distinctly raised exterior carina on lateral lobes running parallel to exterior bordering carina of mesoscutum; scutellum convex, more strongly in males than in females, dorsally very coarsely reticulate-rugose; propodeum and carination as described in preamble; area superomedia in front not quite contiguous to postscutellum, but separated from it by a narrow basal furrow; area superomedia longer than wide, approximately parallel-sided, with costulae beyond middle, narrowed from costulae toward base of area posteromedia; carinae coxales obsolete; mesopleura with fairly deep transverse depression below speculum.

*Legs*.—As described for the tribe; coxae III of females with only a small or indistinct apical protrusion on inner side (fig. 83).

*Wings*.—As described for the tribe; clear.

*Abdomen*.—As described for the tribe; tergites 2 and 3 not aciculate (except space between gastrocoeli) but coarsely rugose-punctate; second sternite predominantly membranous, as is nearly the interior half of third sternite.

# Key to the species and subspecies of *Compsothorus* Saussure

## Females and Males

1. ♀♀ ..... 2  
 ♂♂ ..... 4
2. Sclerotized plates on second sternite deep black; head with only frontal and upper facial orbits white; coxae III apically on inner side scarcely protruding. (Tergites 4-7 with broad apical white bands; basic color of entire abdomen blue-black; length 11-13 mm.) ..... 1. *mirandus* Saussure. ♀  
 Madagascar
- Sclerotized plates on second sternite fulvous, inconspicuous; head with entire clypeus, face, cheeks, and frontal and vertical orbits, white; coxae III with rather distinct apical protrusion on inner side (fig. 83). (Tergite 4 with medially interrupted apical white band, tergites 5-7 with continuous ones; basic color of tergites 1-3 ferruginous, varying geographically to purplish-blue; length 13-15 mm.) ..... 2. *seyrigi* Heinrich, ♀ 3  
 Madagascar
3. Tergites 1-3 ferruginous, rarely the first tergite infuscated. .... 2a. *seyrigi seyrigi* Heinrich  
 Madagascar: Rogez, Betroka
- Tergites 1-3 black with slight purplish-blue tinge. .... 2b. *seyrigi subviolaceus* Heinrich  
 Madagascar: Montagne d'Ambre
4. Sclerotized plates on second sternite deep black; tarsi III evenly infuscated; outer orbits without white. (Tergites 4-7, usually only 5-7, with apical white bands; length 11-13 mm.) ..... 1. *mirandus* Saussure, ♂  
 Madagascar
- Sclerotized plates on second sternite fulvous, inconspicuous; segments 1 (apex) to 5 of tarsi III pale orange to yellowish. (Tergites 6-7, or only 6 and 7, with apical white bands; length 13-15 mm.) ..... 2. *seyrigi* Heinrich, ♂  
 Madagascar

## 1. *Compsothorus mirandus* Saussure

Fig. 90

*Compsothorus mirandus* Saussure, 1890, Grandidier Hist. Phys. Nat. Polit. Madag., XX, pl. XIII, figs. 9 and 9a.

*Compsothorus mirandus* Heinrich, 1938, Mém. Acad. Malg., XXV, pp. 33-34, ♀ ♂. (Description).

## Types

*Holotype*.—♀, "Madagascar, Grandid." M.N.H.N. (Most of the abdomen destroyed by dermestids).

## Distribution

Madagascar: Anivorano, Rogez, Andreba, Sihanaka, Fianarantsoa, Montagne d'Ambre (Heinrich, loc. cit.).

## Preamble

In this species (as in the other forms of the genus) the median lobe of the mesoscutum is medially depressed in front and thus distinctly bipartite; coxae III with only a minute, indistinct protrusion apically on inner side; frons below lower ocellus with at the most faint vestiges of transverse rugosity; collare lamelliform, with fairly deep median emargination.

## Female

Head and thorax ferruginous-red, frontal orbits with upper facial orbits broadly white; black are: middle of frons broadly, ocellar region

and sometimes occipital region; abdomen blue-black, apical margins of tergites 1 and 2 reddish; white are gastrocoeli and wide apical bands on tergites 4-7; legs ferruginous, partially infuscated; flagellum black, with dorsal white annulus; length 11-13 mm.

*Flagellum*.—Structure as described for the tribe; with 42-43 segments, the first nearly 3.5 times as long as wide, the 12th approximately square, the widest scarcely wider than long. Black, with dorsal white annulus on segments 5 (apex) or 6 to 13 or 14 or 15 (base); scape black, ventrally reddish.

*Head*.—Structure as described for the tribe; occiput behind ocellar region with rather pronounced depression; face, clypeus, and lower part of cheeks fairly strongly and densely punctured; frons smooth. Ferruginous-red; frontal orbits up to lower ocellus and upper facial orbits broadly white; the following black: middle of frons, ocellar region, and sometimes occipital region behind ocelli, rarely face partially.

*Thorax*.—Structure as described for the tribe; median lobe of mesoscutum distinctly bipartite in front; collare lamelliform, with fairly deep median emargination (fig. 90); scutellum with high lateral carinae, convex, sloping down in a gradual curve toward postsutellum, dorsally very coarsely reticulate-rugose; propodeum coarsely irregularly rugose all over; carination as described for the genus. Uniformly ferruginous-red; rarely base of propodeum infuscated.

*Legs*.—Coxae III simple, with only a faint indication of a projection on apex of inner side. Ferruginous; the following more or less intensely infuscated: coxae III dorsally in part, trochanters III partially, tibiae II dorsally, tibiae III predominantly, sometimes femora II dorsally and femora III partially; tarsi blackish.

*Wings*.—Nervellus postfurcal, areolet rhomboidal or almost so; radius sinuate. Clear.

*Abdomen*.—Postpetiole with scattered punctures, medially with some longitudinal striae; distance from outer end of thyridia to base of second tergite about equal to width of thyridia; space between gastrocoeli narrower than one of them, densely aciculate; second and third tergites separated by a pronounced suture, very coarsely and densely rugose-punctate, the second tergite apically scarcely as wide as medially long. Blackish-blue, the gastrocoeli whitish, tergites 1 and 2 with reddish apical margins, 4-7 with broad white apical bands; sternites 1-4 membranous and white, the second sternite with foot-shaped, sclerotized black part, about exterior half of fourth sternite sclerotized and black, the following sternites black with white apical margins.

### Male

*Scutellum* slightly more convex than in female; clypeus and face uniformly white; apical white band on fourth tergite reduced to lateral marks or entirely missing, only exceptionally present; otherwise as female.

*Flagellum*.—Structure as described for the tribe; with 42 segments. Black, including scape, with dorsal white annulus on segments 11 (apex) or 14 to 21 or 23 (base).

## 2. *Compophorus seyrigi* Heinrich

Figs. 81-83

### Distribution

Madagascar: Rogez, Betroka, and Montagne d'Ambre.

### Preamble

In structure and sculpture this species is nearly identical with *mirandus* Saussure, differing only by the slightly less coarsely rugose-punctate third tergite and by a slightly stronger protrusion on the inner side of apex of coxae III in females (fig. 83). It is larger, however, and distinguished significantly by chromatic characters described below.

### Female

Head predominantly white, with an infuscated line on each side of median field of face and with the middle of frons, ocellar region, and entire occipital region black, the latter color reaching on temples to the very border of eyes; thorax uniformly ferruginous; abdomen ferruginous, tergites 4-7 black, the fourth with medially more or less broadly interrupted apical white band, tergites 5-7 with complete apical white bands; ferruginous basic color of tergites 1-3 varying geographically to purplish-blue; legs ferruginous, tibiae and tarsi more or less infuscated; flagellum black, with dorsal white annulus; length 13-15 mm.

**Flagellum.**—Structure as in *mirandus*; with 42 segments. Black, with dorsal white annulus on segments 5 (apex) or 7 to 14; scape ventrally reddish.

**Head.**—Structure as described for the tribe; occiput behind ocellar region with rather pronounced depression; malar space slightly longer than width of mandible base; face, clypeus, and lower cheeks moderately strongly and moderately densely punctured, frons smooth. The following white: clypeus, face, frontal orbits broadly up to temple region, malar space, and cheeks (except pale-ferruginous or black posterior stripe) up to temple region; black are: frons between white orbital bands, ocellar region, occiput, and temple region; two longitudinal blackish lines on face, bordering the median field on each side.

**Thorax.**—Structure as described for the tribe; collare with medially emarginate lamella; mesoscutum densely and coarsely rugose-punctate, the median lobe in front as distinctly bipartite as in *mirandus*; scutellum strongly convex, very coarsely reticulate-rugose, with high lateral carinae, its lateral and apical slopes with some longitudinal ribs; propodeum coarsely irregularly rugose; carination as described for the genus. Uniformly ferruginous.

**Legs.**—Projection on inner side of apex of coxae III somewhat more distinct than in *mirandus*. Ferruginous; tarsi brown to blackish-brown; tibiae dorsally slightly to moderately infuscated.

**Wings.**—Nervulus interstitial or postfurcal; areolet with intercubiti almost coalescent in front; radius sinuate. Clear.

**Abdomen.**—Postpetiole with scattered punctures, medially longitudinally striate; gastrocoeli and sculpture of second tergite as in *mirandus*, the third tergite less coarsely rugose-punctate; second tergite medially somewhat longer than apically wide. Basic color of tergites 1-3 varying geo-

graphically from ferruginous to blackish with purplish-blue tinge; tergites 4-7 black, the fourth with medially interrupted white band, the fifth to seventh with continuous apical white bands; sternites as in *mirandus*, but the second sternite without black sclerotized part.

#### Male

Scutellum more strongly convex than in female; face uniformly white; white bands on abdomen restricted to tergites 5-7 or 6 and 7; the three lobes of mesoscutum usually with longitudinal infuscated bands, sometimes also propodeum partially infuscated; all tarsi between apex of metatarsus and fifth segment pale orange to yellowish; otherwise as in female.

Flagellum.—Structure as described for the tribe; with 42-43 segments. Black, with complete white annulus on segments 12-22 or 24; scape ventrally white-marked.

### 2a. *Compsophorus seyrigi seyrigi* Heinrich

*Compsophorus seyrigi* Heinrich, 1938, Mém. Acad. Malg., XXV, pp. 34-35, ♀ ♂.

#### Types

Holotype.—♀, "Madagascar, Rogez, 600 m, I.-II.1931, leg. A. Seyrig." C.G.H. I. (Most of abdomen destroyed by dermestids.)

Allotype.—♂, same locality, XI.-XII.1931. C.G.H. II.

Paratypes.—1 ♀, same data as holotype. C.G.H. I.; 1 ♀, Madagascar, Fanovana, V.1932, leg. A. Seyrig. C.G.H. II.

#### Distribution

Madagascar: Rogez (type locality), Betroka.

#### Female and Male

Tergites 1-3 ferruginous, rarely the first tergite partially infuscated.

### 2b. *Compsophorus seyrigi subviolaceus* Heinrich

*Compsophorus seyrigi* subspecies *subviolaceus* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 35, ♀ ♂.

#### Types

Holotype.—♀, "Madagascar, Diego Suarez, Montagne d'Ambre, 900 to 1100 m, 20.-26.I.34, leg. A. Seyrig." C.G.H. I.

Allotype.—♂, same locality and date. C.G.H. II.

#### Distribution

Madagascar: Montagne d'Ambre.

#### Female and Male

Tergites 1-3 black, with slight purplish-blue tinge; gastrocoeli, apical margin of second tergite, and basal and apical margin of the third dull yellowish-white.

### 35. Genus *Oxyjoppa* Cameron

Figs. 87-89

*Oxyjoppa* Cameron, 1906, Ann. S. Afr. Mus., V, p. 169.

*Oxyjoppa* Heinrich, 1933, Mitt. Zool. Mus. Berlin. XIX, p. 162. (*Oxyjoppa* Cameron synonymized with *Compsophorus* Saussure.)

Type species.—*Oxyjoppa flavobalteata* Cameron, monobasic.

#### Distribution

Most records from South Africa; also Uganda, Kenya, and Sierra Leone. Java (C.G.H. II.).

#### Preamble

The type species belongs to a small group of forms distinguished by a combination of a number of structural characters different from all other species of the tribe. This group shares with *Compsophorus* Saussure the densely, irregularly rugose sculpture of the entire propodeum and the convex, not pyramidal, scutellum in both sexes. Although it certainly could not be united with any other taxonomic group of the *Compsophorini*, it would be possible to incorporate it in the genus *Compsophorus* as I did loc. cit. 1938. Having now a broader knowledge of the enormous number and variety of African forms of this tribe, I feel that the group represented by *Oxyjoppa flavobalteata* Cameron should be reestablished as a distinct genus closely related to, but nevertheless different from *Compsophorus*.

The following characters distinguish *Oxyjoppa* from *Compsophorus*:

1. Second sternite predominantly, the third fully sclerotized.
2. Collare without backward-bent lamella; the transverse trough between collare and frontal slope of pronotum not smooth, but with strong, parallel striae and rugae in both sexes (figs. 88, 89); in females frons with parallel, transverse rugae also.
3. Flagellum in both sexes comparatively short (by abbreviation of segments not by reduction of their number), in females the first segment not longer than the second, in males the third or fourth segment already square.
4. Structure of head as described below.
5. Head and thorax, particularly propodeum, densely pilose.

#### Morphological characters

**Flagellum.**—Structure as described for the tribe, but in both sexes shorter than normal for the tribe; in females the first segment not longer than the second; in males all segments abbreviated, the third or fourth already square.

**Head.**—Structure as described for the tribe; eyes comparatively small, cheeks in lateral view comparatively very wide, malar space long, face and clypeus convex; frons with distinct transverse rugae.

**Thorax.**—Structure as described for the tribe; median lobe not bipartite in front; mesoscutum anteriorly more convex than in *Compsophorus*, strongly and densely irregularly rugose, without smooth longitudinal bands; collare without backward-extended lamella; trough behind collare obliquely and regularly striate and rugose, the striae and rugae converging from both sides of collare toward the middle of the trough, or else slightly curved and extending parallel to each other from side to side (figs. 88, 89);

scutellum rather strongly convex and very coarsely reticulate-rugose; propodeum coarsely and irregularly rugose, with carination (somewhat indistinct by coarse sculpture) similar to *Compsophorus*; mesopleura with long, deep transverse depression below polished speculum.

*Legs*.—Coxae III of females with moderate protrusion on inner side of apex (fig. 87); femora slender.

*Wings*.—Nervulus usually postfurcal; areolet strongly narrowed in front, intercubiti nearly coalescent; radius sinuate; clear.

*Abdomen*.—Of females fairly narrow and pointed toward apex in dorsal view, semiamblypygous; postpetiole moderately wide, sparsely punctured, longitudinally striate in the middle, gastrocoeli triangular, each wider than the space between them, which is densely aciculate; tergites 2 and 3 strongly sclerotized, densely and coarsely rugose-punctate; sternites normally sclerotized, sternites 1-2 or 1-3 with plica.

### Key to the species of *Oxyjoppa* Cameron

#### (Females only)

1. Tergites 3-7 ferruginous-red; 5-7 without white apical bands. (Second tergite with yellow apical band, basally black; length 13 mm.) ..... 1. *flavobalteata* Cameron  
Natal
- Tergites 2-7 black or blackish-blue, tergites 5-7 with laterally abbreviated apical white bands. (Tergites 2 or 1-2 with continuous apical white bands; length 13-14 mm.) ..... 2
2. Femora and first segment light ferruginous-red. .... 2. *insueta* (Tosquinet)  
Sierra Leone
- Femora and first segment of abdomen black. (Propodeum metallic blue or red, head black or red, or black with red frons, vertex, and occiput.) ..... 3. *thoracica* Morley  
Uganda, Kenya, Natal, southeastern  
Cape Province

#### 1. *Oxyjoppa flavobalteata* Cameron

*Oxyjoppa flavobalteata* Cameron, 1906, Ann. S. Afr. Mus., V, p. 170, ♀.

#### Types

*Lectotype*.—♀, "Natal, Estcourt". B.M. No. 3b-82. By present designation.

*Paratype*.—1 ♀, "Natal, Estcourt". S.A.M. Both types are without abdomen.

#### Distribution

Natal (type locality).

#### Preamble

Similar in structure to *thoracica* Morley, but not only differing strikingly in color, but also in relatively shorter basal segments of flagellum.

#### Female

Ferruginous-red, the thorax with some black parts; tergites 2 and 3 basally extensively black; second tergite tricolored: basally black, with continuous apical yellow band, red between black base and yellow band;

legs dark red, tibiae and tarsi III blackish; flagellum tricolored, basally ferruginous, with yellowish-white annulus, apically black; length 13 mm.

*Flagellum*.—Structure as described for the genus. Segments 1-7 ferruginous, 8-12 dorsally yellowish, apex black.

*Head*.—Structure as described for the genus; frons transversely striate with longitudinal median ridge; clypeus and face fairly densely and strongly punctured, vertex weakly punctured and shiny. Ferruginous-red.

*Thorax*.—Structure as described for the genus; apical slope of scutellum and the postscutellum irregularly longitudinally striate; upper half of propleura closely, obliquely striate, the lower half closely punctured. Ferruginous-red; the following black: middle of pronotum (behind collare), median lobe of mesoscutum in front, basal, apical, and lower lateral parts of propodeum, base of prosternum, mesosternum predominantly.

*Legs*.—Dark red; tibiae and tarsi III blackish.

*Wings*.—As described for the genus.

*Abdomen*.—Structure as described for the genus; postpetiole strongly and sparsely punctured. Ferruginous-red; about basal  $\frac{3}{4}$  of the second tergite and basal half of the third black; second tergite with continuous apical yellow band, red between black base and yellow apical band.

## 2. *Oxyjoppa insueta* (Tosquinet), new combination

*Amblyteles insuetus* Tosquinet, 1896, Mém. Soc. Ent. Belg., V, p. 91, ♀.

*Physcoteles insuetus* Berthoumieu, 1904, Gen. Ins. XVIII, p. 52, ♀.

### Types

*Holotype*.—♀, "Sierra Leone." I.R.S.N.

### Distribution

Sierra Leone.

### Female

*Head, thorax, legs* (except infuscated tarsi II and III and apex of tibiae III), and first segment of abdomen uniformly light ferruginous; tergites 2-7 metallic blue, tergites 1 and 2 with continuous apical white bands, tergites 5-7 with laterally abbreviated medio-apical white bands; flagellum blackish with white annulus; length 14 mm.

*Flagellum*.—Structure as described for the tribe; with 42 segments, the first about 3 times as long as wide, the 9th approximately square, the widest scarcely wider than long. Black, scape red, segments 1-6 dull reddish, segments 7-11 with dorsal white annulus.

*Head*.—Structure as described for the tribe; frons, clypeus, face and lower cheeks fairly strongly, though not densely, punctured; frons obliquely transversely rugose on each side, as in *thoracica* Morley, but not quite as strongly; malar space much longer than width of mandible base, cheeks in lateral view very wide. Light ferruginous-red.

*Thorax*.—Structure as described for the tribe and genus. Ferruginous-red; mesoscutum with two longitudinal median blackish lines.

*Legs*.—Dull red, tibiae III toward apex and tarsi II infuscated, tarsi III blackish-brown.



*Wings*.—As described for the genus.

*Abdomen*.—Structure as described for the genus; first segment ferruginous-red, the following tergites bluish-black; tergites 1-2 with apical white bands, tergites 5-7 with laterally abbreviated apical white bands.

### 3. *Oxyjoppa thoracica* (Morley)

Figs. 84-86. 89

*Charitojoppa thoracica* Morley, 1917. Ann. S. Afr. Mus., XVII. p. 200, ♂.

*Epijoppa striatifrons* Morley, 1919. Proc. Zool. Soc. London. p. 121, ♀; new synonymy.

*Charitojoppa thoracica* Morley, 1926. Ann. S. Afr. Mus., XXIII, pp. 442-443, ♀.

*Compsophorus albifasciatus* Heinrich, 1935. Mission Scient. de l'Omo, III, pp. 230-231, ♂; new synonymy.

#### Types

*Holotypes*.—*Charitojoppa thoracica* Morley, ♂, "Mfongosi, Zululand, leg. W. E. Jones, May 1916". S.A.M.; *Epijoppa striatifrons* Morley, ♀, "Uganda, Entebbe, 1.-11. Sept. 1911, S. A. Neave". B.M. No. 3b-93;

*Compsophorus albifasciatus* Heinrich, ♂, Nakuru, Rift Valley, 1904, Ch. Alluaud." M.N.H.N.

*Neallotype*.—*Charitojoppa thoracica* Morley, 1926, ♀, "Mfongosi, Zululand, March + April 1917." S.A.M.

#### Distribution

Natal: Zululand (type locality); Uganda (type locality *Epijoppa striatifrons* Morley); Kenya: Nakuru (type locality *Compsophorus albifasciatus* Heinrich); southeastern Cape Province: Grahamstown (C.G.H. II.).

#### Preamble

Closely related to *flavobalteata* Cameron and even more similar to *insueta* Tosquinet. Differs from the former species by metallicblue basic color of entire abdomen, presence of apical white bands on tergites 5-7, and by slightly more elongate basal segments of flagellum of female. Differs from *insueta* by black basic color of legs and first tergite, and by usually not uniformly ferruginous head and thorax.

#### Female

*Head* black in type, with red frons, vertex, and occiput; *thorax* red with some black parts, *propodeum* usually metallic blue; *abdomen* metallic blue, tergites 1 and 2 with continuous apical white bands, tergites 5-7 with laterally abbreviated apical white bands; *legs* predominantly black; *flagellum* black, with dorsal white annulus; length 13-14 mm.

*Flagellum*.—Structure as described for the genus; with 44-46 segments, the first about 3 times as long as wide and not longer than the second, the 10th square, the widest about 1.5 times as wide as long. Black, including scape, with dorsal white annulus on segments 8-12 or 13.

*Head*.—Structure as described for the tribe and genus; face, clypeus, and cheeks densely and moderately strongly punctured; the excavated part of frons, from lower ocellus down to antennal sockets, covered by distinct parallel transverse rugae, which are slightly curved downward toward the sides; cheeks behind middle of eyes in lateral view approximately twice as wide as median lateral diameter of eyes. Black, including

body of mandibles; in type specimen occiput, vertex, and most of frons red; sometimes head uniformly black.

*Thorax*.—Structure as described for the genus; trough behind collare covered by strong, regular, slightly curved rugae running from side to side. Ferruginous-red: propodeum usually metallic blue; the following black: anterior part of pronotal base, prosternum, middle of prepectus and the mesosternum almost entirely; tegulae infuscated; rarely propodeum red.

*Legs*.—Structure as described for the genus; apical projections on coxae III fairly distinct (fig. 86). Black, coxae II and III dark metallic blue; apical margin of trochanters I dorsally white.

*Wings*.—As described for the genus; nervulus rather strongly postfurcal.

*Abdomen*.—As described for the genus. Basic color metallic blue-black, on apical tergites black; postpetiole usually with narrow apical white band, second tergite always with broader, continuous apical white band; tergites 5-7 with laterally abbreviated, narrow apical white bands.

### Male

*Frons not transversely striate: head black with white markings; thorax restrictedly white-marked; legs extensively white; third tergite also with continuous apical white band; flagellum without annulus; otherwise as in female.*

*Flagellum*.—With 41 unusually short, distinctly nodose segments; the 4th already approximately as long as wide. Ferruginous; scape, pedicel, segment 1 or 1 and 2, and also the apex of flagellum infuscated.

*Head*.—Black; white are: base of mandibles, sides of face broadly, frontal orbits somewhat less broadly nearly up to lower ocellus; temple region sometimes red.

*Thorax*.—Ferruginous-red, propodeum metallic blue-black; black markings as in female, in addition pronotum extensively to predominantly black; the base of median lobe of mesoscutum sometimes infuscated; whitish are: apical border of scutellum and postscutellum narrowly, subalarum, and mark on tegulae.

*Legs*.—Dorsally white are: tarsi and tibiae I and II, tips of all femora, and the very base of tibiae III; rest of tibiae and tarsi brownish; femora and trochanters black or blackish; coxae as in female.

*Abdomen*.—Apical white bands on tergites 5-7 broader than in females; third tergite also with continuous apical white band; gastrocoeli sometimes dull whitish.

### Variation

Along with typical females of this species in Natal, a few specimens have been found (S.A.M. and C.G.H. II.), which are distinguished by entirely ferruginous-red head and propodeum, but not appreciably differentiated from typical *thoracica* in structure. In the red-headed female at hand, the rugosity of the trough behind collare shows a pattern somewhat different from black-headed females, and the protrusion on apex of coxae III is slightly less prominent. Both differences may well lie within the limits of individual variability. I presume therefore that this

species occurs in melanistic and erythristic phases rather than that these are two distinct sympatric sibling species. The matter needs further attention.

### 36. Genus *Eccoptosageflus*, new genus

Figs. 91, 92

*Type species.*—*Eccoptosagellus androplites*, new species

#### *Distribution*

Northwestern Angola; Spanish Guinea.

#### *Preamble*

The most striking character of this genus is evident only in the males. While the scutellum of the female (fig. 91) is roundly convex as in *Compsophorus* Saussure or *Tosquinetia* Ashmead (fig. 93), the scutellum of the male shows a highly specialized structure, almost identical with that of the Oriental genus *Eccoptosage* Kriechbaumer, but unique in the tribe Compsophorini (fig. 92). This type and degree of sexual dimorphism in scutellar structure is very unusual and may in itself be considered a generic character. In the dense, irregular rugosity of the entire propodeum, including the elongate area superomedia, and in the obsolete carinae coxales the female agrees with the genus *Compsophorus*, but the median lobe of the mesoscutum is not bipartite in front and the third sternite is nearly entirely sclerotized.

#### *Morphological characters*

*Flagellum.*—As described for the tribe.

*Head.*—As described for the tribe.

*Thorax.*—Collare with fairly conspicuous, medially deeply emarginate lamella; mesoscutum coarsely and densely irregularly rugose; median lobe of mesoscutum not bipartite in front; the three smooth longitudinal bands distinct; exterior longitudinal carina on lateral lobes weakly developed; scutellum of females dorsally moderately convex, strongly punctured, with lamelliform lateral carinae and with transverse, apical ruga or rugae from side to side; the scutellum of males with still higher lateral carinae, which ascend slightly from base to apex and which project very strongly beyond the apex of the scutellum, the latter being depressed and emarginate medio-apically (fig. 92); propodeum densely, irregularly rugose, including area superomedia, the latter elongate, comparatively narrow; costulae and carinae coxales obsolete; propleura regularly transversely striate, mesopleura longitudinally striate above and before speculum.

*Legs.*—Coxae III of females simple; tarsi III slender and elongate.

*Wings.*—Nervulus postfurcal; areolet rhomboidal; radius sinuate; basally clear, with slight apical cloud.

*Abdomen.*—Postpetiole aciculate; broad median part of second and third tergites to beyond middle strongly aciculate; second sternite extensively membranous, the third predominantly sclerotized, only the plica membranous.

*Eccoptosagellus androplites*, new species

Figs. 91, 92

## Types

*Holotype*.—♂, "Roça Canzele. Angola, 30 km nördl. Quiculungo, 25.III. 55." C.G.H. II.

*Allotype*.—♀, same data. C.G.H. II.

*Paratypes*.—3 ♀♀, 2 ♂♂, same locality, March 1954 and 1955. C.G. H. II.: 1 ♀, 1 ♂, Spanish Guinea. Z.M.H.U.

## Distribution

West Africa: northwestern Angola and Spanish Guinea.

## Female

Head black with a white mark near inner orbits at exterior sides of antennal sockets; thorax red, with blue-black propodeum and black sterna; legs black, coxae III, blue-black, tibiae and tarsi I and II brownish; abdomen blue-black, tergites 4-7 black, 5-7 with broad apical white bands; wings with slight apical cloud; flagellum black with white annulus; length 9-11 mm.

*Flagellum*.—Structure as described for the tribe; with 35-38 segments, the first nearly 3 times as long as wide, the 14th and the widest approximately square. Deep black, including scape, with dorsal white annulus on segments 7 (apex) to 13.

*Head*.—Structure as described for the tribe. Uniformly black, with a white spot on each side of the upper facial arc (between antennal sockets and orbits); mandibles medially brown.

*Thorax*.—Structure as described for the tribe and genus. Red, with blackish-blue propodeum; the following black: pronotal base partially, mesosternum, prosternum, prepectus along mesosternum and in the middle.

*Legs*.—Black; coxae III blue-black; tibiae I and II light brownish, tarsi I and II blackish-brown, usually also femora and trochanters I and II brown-tinged.

*Wings*.—As described for the genus.

*Abdomen*.—Structure as described for the genus; color as described above.

## Male

Scutellum as described for the genus; flagellum without annulus; facial orbits broadly white, the white band extending downward to beyond lower end of eyes and upward, gradually tapering, to about middle of frontal orbits; otherwise as in female.

**37. Genus *Tosquinetia* Ashmead**

Obba Tosquinet, 1896, Mém. Soc. Ent. Belg., V, p. 105; (preocc.).

*Tosquinetia* Ashmead, 1900, Can. Ent., XXXII, p. 368; (new name for *Obba* Tosquinet. preocc.).

*Tosquinetia* Heinrich, 1938, Mém. Acad. Malg., XXV, pp. 36-37.

*Type species*.—*Obba caelatus* Tosquinet; monobasic.

## Distribution

Africa south of the Sahara and Madagascar.

### Preamble

This genus comprehends the majority of the African forms in the tribe. In typical species it is distinguished mainly by the large and often polished area superomedia, contiguous in front to the postscutellum, combined with a simply convex scutellum, at least in females. Additional distinctive characters are: costulae obsolete or subobsolete; carinae coxales more or less distinct, often sharply prominent; the space of the areae superoexternae, as a rule, rather regularly longitudinally striate, which sculpture may also extend over the area superomedia; the mesoscutum tending to develop a more or less prominent carina or ridge parallel to the exterior bordering carina of the mesoscutum (in continuation of the prescutellar carinae); coxae III of females tending to develop a prominent carina or tooth-like projection apically on inner side.

### Morphological characters

*Flagellum*.—As described for the tribe.

*Head*.—As described for the tribe.

*Thorax*.—Generally as described for the tribe; collare with or without a considerable, backward-bent, medially emarginate lamella; mesoscutum fairly flat, very coarsely rugose, each lobe with more or less distinct smooth longitudinal band, the lateral lobes with a lateral longitudinal carina, running parallel to exterior bordering carina of mesoscutum; scutellum often rather strongly raised above postscutellum, but in females merely convex, not pyramidal, in males more strongly raised than in females and sometimes pyramidal; space of areae superoexternae regularly longitudinally rugose, the area superomedia at least medially projecting and contiguous to postscutellum, usually polished and rather wide, sometimes longer than wide, sometimes longitudinal rugosity on areae superoexternae extending over area superomedia; costulae obsolete or rather indistinct, the areae coxales distinct; mesopleura flat, not or scarcely depressed below speculum, usually more or less extensively longitudinally striate.

*Legs*.—As described for the tribe; coxae III of females tending to develop protrusions or projections of various degrees ventrally on inner side at apex.

*Wings*.—As described for the tribe; usually clear, in type species and a few other species with infuscated bands, rarely uniformly infuscated.

*Abdomen*.—As described for the tribe; second and third tergites always extensively and strongly longitudinally aciculate; second sternite predominantly (except middle, base, and apex), the third entirely sclerotized; plica on sternites 1-3.

### Remarks

Three small species, the smallest of the tribe, only 8-10 mm long, do not agree completely with the diagnosis of the genus as given above. They are, nevertheless, included (at the end of the genus), as the differences do not seem important enough for the erection of another genus. These species are: *hildegardae*, *minima*, and *instriata*, new species, referred to in this paper as the *hildegardae* group. For the distinctive characters, see species *hildegardae*, preamble.

Key to the species and subspecies of *Tosquinetia* Ashmead

## Females and Males

1. Thorax, including mesoscutum blue-black or green-black. (Basic color of abdomen the same.) ..... 2  
At least the mesoscutum red or ferruginous-red, often thorax more extensively so colored. .... 8
2. Abdomen without white marks. (Head, thorax, and abdomen uniformly blue-black, except orange petiole: coxae III orange; wings with deeply infuscated crossband; length 13 mm.) ..... 1. *caelata* (Tosquinet), ♀  
West Africa
- Abdomen with white marks on tergites 6 and 7, or only 7. .... 3
3. Only the seventh tergite with white band, only coxae I apically white; area superomedia irregularly rugose. (Scutellum pyramidal; length 13 mm.) ..... 4. *eucoelea* (Morley), ♂ (♀ unknown)  
Kenya: Mt. Kenya
- Tergites 6 and 7 with apical white bands, coxae I and II apically white; area superomedia smooth or almost so. .... 4
4. ♂♂. (Scutellum subpyramidal; thorax and abdomen blue-black; femora III black; wings with apical cloud; length 13 mm.) ..... 2. *corrugata* (Tosquinet) 5  
♀♀. .... 6
5. Flagellum without annulus; apical half of wings strongly infuscated; clypeus entirely black; sixth tergite with narrow white apical margin. .... 2a. *corrugata corrugata* (Tosquinet), ♂  
Togo
- Flagellum with dorsal annulus on segments 12-18; apical half of wings only moderately clouded; clypeus laterally white; sixth tergite apically broadly white. .... 2b. *corrugata angolensis*, new subspecies, ♂  
Northwestern Angola
6. Coxae III simple, their apical rim not lamelliform or protruding ventrally on interior side; femora III orange, apically black. (Thorax and abdomen blue-black; wings with fairly distinct apical cloud; collaral lamella of moderate size, with distinct median incision; sides of face and clypeus broadly white; length 13 mm.) ..... 2b. *corrugata angolensis*, new subspecies, ♀  
Northwestern Angola
- Coxae III with distinctly raised, cariniform rim ventrally on inner side, projecting a short distance onto ventral side of coxae; femora III black. (Collaral lamella conspicuous; length 16-17 mm.) ..... 7
7. Thorax and basic color of abdomen distinctly metallic green; coxae III on ventral side with very considerable, apical lamella on inner side (fig. 97) (Wings with slight apical cloud; sides of face and clypeus white; length 17 mm.) ..... 5. *viridescens*, new species, ♀  
Togo
- Thorax and basic color of abdomen dark metallic blue; coxae III with only very slightly raised interior apical rim on ventral side, the raised carina extending a short distance onto ventral side of coxae (fig. 94). (Wings with slight apical cloud; facial orbits without white; length 16 mm.) ..... 3. *micans* (Tosquinet), ♀  
Congo, Spanish Guinea
8. Basic color of at least tergites 1-4, sometimes of the entire abdomen, ferruginous. (Area superomedia usually partially to entirely rugose; collaral lamella inconspicuous, with small median emargination.) ..... 9  
Basic color of at least tergites 2 and 3, usually of the entire abdomen, metallic blue or metallic green. .... 17
9. ♀♀. .... 10  
♂♂. (Flagellum without annulus; mesosternum black.) ..... 15
10. Apical rim on ventral side of coxae III rather strongly raised, forming a triangle the tip of which emits a distinct carina onto ventral side of coxae (fig. 95); large species, 16-18 mm long. (Abdomen ferruginous-red, tergites 5-7 with apical white bands.) ..... 6. *triangulifer* (Morley) 11  
Coxae III simple; smaller species, 12-14 mm long. .... 12

11. Head uniformly ferruginous; area superomedia extensively or entirely smooth. .... 6a. *triangulifer triangulifer* (Morley), ♀  
Nyasaland
- Head ferruginous, with the following white: base of mandibles, sides of face, malar space, frontal and vertical orbits, and sometimes lateral marks on clypeus; area superomedia predominantly or entirely irregularly rugose. .... 6b. *triangulifer congica*, new subspecies  
Southern Congo to southern Tanganyika
12. Tergites 5-7 with broad apical white bands (sometimes even the fourth tergite apically white); femora I, sometimes I and II ventrally partially white. .... 13
- At most tergites 6 and 7 apically white; femora I and II not ventrally white-marked. (Area superomedia elongate, longitudinally rugose; mesosternum predominantly black; length 13 mm.) ..... 9. *rufa* (Szépligeti) 14
13. Polished area of speculum extending in front close to anterior border of mesopleuron; widest flagellar segment about twice as wide as long; basic color of tergites 4-7 black, as is apical half of mesosternum; femora I and II ventrally white; white are also: mandible base, mark on apex of malar space, spots on sides of clypeus, frontal and vertical orbits, coxae I and II almost entirely, apex of coxae III ventrally. (Length 12-14 mm.) ..... 8. *carinifer* (Morley), ♀  
Nyasaland
- Polished area of speculum small, scarcely reaching middle of mesopleura; widest flagellar segment scarcely wider than long; basic color of entire mesopleura and of entire abdomen red; only femora I ventrally white; white are only: frontal orbits, collaral lamella, small mark on apex of pronotal ridge, apices of coxae I and II. (Length 13 mm.) ..... 7. *pilosa* (Cameron), ♀  
Southeastern Cape Province
14. Tergites 6 and 7 with conspicuous apical white marks, the fifth with narrowly white apical margin; prosternum black, with red crossband. .... 9b. *rufa usambarica*, new subspecies, ♀  
Northern Tanganyika: W. Usambara Mts.
- Only seventh tergite with small apical white mark, the sixth with narrowly white apical margin; prosternum red, extreme base and apex black. .... 9c. *rufa merumontis*, new subspecies, ♀  
Northern Tanganyika: Mt. Meru
15. Scutellum pyramidal; large species, 15-17 mm long. (Femora I and II and coxae and trochanters I and II ventrally white; white are also: lower half of frontal orbits narrowly, sides of face broadly down to beyond clypeal foveae, base of mandibles; tergites 5-7 apically broadly white.) ..... 6a. *triangulifer triangulifer* (Morley), ♂  
Nyasaland
- Scutellum subpyramidal or gibbose; smaller species, 12-14 mm long. .... 16
16. Area superomedia smooth on anterior part; femora I ventrally white; tergites 4 or 5 to 7 with conspicuous apical white bands. (Coxae I and II ventrally white; white are also: entire frontal orbits narrowly, sides of face broadly down to beyond clypeal foveae, base of mandibles, collaral lamella, spot on apex of pronotal ridge.) ..... 7. *pilosa* (Cameron), ♂  
Southeastern Cape Province
- Area superomedia longitudinally rugose; femora I not ventrally white; only tergites 6 and 7 indistinctly whitish apically. (White are: frontal and facial orbits and mandible base.) ..... 9a. *rufa rufa* (Szépligeti), ♂  
Tanganyika: Kilimanjaro
17. Abdomen metallic blue, without white pattern. (Small species, 10 mm long; areae coxales obsolete; area superomedia elongate, about twice as long as wide; collaral lamella inconspicuous; head uniformly, mesothorax almost uniformly, red, propodeum blue-black.) ..... 16. *hildegardae*, new species, ♀  
Northern Tanganyika: Mt. Meru
- Abdomen with white pattern. .... 18

*Head*.—Structure as described for the tribe; carina genalis distinctly, though not strongly; lamelliform. Uniformly black.

*Thorax*.—Structure as described for the genus; scutellum somewhat elevated above postscutellum, only slightly convex dorsally; speculum large, extending considerably toward anterior border of mesopleura. the mesopleura above and below speculum extremely strongly longitudinally striate; also metapleura strongly obliquely-transversely striate; area superomedia somewhat elongate, approximately twice as long as wide, nearly smooth, the areae superoexternae longitudinally rugose; costulae obsolete. Uniformly blue-black.

*Legs*.—Coxae III with fairly strongly elevated longitudinal carina apically on inner side; tarsi III slightly thickened. Black, coxae III and base of trochanters III orange; anterior legs blackish-brown; tarsi III reddish, except metatarsus.

*Wings*.—Nervulus postfurcal; areolet with the intercubiti coalescent in front; radius sinuate. Clear, except for a strongly infuscated, transverse band on forewings between approximately middle of discocubital cell and anterior border of areolet.

*Abdomen*.—Structure as described for the tribe; each of the gastrocoeli about twice as wide as the space between them; postpetiole nearly smooth; entire surface of second and third tergites very strongly longitudinally striate. Blue-black, the petiole orange.

## 2. *Tosquinetia corrugata* (Tosquinet)

### *Distribution*

Togo; northwestern Angola.

### *Preamble*

This species is known only from the type specimen, a male from Togo. It is related to *caelata* Tosquinet, but rather different in color, particularly by the presence of white marks on tergites 6 and 7. I have a male and female from northwestern Angola, caught in the same locality and at about the same time; I believe that they belong to the species *corrugata*, although apparently representing a distinct subspecies.

The species is distinguished by an apical cloud on the fore-wings, blue-black general color with apical white markings on tergites 6 and 7; males with black legs III and subpyramidal scutellum, females (from Angola) with orange-red femora III with black apex and with simply convex scutellum.

*Female* (tentative, based on specimen from Angola)

Blue-black, tergites 6 and 7 with white marks; head with yellowish-white markings; legs I and II and the femora II predominantly orange-red; apices of coxae I and II white; flagellum black, with dorsal white annulus; wings moderately infuscated toward apex; coxae III without specializations; length 13 mm.

*Flagellum*.—As described for the tribe; with 40 segments, the first about 3 times as long as wide, the 14th nearly square, on the flat side all slightly longer than wide. Black, including scape, with dorsal white annulus on segments 8-15 (base).



*Head*.—Structure as described for the tribe; apex of clypeus projecting a trifle medially; face, clypeus, and lower cheeks fairly densely and moderately strongly punctured, frons polished. Black; yellowish-white are: base of mandibles, apex of cheeks at mandible base with entire malar space and broad facial orbits, frontal orbits more narrowly, sides of clypeus.

*Thorax*.—Structure as described for the tribe and genus; collaral lamella of moderate size, with rather small median incision; lateral carina of lateral lobes of mesoscutum normally developed; scutellum moderately convex, with only a few, scattered punctures and without longitudinal rugae; area superomedia scarcely longer than wide, medially projecting and contiguous to postscutellum, polished. the areae superoexternae regularly longitudinally rugose; mesopleura sharply longitudinally striate above large speculum, below it irregularly longitudinally rugose-punctate. Uniformly blue-black.

*Legs*.—Coxae without specializations. Black, coxae I and II apically white; the following orange-red: trochanters, femora, tibiae and tarsi I and II extensively, femora III (except about apical quarter); brownish-infuscated are: trochanters I and II dorsally, femora I and II on inner side (except basally), tibiae II on inner side (except medially), and tarsi I.

*Wings*.—Nervulus only slightly postfurcal; areolet with intercubiti coalescent in front. Clear, apices of forewings moderately infuscated from about ramellus on.

*Abdomen*.—Postpetiole nearly smooth; almost entire surface of second tergite and the third tergite to about middle strongly aciculate. Blue-black, sixth tergite with narrow white apical band, the seventh with apical white mark.

#### Male

*Scutellum subpyramidal; legs III entirely black; trochanters I and II black, except whitish apical margins; tarsi I and II blackish-brown; femora I and II scarcely infuscated on inner side; apex of cheeks and malar space not yellowish-white; otherwise as female. Seemingly varying geographically: lateral white marks on clypeus, white annulus on flagellum, and width of apical white margin on sixth tergite.*

#### 2a. *Tosquinetia corrugata corrugata* (Tosquinet), new combination

*Joppa corrugata* Tosquinet, 1896, Mém. Soc. Ent. Belg., p. 99, ♂.

*Pedinopelte corrugata* Berthoumieu, 1904, Gen. Ins., XVIII, p. 15, ♂.

*Epijoppa corrugata* Morley, 1915, Rev. Ichn., IV, p. 52.

#### Types

*Holotype*.—♂, "Togo, Bismarckburg, R. Büttner." Z.M.H.U. No. 26336.

#### Distribution

Togo.

#### Male

*Flagellum without white annulus; clypeus entirely black; sixth tergite with narrow apical white margin; apical half of wings strongly infuscated.*

**2b. *Tosquinetia corrugata angolensis*, new subspecies***Types*

*Holotype*.—♂, "Roça Canzele, Angola, 30 km nördl. Quiculungo, 20.III. 55." C.G.H. II.

*Allotype*.—♀, same locality, 15.IV.55. C.G.H. II.

*Distribution*

Northwestern Angola.

*Male*

*Flagellum* with dorsal white annulus on segments 12-18; *clypeus* laterally white; sixth tergite with broad apical white band; apical half of wings only slightly infuscated.

*Female* (tentative)

See description of species.

**3. *Tosquinetia micans* (Tosquinet), new combination**

Fig. 94

*Obba micans* Tosquinet, 1903, Mém. Soc. Ent. Belg., X, pp. 397-399, ♀.

*Types*

*Holotype*.—♀, "Bena Bendi, Sankuru, Congo, leg. L. Cloetens, I.95." I.R.S.N.

*Distribution*

Congo (type locality); Spanish Guinea (Z.M.H.U.).

*Preamble*

Very similar to *corrugata* Tosquinet, but larger, flagellum of females slightly widened, collaral lamella somewhat more conspicuous, scutellum coarsely irregularly rugose, and femora III predominantly or entirely black. Probably a distinct species rather than a subspecies of *corrugata*.

*Female*

Blue-black, tergites 6 and 7 with apical white marks; head with some pale yellow markings; legs I and II extensively orange-red; apices of coxae I and II white; flagellum black, with dorsal white annulus; length 16 mm.

*Flagellum*.—Structure as described for the tribe; with 45 segments, the first about three times as long as wide, as long as the second, the 12th square, the widest 1.5-2 times as wide as long. Black, with dorsal white annulus on segments 8-14.

*Head*.—Structure as described for the tribe. Black; the following pale yellow: body of mandible, small lateral marks on clypeus, frontal orbits, longitudinal band on malar space and/or its apex, in type also facial orbits broadly.

*Thorax*.—Structure as described for the tribe and genus; collare with lamella considerably widened and deeply emarginate medially; exterior lateral carina of lateral lobes of mesoscutum sharply prominent; scutellum fairly strongly convex, very coarsely irregularly longitudinally rugose and sparsely punctured; area superomedia medially projecting to-

ward postscutellum, scarcely longer than wide, smooth; costulae obsolete; areae superoexternae fairly regularly longitudinally rugose; mesopleura as in *caelata*, but part below speculum not quite so extensively and sharply transversely striate. Uniformly blue-black; sometimes white spot on apex of pronotal ridge.

*Legs*.—Femora moderately stout; coxae III without, or with only a rudimentary apico-ventral longitudinal carina (fig. 94). Black, the following orange-red: trochanters, femora and tibiae I and II, sometimes also base or basal third of femora III; tarsi I and II and sometimes apices of tibiae II brownish-infuscated; apices of coxae I and II whitish.

*Wings*.—Nervulus rather strongly postfurcal; areolet with intercubiti coalescent in front. Clear, usually slightly infuscated toward apex.

*Abdomen*.—As described for the tribe; postpetiole very finely aciculate; almost entire surface of second tergite extremely strongly, the third tergite not quite as strongly longitudinally striate. Blue-black, tergites 6 and 7 with apical white marks.

#### 4. *Tosquinetia eucoelea* (Morley), new combination

*Epijoppa eucoelea* Morley, 1915, Rev. Ichn., IV, p. 52, ♂

*Pyramidellus corrugatus eucoeleus* Heinrich, 1935, Miss. Scient. de l'Omo, III, pp. 231 to 232, ♂.

#### *Types*

*Holotype*.—♂, "S.E. slopes of Mt. Kenya, 6000-7000 ft, Feb. 3.-12.1911, S.A. Neave." B.M. No. 3b-89.

#### *Distribution*

Kenya: Mt. Kenya.

#### *Preamble*

The type specimen is a male and has a pyramidal scutellum. Until the female is known it will be uncertain whether this species belongs to *Tosquinetia* Ashmead or to *Epijoppa* Morley. As the type species agrees chromatically with the type species of *Tosquinetia*, exhibiting a combination of colors not known so far in the genus *Epijoppa*, I am including the species tentatively in the genus *Tosquinetia*.

I treated *eucoelea* Morley in 1935 (loc. cit.) as a subspecies of *corrugata* Tosquinet. The two forms are very similar indeed but knowing the complexity of this group better now than in 1935, I prefer to consider *eucoelea* tentatively as a distinct species unless the discovery of associated females should prove otherwise.

*Tosquinetia eucoelea* ♂ differs from *corrugata* ♂ by restriction of the white anal pattern to the seventh tergite, by evenly and only slightly (instead of only apically but rather distinctly) infuscated wings, by the irregularly rugose (instead of smooth) area superomedia, by the more distinctly pointed scutellum, and by only the coxae I apically white-marked.

#### *Male*

Scutellum pyramidal; legs III black, femora and tibiae I and II red; only the seventh tergite with apical white band; frontal orbits nearly up to lower ocellus narrowly, facial orbits broadly, white; flagellum black, without annulus; length 13 mm.

5. *Tosquinetia viridescens*, new species

Fig. 97

## Types

*Holotype*.—♀, "Togo, Bismarckburg, 30.VI.-3.VII.93, L. Conradt S."  
Z.M.H.U.

*Allotype*.—(tentative) ♂, "Togo, Misahöhe, 10.V.94, E. Baumann S."  
Z.M.H.U.

## Distribution

Togo.

## Preamble

Closely related in structure and sculpture to *micans* Tosquet, but somewhat larger and light metallic green instead of dark metallic blue; apex of coxae III of females on inner side with considerably larger protrusion and with distinct longitudinal apico-ventral carina; the structure of coxae III thus very similar to *triangulifer* Morley and distinctly different from *micans*; collaral lamella as in *micans*: fairly conspicuous and medially deeply emarginate.

The male tentatively associated with the type specimen comes from the same part of Africa and has the abdomen and propodeum metallic green, as in the female, but differs strikingly from it by predominantly red mesoscutum, scutellum, and upper part of mesopleura.

## Female

*Metallic green, tergites 6 and 7 with apical white marks; head with pale yellow markings; legs I and II predominantly orange-red; apices of coxae I and II white; flagellum black, with dorsal white annulus; length 17 mm.*

*Flagellum*.—(Tip missing); structure as described for the tribe; the first segment about three times as long as wide, the 14th and the widest approximately square. Black, with dorsal white annulus on segments 8-14 (base), apices of segments before annulus brownish; scape black.

*Head*.—Structure as described for the tribe; malar space slightly longer than width of mandible base. Black; the following yellow: base of mandibles, sides of clypeus, facial orbits (the yellow facial band extending downward along malar space to yellow sides of clypeus), frontal orbits up to lower ocellus.

*Thorax*.—Structure as described for the tribe and genus; collare with conspicuous, medially deeply emarginate lamella; the three smooth longitudinal bands on mesoscutum distinct; scutellum moderately strongly convex, coarsely longitudinally rugose-punctate, apically with longitudinal, convergent rugae; area superomedia approximately square, smooth; areae superoexternae longitudinally rugose; costulae obsolete, carinae coxales distinct; mesopleura above, before, and below speculum densely longitudinally striate. Metallic green; apex of pronotal ridge with yellowish dot.

*Legs*.—Coxae III ventro-apically on inner side with a fairly conspicuous protrusion which continues as a longitudinal carina onto ventral surface of coxae (fig. 97). Black; the following orange-red: trochanters,

femora and tibiae I and II; the tarsi I and II and posterior part of tibiae II slightly infuscated; apices of coxae I and II yellowish-white; tibiae III dorsally black-brown, ventrally ferruginous.

*Wings*.—Nervulus strongly postfurcal; areolet rhomboidal. Clear, slightly infuscated toward apex.

*Abdomen*.—As described for the tribe; postpetiole finely aciculate; nearly entire surface of second tergite very strongly, the third tergite not quite as strongly aciculate. Metallic green; tergites 4-7 black, the sixth and seventh with laterally abbreviated apical white bands.

#### Male (tentative)

*Scutellum* subpyramidal; *flagellum* black, without annulus; *mesoscutum*, *scutella*, and more than upper half of *mesopleura* ferruginous; *femora*, *tibiae*, and *tarsi* III and *tergites* 4-7 (except apical white bands) blackish-brown; otherwise as in female; length 14 mm.

### 6. *Tosquinetia triangulifer* (Morley)

Fig. 95

#### Distribution

Nyasaland; southern Congo; southwestern Tanganyika.

#### Preamble

A handsome species and one of the largest of the genus, distinguished by a fairly prominent longitudinal carina ventrally on apex of coxae III of females (fig. 95), and by ferruginous-red basic color of almost the entire body combined with apical white bands on tergites 5-7.

#### Female

Ferruginous-red, tergites 5-7 with white apical bands; head with or without yellowish-white markings in geographical variation; mesosternum predominantly, and at least coxae and trochanters III partially, sometimes all coxae and trochanters partially black; tarsi more or less infuscated; flagellum with dorsal, or almost complete, white annulus, brownish before, black behind annulus; length 16-18 mm.

*Flagellum*.—Structure as described for the tribe; with 45 segments, the first about 3 times as long as wide, the 13th and the widest approximately square. Black, with dorsal, or nearly complete, white annulus on segments 7 or 8 to 14 or 15, segments before annulus with blackish-brown apices, segments beyond annulus black; scape ferruginous.

*Head*.—Structure as described for the tribe; malar space slightly longer than width of mandible base. Ferruginous-red, in specimens from the Congo inner orbits extensively white.

*Thorax*.—Structure as described for the tribe and genus; collare with small lamella only slightly emarginate medially; mesoscutum very densely, irregularly rugose, subopaque, the three smooth longitudinal bands indicated, but indistinct by some fine sculpture; scutellum very strongly convex dorsally, with sparse, coarse puncturation, the apical slope with convergent longitudinal rugae; area superomedia large, about as wide as long, medially nearly contiguous to postscutellum, its anterior half polished, in specimen from Congo entirely rugose; areae superoexternae lon-

gitudinally rugose; costulae absent or weak, carinae coxales distinct; speculum reduced by dense longitudinal striation on upper part of mesopleura. Ferruginous-red; mesosternum black, except part between (imaginary) sternaui and mesopleura.

*Legs*.—Coxae with a small protrusion apico-ventrally on inner side which continues as longitudinal carina onto ventral surface of coxae (fig. 95). Ferruginous-red; tarsi slightly, tarsi III sometimes fairly strongly infuscated.

*Wings*.—Nervulus strongly postfurcal; areolet rhomboidal. Clear.

*Abdomen*.—Structure as described for the tribe; postpetiole medially distinctly aciculate; about median third of second tergite aciculate over nearly the whole length of the tergite, the third tergite only basally aciculate, the rest of the two tergites coarsely longitudinally rugose-punctate. Ferruginous-red, tergites 5-7 with laterally abbreviated apical bands, the one on the fifth tergite more or less emarginate medially.

*Male* (of nominate form)

*Scutellum* pyramidal; *flagellum* black, without annulus; *legs II* slightly, *legs III* more strongly infuscated; the following white: base of mandibles, sides of face broadly (down to clypeal foveae), lower half of frontal orbits narrowly, femora I and II, and coxae and trochanters I and II ventrally; otherwise as female.

#### 6a. *Tosquinetia triangulifer triangulifer* (Morley)

*Epijoppa triangulifer* Morley, 1919, Proc. Zool. Soc. London, p. 121, ♀ ♂.

*Tosquinetia triangulifer* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 37.

*Types*

*Holotype*.—♂, "Nyasaland, Mlanje, June 18, 1913, S.A. Neave." B.M. No. 3b-86. ♀

*Allotype*.—♀, same data. B.M.

*Distribution*

Nyasaland.

*Female*

Head uniformly ferruginous; area superomedia polished.

*Male*

As described for the species.

#### 6b. *Tosquinetia triangulifer congica*, new subspecies

*Types*

*Holotype*.—♀, "Elisabethville, 24.XII.1938, H. J. Brede." C.G.H. II.

*Paratype*.—♀, "Nyasa See, Langenburg, 4.—5.IX.99, Fullerborn S." Z.M.H.U.

*Distribution*

Southern Congo: Elisabethville, to southern Tanganyika: Tukuyu (= Langenburg).

### Female

Head ferruginous, with the following white: base of mandibles, sides of face down to clypeal foveae, entire malar space, frontal and vertical orbits and sometimes lateral marks on clypeus; area superomedia predominantly to entirely irregularly rugose.

### 7. *Tosquinetia pilosa* (Cameron), new combination

*Henicophatnus pilosus* Cameron, 1900, Ann. S. Afr. Mus., pp. 166-167. ♀.

### Types

*Holotype*.—♀, "Kg. Wm.'s T. Dist. St. Mathews, R. Lightfoot 1884." S.A.M.

### Distribution

Southeastern Cape Province.

### Preamble

A ferruginous-red species, with extensive white banding of abdomen. Collaral lamella inconspicuous, scarcely emarginate in the middle. Coxae III of females without apical protrusion or carina; area superomedia parallel-sided, fairly wide, its anterior part smooth and medially slightly projecting toward the postscutellum; scutellum of females gibbose, of males pyramidal.

### Female

*Ferruginous-red; prosternum basally more or less extensively black; the following pale yellow: frontal orbits, collaral lamella, dot on apex of pronotal ridge, longitudinal band on ventral side of femora I, and apices of coxae I and II; broad apical white bands on tergites 5-7, sometimes also the fourth tergite apically narrowly white; trochanters usually infuscated; flagellum with white annulus; length 13 mm.*

*Flagellum*.—Structure as described for the tribe; with 39 segments, the first about 2.5 times as long as wide, the 13th square, the widest hardly wider than long. Dorsal white annulus on segments 7 (apex) to 12, segments before annulus black-brown, with light-brown apices and ventral side, segments beyond annulus black; scape ferruginous.

*Head*.—Structure as described for the tribe. Ferruginous-red; pale yellow are only the frontal orbits up to level of lower ocellus, down to level of antennal sockets; clypeal foveae, apical margin of clypeus medially, and the mandible teeth, black.

*Thorax*.—Structure as described for the tribe and the genus; collaral lamella inconspicuous and scarcely emarginate medially; mesoscutum coarsely and very densely irregularly rugose, the three smooth longitudinal bands narrow; scutellum fairly strongly gibbose, sparsely and coarsely punctate above, the lateral and apical declivities strongly longitudinally rugose; area superomedia as described in preamble, toward apex rugose-punctate, areae superoexternae partially transversely or obliquely longitudinally rugose; mesopleura strongly longitudinally striate above, before, and a little below speculum, the speculum not extended toward anterior border of mesopleura. Ferruginous-red; collaral lamella and dot on apex of pronotal ridge pale yellow.

*Legs*.—Coxae III without noticeable protrusion or carina on apex of ventral side. Ferruginous-red, trochanters somewhat infuscated; yellow are: apical margins of trochanters, apices of coxae I and II, apical half of femora I ventrally.

*Wings*.—Nervulus distinctly postfurcal: areolet rhomboidal, intercubiti sometimes not quite coalescent in front; radius sinuate. Clear.

*Abdomen*.—Postpetiole distinctly aciculate; broad median part of surface of second and third tergites very coarsely longitudinally striate, the lateral parts of these tergites coarsely and densely rugose-punctate; middle, apex, and base of second sternite broadly membranous. Ferruginous-red, tergites 5-7 with broad apical white bands, sometimes also the fourth tergite apically white.

### Male

*Scutellum* subpyramidal; *flagellum* without annulus; in addition to the yellow frontal orbits base of mandibles and sides of face also broadly yellow; the fourth tergite also with conspicuous apical white band; prosternum (except whitish tip), mesosternum, and coxae more or less extensively black, coxae I and II ventrally almost entirely white; usually also rest of legs more or less intensively infuscated; basic color of tergites 4-7 blackish; otherwise as in female.

*Flagellum*.—With 38 segments. Dorsally blackish-brown, ventrally light brown.

### 8. *Tosquinetia carinifer* (Morley), new combination

*Pyramidellus carinifer* Morley, 1919, Proc. Zool. Soc. London, pp. 120—121, ♀.

### Types

*Holotype*.—♀, "Nyasaland, Mlanje, 8.X.13., 2300ft., S.A. Neave." B.M. No. 3b-87.

### Distribution

Nyasaland.

### Preamble

A ferruginous-red species with extensive white banding of abdomen, very similar in appearance and size to *pilosa* Cameron, but differing from it by the considerably larger speculum which extends to near the anterior border of mesopleura, by more widened flagellum, and also by the distribution of white and black markings on head and thorax. Differs from the also similar *triangulifer* Morley by smaller size and simple coxae III of females.

### Female

Ferruginous-red; prosternum basally, about apical half of mesosternum and basic color of tergites 4-7 black; the following yellowish-white: mandible base, mark on apex of malar space, spots on sides of clypeus, frontal and vertical orbits (down to below antenna level), coxae I and II predominantly, apex of coxae III ventrally, femora I and II ventrally (except base); tergites 5-7 with broad apical white bands; legs III partially infuscated; flagellum with white annulus; length 12-14 mm.



*Flagellum*.—Structure as described for the tribe; with 42 segments, the widest about twice as wide as long. Black, with white annulus on segments 8-12; scape red.

*Head*.—Structure as described for the tribe. Ferruginous-red; white markings as described above.

*Thorax*.—Structure as described for the tribe and genus; the three longitudinal bands on mesoscutum distinct; scutellum simply convex; smooth, with scattered coarse punctures: area superomedia smooth, areae superoexternae longitudinally rugose; smooth area of speculum large, extending close to anterior border of mesopleura, the latter fairly distinctly depressed below speculum. Color as described above.

*Legs*.—Coxae III simple. Ferruginous-red; femora I and II ventrally white, except bases; trochanters III, tarsi III and part of tibiae I infuscated.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Clear.

*Abdomen*.—Ferruginous-red; basic color of tergites 4-7 black, tergites 5-7 apically broadly white.

### 9. *Tosquinetia rufa* (Szépligeti)

#### *Distribution*

Northern Tanganyika: Kilimanjaro, Western Usambara Mts., Mt. Meru.

#### *Preamble*

The type specimen, a male, is very similar to *pilosa* Cameron from South Africa, but differs as a distinct species by the following characters: (1) outline of temples in vertical view more narrowed behind eyes and less curved; (2) area superomedia much narrower, elongate, tapering slightly toward postscutellum, longitudinally rugose (instead of smooth); (3) abdomen narrower, particularly the second and third tergites more elongate; (4) white marks on abdomen much more restricted: only the seventh tergite with rather indistinct apical white mark, the sixth with narrowly white apical margin; (5) no white line on ventral side of femora I; (6) coxae I and II with only a minute white dot on apex of ventral side.

There are two females at hand from the Western Usambara Mts. and one female from Mt. Meru, which share the above-mentioned characters with the type specimen. They represent without doubt the other sex of *rufa* Szépligeti; however, the specimens from the Usambara Mts. are slightly, evidently subspecifically, different from the specimen from Mt. Meru, mainly in the greater extent of the white markings on abdomen.

Unfortunately no female is known so far from the type locality (Kilimanjaro), and on the other hand, no male has been collected on Mt. Meru or the Usambara Mts. It is therefore impossible at present to decide with certainty or even probability whether one of the two subspecifically different females can be regarded as associated with the male of the nominate form, and which of the two it could be. As a temporary arrangement therefore, the populations of the three mountains have been separated as three different subspecies, reserving solving their true subspecific interrelationship for a future occasion.

### Male

(Description of holotype). *Ferruginous-red; prosternum and mesosternum, middle of prepectus, all coxae predominantly, and pronotal base with collare, black; white are: base of mandibles, facial and frontal orbits, apical dots on ventral side of coxae I and II, the apical margin of the sixth and an indistinct apical mark on the seventh tergite; flagellum brownish; length 11 mm.*

*Flagellum*.—(Broken); brownish, without annulus; scape ferruginous.

*Head*.—Structure as described for the tribe; temples not somewhat swollen as in *pilosa*, the outline of temples in vertical view slightly narrowed behind eyes and scarcely curved. Red; base of mandibles, facial and frontal orbits, white; apical and lateral margin of clypeus, mark on clypeal foveae, apical margin of cheeks and supra-antennal cavities partially black.

*Thorax*.—As described for the tribe and genus; collaral lamella rather well developed, with distinct median emargination; scutellum gibbose but not pyramidal, coarsely, irregularly punctured; area superomedia longer than wide, nearly parallel-sided, finely longitudinally rugose, as are the areae superoexternae; costulae obsolete, carinae coxales distinct. Ferruginous; the following black: prosternum, middle of prepectus, mesosternum, collare, adjacent part of pronotal base, lateral troughs of postscutellum, basal and apical sutures of propodeum narrowly; tegulae dark brown.

*Legs*.—Coxae III simple. Ferruginous, all coxae black, the coxae III dorsally ferruginous, coxae I and II with white apical spot on ventral side; trochanters black-brown; no white line on ventral sides of anterior femora.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Clear.

*Abdomen*.—Second tergite somewhat longer than apically wide, the third scarcely twice as wide as long; postpetiole finely aciculate, second and third tergites coarsely and extensively longitudinally striate, the second nearly to the apex, the third to beyond middle. Ferruginous, the basic color of tergites 4-7 more paleochreous than ferruginous, the sixth with white apical margin, the seventh with indistinct whitish apical mark.

### Female

(Specimens from Usambara Mts. and Mt. Meru). *Ferruginous-red; prosternum basally and apically, the mesosternum almost entirely, and coxae I and II partially, black; the following white: upper frontal orbits narrowly, mandible base broadly, usually a small apical spot on ventral side of coxae I and II, apical markings of geographically varying size on tergites 6 and 7; flagellum with white annulus; length 13 mm.*

*Flagellum*.—Structure as described for the tribe, slightly longer and slenderer than in *pilosa*, with 41-43 segments; the length of the first segment as compared to the length of the first segment of *pilosa* is 7.7 to 5.5; about the 11th segment square, the widest not, or scarcely wider than long. Black, with dorsal white annulus on segments 8-13, segments before annulus ventrally dark ferruginous, dorsally with brownish apices; scape ferruginous.

Structure of all other parts and their differences from *pilosa* as mentioned in preamble and in the description of the male. Femora III slightly slenderer than in *pilosa*.

**9a. *Tosquinetia rufa rufa* (Szépligeti), new combination**

*Pyramidellus rufus* Szépligeti, 1910, Sjöstedt's Kilim.-Meru Exped. VIII, p. 65, ♂.

*Types*

*Holotype*.—♂, "Kilimandjaro Sjöstedt, Kibonoto Kulturzone, 4. Mai."  
N.R.

*Distribution*

Kilimanjaro.

*Male*

*See species description.*

*Female*

*Unknown.*

**9b. *Tosquinetia rufa usambarica*, new subspecies**

*Types*

*Holotype*.—♀, "Tanganyika, W.Usambara Mts., 1600 m, Lushoto, 27.II.1962." C.G.H. II.

*Paratype*.—♀, same locality, 3.III.1962. C.G.H. II.

*Distribution*

Tanganyika: West Usambara Mts. at 1600 m.

*Female*

*Tergites 6 and 7 with conspicuous apical white mark; fifth tergite with narrowly white apical margin; prosternum black with red crossband shortly before apex.*

*Male*

*Unknown.*

**9c. *Tosquinetia rufa merumontis*, new subspecies**

*Types*

*Holotype*.—♀, "Tanganyika, Mt. Meru, 1800 m, 26.VI.1962." C.G.H. II.

*Distribution*

Northern Tanganyika, Mt. Meru, at 1800 m.

*Female*

*Only tergite 7 with (small) apical white mark, the sixth with narrowly white apical margin; prosternum red, narrowly black at extreme base and apex.*

*Male*

*Unknown.*

### 10. *Tosquinetia nigricoxata* (Morley), new combination

*Epijoppa nigricoxata* Morley, 1915, Rev. Ichn., IV, p. 53, ♀♂.

(*Epijoppa nigricoxata* Morley, 1917, Ann. S. Afr. Mus., XVII, p. 196, ♂ from Mfongosi, Zululand, leg. W. E. Jones.) •I consider the identification of this male probably incorrect.

*Epijoppa pilosa* Morley, 1919, Proc. Zool. Soc. London, p. 121, ♀♂. (The author erroneously synonymizes his species *nigricoxata* with *Henicophatnus pilosus* Cameron).

#### Types

*Holotype*.—♀, "Uganda, between Jinja and Busia, E. Busoga (Some Forest)." B.M. No. 3b-91.

#### Distribution

Uganda.

#### Preamble

Within a group of species sharing in females red basic color of head and sometimes mesoscutum, combined with predominantly blue-black abdomen with white anal pattern, this species is distinguished in color by lack of white markings on coxae, frontal and facial orbits, and fifth tergite, in structure by presence of a distinct collaral lamella with conspicuous median emargination in both sexes, and by a lamelliform expansion of considerable size on the inner side of the apex of coxae III of females.

#### Female

*Head*, mesoscutum more or less extensively, pronotum, and upper part of mesopleura red; abdomen blue-black, tergites 6 and 7 with apical white marks; legs blue-black, including coxae, legs I and II partially red-brown; coxae without white markings; flagellum black with white annulus; length 14 mm.

*Flagellum*.—Structure as described for the tribe; very slender, strongly attenuated toward apex, not widened beyond middle, with 44 segments. Black, with dorsal white annulus on segments 8 (apex) to 14.

*Head*.—Structure as described for the tribe. Uniformly red.

*Thorax*.—Structure as described for the tribe and genus; collaral lamella distinct, with distinct median emargination; median lobe of mesoscutum in front with a slight indication of bipartition; scutellum fairly strongly convex, coarsely and sparsely punctured, its apical slope with some coarse longitudinal rugae; mesopleura strongly longitudinally striate, the smooth area of the speculum moderately large. Pronotum, upper part of mesopleura, mesoscutum more or less extensively, and scutellum red, the rest black or blue-black, the scutellum in type infuscated; mesoscutum varying from entirely red to almost entirely black.

*Legs*.—Coxae III as described in preamble. Black-blue, including coxae, the latter without white markings; legs I and II partially red-brown.

*Abdomen*.—Postpetiole aciculate, with scattered punctures; second tergite (except laterally) and about basal half of the third tergite rather coarsely longitudinally striate, the apical half of the third tergite coarsely punctured. Blue-black, tergites 6 and 7 with apical white marks.

### Male

(Description based on specimens from Uganda, in the British Museum). Scutellum pyramidal; flagellum black, without annulus; mesopleura varying from predominantly dark to entirely red; white are: sides of face and usually of clypeus, base of mandibles, coxae I and II extensively, trochanters I and II ventrally; blackish patches on vertical orbits; tip of scutellum often blackish; the fourth tergite distinctly, the fifth very finely, both sparsely, punctured; the rest, including white marks on tergites 6 and 7, as in female.

### 11. *Tosquinetia rugicollis*, new species

#### Distribution

Tanganyika: Uluguru Mts. and Tukuyu; South Africa: King Williams-town.

#### Preamble

Similar in color to *nigricoxata* Morley, having the almost uniformly red head and red mesoscutum combined with blue-black abdomen with white marks. Distinguished by the presence of a row of oblique rugae on each side of the trough behind the collare, the indistinct median emargination of the collaral lamella, by median apical white band also on the fifth tergite, and by the white markings on bases of mandibles and on apices of coxae I and II.

#### Female

Head red, the mandible base yellowish-white-marked, sometimes also frontal orbits very narrowly yellowish-white; thorax red, sterna and propodeum varying geographically to extensively black; legs black, partially black-brown or red-brown, coxae I and II apically white; abdomen blue-black, tergite 5-7 with laterally abbreviated apical white bands; flagellum with white annulus; length 14-16 mm.

*Flagellum*.—Structure as described for the tribe; with 41-44 segments, the first about 3 times as long as wide, about the 13th square, the widest slightly wider than long. Black, with dorsal white annulus on segments 7 or 8, to 12 or 14; scape red, dorsally partially infuscated.

*Head*.—Structure as described for the tribe. Red, base of mandibles yellow-marked, sometimes also frontal orbits narrowly yellowish.

*Thorax*.—Structure as described for the tribe and genus; collaral lamella of moderate size, without distinct median emargination; trough behind collare on each side with a row of oblique rugae; scutellum rather strongly convex, with sparse, coarse punctures, its apical slope with some converging, coarse rugae; area superomedia nearly parallel-sided, in front projecting somewhat medially toward postscutellum, longitudinally rugose, except on anterior part; areae superoexternae more or less regularly longitudinally rugose; costulae and areae coxales distinct. Red; black or blue-black are: prosternum (except posterior end), mesosternum (except exterior part in front), horizontal part and declivity of propodeum, median part of prepectus; the extent of black varies geographically and is much more restricted in the South African population.

*Legs*.—Coxae III of females simple. Black, including coxae; femora and tibiae I and II usually, femora III sometimes, red-brown or blackish-brown; coxae in South African population predominantly red; coxae I and II always apically white-marked, coxae III usually ventrally at apex; apical margins of trochanters usually narrowly white in part; femora I with white longitudinal band on ventral side toward apex.

*Wings*.—Nervulus postfurcal; areolet rhomboidal, intercubiti coalescent in front; radius sinuate. Clear.

*Abdomen*.—Postpetiole densely and regularly aciculate, with a few punctures at the very apex and sides; second tergite with coarse striation on median part, the median striae running nearly to the apex of the tergite, third tergite strongly striate to beyond middle, the striae gradually decreasing in length toward the sides of the tergite; rest of tergites 2 and 3 coarsely rugose-punctate; second sternite with elongate, nearly parallel-sided, sclerotized plates, its base, apex, and middle broadly membranous; sclerotized plates of third sternite large and broad, nearly contiguous toward apex of the sternite. Blue-black, tergites 4-7 of black basic color, 5-7 with laterally abbreviated apical white bands.

### Male

(Description based on specimen of subspecies *piriensis*, new subspecies from King Williamstown). *Scutellum not pyramidal, though more strongly convex than in female; facial orbits broadly, frontal orbits more narrowly, white; white apical band on fifth tergite indistinct; flagellum without annulus; antennal cavities and ocellar region partially black; otherwise as female; length 12 mm.*

## 11a. *Tosquinetia rugicollis rugicollis*, new subspecies

### Types

*Holotype*.—♀, "Tanganyika, Uluguru Mts., 28.XI.1961." C.G.H. II.  
*Paratype*.—1 ♀, "Nyassa-See, Langenburg, 20.VIII.-1.IX.98, Fülleborn S." Z.M.H.U.

### Distribution

Eastern Tanganyika: Uluguru Mts. (type locality) and southwestern Tanganyika: Tukuyu (= Langenburg).

### Female

*Horizontal part and declivity of propodeum, the mesosternum (except anterior outer part), and all coxae except white markings, black; frontal orbits very narrowly yellow.*

## 11b. *Tosquinetia rugicollis piriensis*, new subspecies

### Types

*Holotype*.—♀, "South Africa, King Williamstown, Peeree Forest, 6.III.63." C.G.H. II.  
*Allotype*.—♂, same data. C.G.H. II.

### Distribution

South Africa: southeastern Cape Province.

### Female

Horizontal part and declivity of propodeum and mesosternum almost entirely, all coxae predominantly, red; frontal orbits without yellow line.

### Male

See description of species; the male agrees in the amount of black with the females of the nominate form.

### 12. *Tosquinetia variabilis* (Morley), new combination

*Epijoppa variabilis* Morley, 1915, Rev. Ichn. IV, p. 52, ♀♂.

*Epijoppa variabilis* Morley, 1917, Ann. S. Afr. Mus., XVII, p. 196, ♂; (♂ recorded from Zululand, Mfongosi; the record needs confirmation).

### Types

Holotype.—♀, "Uganda, Tero Forest, S.E. of Buddu, 3800 ft., 26—30. Sept. 1911, S.A. Neave". B.M. No. 3b-92.

### Distribution

Uganda, 3800-4000 ft., southeast of Buddu (type locality), between Jinja and Busia, also Buddu and Entebbe (Morley 1915); ? Zululand (Morley 1917).

### Preamble

Similar to *rugicollis* Heinrich, but somewhat smaller and trough behind collare without rugosity, polished. Differing from *rugicollis* chromatically by predominantly white coxae I and II, by white malar space and sides of face, and by lack of apical white mark on the fifth tergite. Frontal orbits white up to level of lower ocellus. Coxae III of females simple. In females the basic color of the head varies from red to black, but is probably constantly black in males.

The West African form *flavivertex* Heinrich is very similar to this species and is perhaps its vicariant; for the differences see *flavivertex*.

### Female

Head red or sometimes black, with rich white markings; in type specimen white are: base of mandibles, sides of face and clypeus, malar space and apex of cheeks, frontal orbits up to lower ocellus; thorax ferruginous-red, with black pronotal base, prosternum, and propodeum (except metapleura); tergites 1-3 metallic blue, or greenish-blue, their apices (except of third tergite) and sides yellowish-orange; tergites 4-7 black, 6 and 7 with apical white marks; legs black, coxae I and II predominantly, and trochanters I ventrally, white, femora I and II extensively ferruginous-brown; flagellum with white annulus; length 12-13 mm.

*Flagellum*.—Structure as described for the tribe; with 44 segments, the widest scarcely wider than long. Black, with white annulus on segments 7 (apex) to 14.

*Other parts of the body*.—Structure as described for the tribe and genus. Color as described above.

### 13. *Tosquinetia flavivertex*, new species

#### Types

*Holotype*.—♀, "Angola, 30 km N. of Quiculungo, Sept. Okt. 1957." C.G.H. II.

*Allotype*.—♂, same data. C.G.H. II.

*Paratypes*.—1 ♀, 1 ♂, same data; 1 ♂, "Angola, Quitondo, distr. Calulo". C.G.H. II.; 1 ♀, "Carnot-Buar, Gbajanga's". Z.M.H.U.

#### Distribution

Northwestern Angola; western Central African Republic.

#### Preamble

This is, in all probability, the West African vicariant of *variabilis* Morley, as the structural and general chromatic characters are almost the same. It differs from *variabilis* in females by the more distinctly widened flagellum and by the white on frontal orbits extending over the vertical orbits, while the white on coxae I and II is restricted to their apices; in both sexes, in contrast to *variabilis*, propodeum is usually uniformly red. I am treating the two forms tentatively as full species, as not enough is known yet about their distributional pattern to support the hypothesis of their subspecific association.

#### Female

*Head red, with fairly rich white markings; the following white:* base of mandibles, malar space, frontal and vertical orbits; *thorax ferruginous-red, with black prosternum (except apex), most of mesosternum and middle of prepectus; tergites 2 and 3 bluish-black, their apices and sides and the first tergite reddish-tinged; tergites 4-7 black, 6 and 7 with large apical white marks; legs blackish-brown and brown, the coxae black; white are: a stripe on ventral side toward apex of femora I, apices of coxae I and II, apical margins of trochanters in part; flagellum black with white annulus; length 12.5 mm.*

*Flagellum*.—Structure as described for the tribe; with 40 segments, the first nearly 3 times as long as wide, the 10th approximately square, the widest twice as wide as long. Black, with dorsal white annulus on segments 7 (apex) to 14 (base); apices of segments before annulus and ventral side of scape basally reddish.

*Head*.—Structure as described for the tribe; face and clypeus fairly densely, lower cheeks more sparsely, punctured. White are: mandible base, malar space, frontal orbits narrowly, vertical orbits more broadly; basic color varying from entirely red to entirely black.

*Thorax*.—Structure as described for the tribe and genus; collare without distinct lamella, trough behind collare without rugosity, polished; scutellum dorsally fairly strongly convex, with scattered, coarse punctures, the apical slope with strongly converging longitudinal rugae; sometimes entire upper surface coarsely longitudinally rugose; area superomedia slightly narrowed toward front, or almost parallel-sided, finely longitudinally rugose, the anterior part usually nearly smooth and medially slightly projecting toward postscutellum, the areae superoexternae regularly longi-



tudinally rugose; costulae obsolete; areae coxales distinct; the polished speculum fairly large, somewhat extended toward anterior border of mesopleura, the latter strongly longitudinally striate above, before and shortly below speculum. Red; the following black: prosternum (except apex), mesosternum (except anterior outer part), middle of prepectus; sometimes horizontal part of propodeum extensively infuscated.

*Legs*.—Coxae III simple. All coxae black, about apical half of coxae I and II white; rest of legs blackish-brown and brown; apical margins of trochanters partially and narrowly white; femora I ventrally toward apex with longitudinal white band.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Clear.

*Abdomen*.—Postpetiole aciculate; median part of second tergite strongly striate, the median striae reaching almost to the apex of the tergite; the third tergite likewise strongly striate, the median striae reaching to beyond its middle; most of tergites 2 and 3 coarsely rugose-punctate. The first tergite dark-red-tinged, rarely whitish at base and apex; the second and third tergites bluish-black, with their apical, and parts of their lateral margins red-tinged; tergites 4-7 black, 6 and 7 with large apical white marks.

#### Male

Scutellum gibbose, not distinctly pyramidal; head black; white are: mandible base, sides of face and clypeus broadly, malar space and apex of cheeks, vertical orbits narrowly up to level with lower ocellus only; coxae I and II predominantly white; flagellum without annulus; first tergite usually red; length 11-11.5 mm; otherwise as female.

*Flagellum*.—With 38 segments (in all 3 specimens), with fairly pronounced transverse bristle-ridges. Black, ventrally dark brownish; scape black.

#### Remarks

The female (paratype) in the Z.M.H.U. differs from the series of Angolan specimens by a fairly distinct, medially distinctly emarginate collaral lamella, but otherwise is fully identical with the holotype. The character mentioned may indicate a subspecific differentiation.

#### 14. *Tosquinetia lundae*, new species

##### Types

*Holotype*.—♂, "Angola, Cammissombo (Lunda), 4.-13.II.1952."  
C.G.H. II.

##### Distribution

Northeastern Angola: Province of Lunda.

##### Preamble

The species belongs in the neighborhood of *variabilis* Morley and *flavivertex* Heinrich. It differs from the males of these two species by an extensive white flagellar annulus, by almost entirely white face and clypeus, and by ventrally entirely white coxae and trochanters I and II. The median part of the collaral lamella is somewhat more strongly developed than in *flavivertex*, with more distinct median emargination.

*Male*

Head black, with extensive white markings; white are: base of mandibles, face and clypeus almost entirely (except for a small ferruginous mark in the middle of upper face and a longitudinal median ferruginous line on clypeus), frontal orbits narrowly up to lower ocellus; thorax ferruginous-red, only prosternum and mesosternum predominantly black; tergites 2 and 3 bluish-black, 4-7 black, the first tergite, the sides of the second and third broadly, and the apex of the second narrowly, ferruginous-red; tergites 6 and 7 with apical white marks; legs III almost entirely black, including coxae; legs I and II predominantly light-brown; white are: femora I ventrally, coxae and trochanters I and II ventrally; flagellum with extensive white annulus; length 12.5 mm.

*Flagellum*.—With 38 segments. Black with complete white annulus on segments 9-21; apices of basal segments, their ventral side and the scape ventrally pale ferruginous.

*Head*.—Structure as described for the tribe. Color as described above; malar space (except at eye margin) and lower part of cheeks pale ferruginous.

*Thorax*.—Structure as described for the tribe and genus; median part of collaral lamella moderately widened, with fairly distinct median emargination; trough behind collare smooth; scutellum gibbose, not pyramidal, coarsely rugose-punctate, apical slope with converging, longitudinal rugae; area superomedia nearly parallel-sided, in front slightly projecting medially toward postscutellum, finely and irregularly rugose; areae superoexternae obliquely and fairly irregularly rugose; costulae obsolete; areae coxales distinct; speculum as in *flavivertex*. Ferruginous-red; black are: prosternum (except posterior margin) and mesosternum (except anterior outer part); basal furrow of propodeum narrowly infuscated.

*Legs*.—Coxae III simple. Legs I and II predominantly light brown, legs III nearly entirely black, including coxae; the following white: ventral side of femora I, coxae I and II and trochanters I and II ventrally; coxae III dorsally ferruginous at base; extreme bases of coxae I and II and dorsal side of trochanters I and II blackish.

*Wings*.—Nervulus postfurcal; areolet rhomboidal, short petiolate; radius sinuate. Clear.

*Abdomen*.—Postpetiole finely aciculate; second and third tergites somewhat less extensively and somewhat less strongly and less regularly striate than in *flavivertex*, the striae on the second tergite not nearly reaching to its apex, the ones on the third tergite not reaching to its middle. Color as described above.

### 15. *Tosquinetia crassidentata* Heinrich

Figs. 93, 96

*Tosquinetia crassidentata* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 37, ♀♂.

#### Types

*Holotype*.—♀, "Col. de Gaulle, Madagascar". N.M.H.N. Antennae missing.

*Allotype*.—♂, "Diego-Suarez, Ch. Alluaud, 1893". N.M.H.N.

*Paratypes*.—1 ♀, "Madagascar, Bekily, Reg. Sud de l'Ile, leg. A. Seyrig, III.34". C.G.H. I.: 1 ♀. C.M.

#### *Distribution*

Madagascar: Montagne d'Ambre, Ampandrandava, Bekily, Baie d'Antongil (Heinrich, loc. cit.).

#### *Preamble*

A species resembling *triangulifer* Morley, in size and structure, but clearly distinguished by the extraordinarily strongly developed projection on the apex of the interior ventral side of coxae III of females (fig. 96), and by the color as described below; area superomedia regularly longitudinally rugose (fig. 93); aciculation on second and third tergites less extensive and somewhat less prominent than in type species but corresponding to that of *triangulifer*.

#### *Female*

*Head and thorax ferruginous-red, both with some black or infuscated parts, the head with extensive white markings; abdomen predominantly blue, tergites 4-7 with white apical margins or bands, tergites 1-3 basally and laterally, the first and second tergites also apically, narrowly dull yellowish; legs predominantly ferruginous-red; flagellum black with white annulus; wings clear; length 15-17 mm.*

*Flagellum*.—Structure as described for the tribe; with 45 segments, the first about 2.5 times as long as wide, the 11th and widest approximately square. Black, with complete white annulus on segments 7-16; scape ventrally brownish.

*Head*.—Structure as described for the tribe; malar space about 1.3 times as long as width of mandible base. Ferruginous-red; the following white: frontal and vertical orbits moderately broadly, facial orbits very broadly, with entire malar space and cheeks nearly up to temple region (except posterior belt); frons and vertex between white orbits, most of occipital region and sometimes middle of face black.

*Thorax*.—(Fig. 93); structure as described for the tribe and for the genus; collare with conspicuous, medially emarginate lamella; mesoscutum with three distinct longitudinal smooth bands; scutellum rather strongly convex, shiny, with scattered, coarse punctures, the apical slope with convergent longitudinal rugae; area superomedia large, about as wide as long, medially projecting toward postscutellum, with parallel longitudinal rugae; exterior part of areae superoexternae also regularly longitudinally rugose; costulae wanting, carinae coxales fairly distinct. Ferruginous-red; sterna and lower part of pleura yellow-tinged; space of areae superoexternae and dentiparae infuscated.

*Legs*.—Coxae III apico-ventrally on inner side with unusually large tooth. Ferruginous-red, coxae and trochanters I and II slightly yellow-tinged; all tarsi and dorsal side of tibiae infuscated.

*Wings*.—Nervulus strongly postfurcal; areolet rhomboidal, forming an acute angle in front. Clear.

*Abdomen*.—Structure as described for the tribe; postpetiole medially distinctly aciculate; about median third of second tergite aciculate through-

out its length, the third tergite aciculate nearly to middle; rest of second and third tergites moderately coarsely punctured. Color as described above.

#### Male

Scutellum bluntly pyramidal; flagellum without annulus; infuscations on propodeum also comprising the area superomedia; white apical bands on tergites 4-7 more restricted than in female, particularly on tergites 4 and 5; otherwise as in female.

### 16. *Tosquinetia hildegardae*, new species

#### Types

Holotype.—♀, "Tanganyika, Mt. Meru, 1800 m, 15.II.63." C.G.H. II.

#### Distribution

Northern Tanganyika: Mt. Meru.

#### Preamble

This is one of the three smallest known species of the tribe. They have some characters in common in which they differ from the larger, typical forms of the genus *Tosquinetia* Ashmead: the lack of distinctly raised exterior carinae on lateral lobes of mesoscutum, the lack of areae coxales, the elongate shape and often rugose sculpture of the area superomedia, the small size of the speculum and presence of a depression below it, and the reduction of the smooth longitudinal bands on the mesoscutum. In all these characters they approach the Madagascan genus *Compsophorus* Saussure, but they differ from it by not bipartite median lobe of the mesoscutum and by the presence of some coarse longitudinal striation on the second and third tergites.

These three small species thus form an intermediate group between *Tosquinetia* and *Compsophorus*, seeming somewhat more closely related to the former than to the latter.

#### Female

Head uniformly red; red are also: pronotum, mesoscutum, scutellum, tegulae, mesopleura with subalarum, and the mesosternum predominantly; propodeum and abdomen blue-black; legs black, the coxae I, femora and tibiae I and II, and ventral side of femora and tibiae III extensively red and red-brown; about apical half of wings slightly infuscated; flagellum black, basally partially ferruginous, with white annulus; length 10 mm.

Flagellum.—Structure as described for the tribe; with 42 segments, the first 2.5 times as long as wide, the 12th approximately square, the widest nearly twice as wide as long. Black, with dorsal white annulus on segments 9-13; segments 1-7 ventrally entirely, dorsally toward apices, ferruginous, scape and pedicel ferruginous.

Head.—Structure as described for the tribe; outline of temples in dorsal view only very slightly curved behind eyes and slightly narrowed; middle of frons with a shallow longitudinal furrow. Uniformly red.

*Thorax*.—Structure as described for the tribe and genus, differing from the diagnosis of the latter by the characters mentioned above in the preamble; collaral lamella conspicuous, its median part distinctly produced backward, with large median emargination; trough behind collare smooth, except for a series of short oblique rugae in its lateral angles, adjacent to epomia; mesoscutum coarsely and densely irregularly rugose-punctate, the smooth longitudinal bands reduced to narrow lines on the lateral lobes, obsolete on median lobe; scutellum gibbose, coarsely rugose punctate; area superomedia narrow, considerably longer than wide, irregularly longitudinally rugose, areae superoexternae rather coarsely irregularly rugose, just a few rugae next to area superomedia running longitudinally and subparallel; costulae weak, areae coxales obsolete; speculum rather small, convex, with a distinct depression below it; part of mesopleura above and before speculum strongly longitudinally striate, the propleura obliquely so. Red; the following black: front and hind ends of prosternum narrowly, median part of prepectus, mesosternum apically, and propodeum; sides of propodeum blue-tinged, upper surface with a faint reddish tinge.

*Legs*.—Apical rim of coxae III without evident protrusion; tarsi normally slender. Black, including coxae II and III; red and red-brown are: base of coxae II, coxae I predominantly, trochanters I ventrally, femora and tibiae I, apex and ventral side of femora II, exterior and ventral side of femora III, tibiae I and II ventrally; apical margins of trochanters dorsally white.

*Wings*.—Nervulus almost interstitial; areolet with intercubiti not quite coalescent in front; radius sinuate. Clear, about apical half very slightly infuscated.

*Abdomen*.—Oval; median field of postpetiole coarsely longitudinally striate; base of third tergite and median part of second tergite to beyond middle coarsely striate, rest of tergites 2 and 3 coarsely and densely rugose-punctate; middle and base of second sternite narrowly, its apex broadly membranous and white. Tergites 1-3 blue-black, 4-7 black.

### 17. *Tosquinetia minima*, new species

#### *Types*

*Holotype*.—♂, "Tanganyika, Mt. Meru, 1800 m, 2.VII.1962." C.G.H. II.

*Paratypes*.—5♂♂, same locality, 20.VI.-2.VII.1962. C.G.H. II.

#### *Distribution*

Northern Tanganyika: Mt. Meru (type locality); Uganda: Kampala (Collection H. Townes).

#### *Preamble*

Very similar in size, structure, and sculpture to *hildegardae* Heinrich, but differing by presence of broad apical white bands on tergites 5-7. It cannot be assumed that this is a mere sexual dichroism, as in all known species of the tribe the white abdominal markings are either shared completely by the two sexes or else are less extensive in males than in females.

*Male*

Head red with yellowish mark on inner orbits; red are also: pronotum, mesoscutum, scutellum, tegulae, subalarum, and patch below it; rest of thorax blue-black and black; legs black, including coxae, coxae II and III with bluish tinge, tibiae and tarsi I and II red-brown; femora I ventrally white, rarely femora II ventrally also with short white line; abdomen blue-black, tergites 5-7 with broad apical white bands; flagellum extensively ferruginous, without white annulus; wings very slightly infuscated; length 8-9 mm.

*Flagellum*.—Structure as described for the tribe; with 38-39 segments. Pale ferruginous, dorsally increasingly strongly infuscated from before middle to tip.

*Head*.—Structure as described for the tribe. Red, with yellowish-white mark on inner orbits level with antennal sockets. Black are: base of mandibles, apical margin of clypeus, clypeal foveae, antennal cavities, and posterior side of head (beyond carinae occipitalis and genalis).

*Thorax*.—Structure as described for the tribe and genus, except for the differences already mentioned for *hildegardae* Heinrich; collaral lamella distinct, with distinct median emargination; trough behind collare of variable rugosity, usually entirely or predominantly smooth, sometimes with short longitudinal rugae; mesoscutum coarsely rugose, partially rugose-punctate, the smooth longitudinal bands reduced, recognizable only on the lateral lobes; scutellum strongly gibbose, subpyramidal, its upper surface densely rugose-punctate, the apical slope with converging longitudinal rugae; area superomedia considerably longer than wide, finely and somewhat irregularly longitudinally rugose; the areae superoexternae rather regularly and strongly longitudinally rugose; costulae distinct, carinae coxales obsolete; speculum comparatively small, convex, with distinct depression below it; longitudinal striation on mesopleura above, before, and slightly below speculum fairly regular and strong. Red; the following black: prosternum, prepectus, mesosternum, mesopleura (except red subalarum and patch below it), postscutellum, and propodeum, rarely also collare and pronotal base; propodeum and mesopleura metallic-blue-tinged.

*Legs*.—Color as described above.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Very slightly infuscated.

*Abdomen*.—Middle of postpetiole, middle of second tergite broadly and nearly to apex, and third tergite basally and on narrow median part to beyond middle coarsely longitudinally striate; rest of tergites 2 and 3 coarsely rugose-punctate, second sternite medially and apically fairly broadly membranous and white. Tergites 1-3 blue-black, 4-7 black, 5-7 with broad, laterally abbreviated apical white bands.

**18. *Tosquinetia instriata*, new species***Types*

*Holotype*.—♀, "Angola, Quitondo. distr. Calulo, 11.VIII.-2.IX.1957."  
C.G.H. II.

*Distribution*

Western Angola.

*Preamble*

Very similar to *minima* Heinrich in size, structure, and general color pattern, and possibly the West African vicariant form of that species. Differs from *minima* by lack of longitudinal striation on the third and strong restriction of the striation on the second tergite, furthermore by almost uniformly red thorax and partially black head.

*Female*

*Head* red, with a yellowish dot on exterior side of antennal sockets, and with black clypeus, part of cheeks, malar space, and sides of face; thorax nearly entirely red, except black prosternum; legs black, including all coxae; coxae III with blue tinge; tibiae and tarsi I blackish-brown; anterior femora without white ventral line; abdomen blue-black, tergites 5-7 with broad apical white bands; flagellum with white annulus, black, including scape; wings clear; length 9 mm.

*Flagellum*.—Structure as described for the tribe; with 39 segments, the first slightly more than twice as long as wide, the 12th square, none distinctly wider than long. Black, with dorsal white annulus on segments 7 (apex) to 12; scape and pedicel black.

*Head*.—Structure as described for the tribe; frons with shallow median longitudinal furrow. Red, with a yellowish dot on exterior side of antennal sockets; the following black: base of mandibles, cheeks (from about middle of outer orbits down to mandible base, except red posterior stripe along carina genalis), with malar space and sides of face (up to slightly beyond level of antennal sockets), antennal cavities.

*Thorax*.—Structure as described for the tribe and genus, except for the differences mentioned for the species *hildegardae* Heinrich; collaral lamella fairly conspicuous, with distinct median emargination; trough behind collar smooth; mesoscutum coarsely, densely, and irregularly reticulate-rugose, the three smooth longitudinal bands reduced, the median one indistinct; scutellum strongly convex, coarsely rugose-punctate, the apical slope fairly regularly longitudinally rugose; area superomedia considerably longer than wide, almost smooth; costulae distinct, carinae coxales obsolete; speculum fairly small, with slight depression below it; longitudinal rugosity above and before speculum coarse, not quite so regular as usually; vertical rugae on propleura strong and regular. Red, prosternum black; mesosternum before coxae II on exterior side somewhat infuscated.

*Legs*.—Black, including all coxae, the coxae III with blue tinge; tibiae and tarsi I brownish.

*Wings*.—Nervulus postfurcal, areolet rhomboidal, radius sinuate. Clear.

*Abdomen*.—Median field of postpetiole and middle of second tergite between gastrocoeli strongly longitudinally striate, the median striae of

second tergite extending to beyond the middle of the tergite; third tergite without regular striation, only the transverse basal furrow with regular, very short, longitudinal striae; rest of second and third tergites densely rugose-punctate. Tergites 1-3 blue-black, their apical margins narrowly reddish; tergites 4-7 black, 5-7 with broad, laterally abbreviated apical white bands; the second sternite more extensively membranous than in the two preceding species, predominantly white, with a comparatively much narrower, elongate, sclerotized black plate on each side.

### 38. Genus *Epijoppa* Morley

*Pyramidellus* Szépligeti, 1910. Sjöstedt's Kilim.-Meru Exped., VIII, p. 64. Preoccupied in mollusca 1810.

*Epijoppa* Morley, 1915, Rev. Ichn., IV, pp. 49-50.

*Pyramidellus* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 35.

*Type species*.—*Joppa verecunda* Tosquinet; original designation by Morley 1915.

#### *Distribution*

Africa south of the Sahara, and Madagascar.

#### *Preamble*

The distinctive feature of this genus is the specialized structure of the scutellum of the females, which is very strongly raised, culminating in a point ("pyramidal") or in a short, sharp, transverse edge. As far as the African females of the tribe are concerned, this is an excellent character for practical taxonomic use as it permits an immediate distinction from all other genera (except *Pyramidamblys*, new genus), even the closely related genus *Tosquinetia* Ashmead. Less satisfactory is the fact that the males of this genus, sharing the above-mentioned scutellar structure with the females, cannot be distinguished generically from the few sexually dimorphic males of *Tosquinetia* with pyramidal scutellum. In other words: as long as the female associated with a given male with pyramidal scutellum is unknown, it remains uncertain to which of the two genera under discussion the male belongs. This is a drawback, but in my opinion not sufficient reason to synonymize these two large genera, which, I think, represent natural, though closely related groups. Besides, it is not at all unusual in the subfamily Ichneumoninae that the generic position of a species can not be determined without knowledge of the female, as, to mention just one example, in the alternative between *Ichneumon* Linnaeus and *Thyrateles* Perkins.

*Epijoppa* can be subdivided into two fairly well differentiated groups: the one represented by the type species, *metallica* Szépligeti, the other represented by *fumosa* Morley. In the *metallica* group, the scutellum is longitudinally striate and more gradually ascending, sometimes culminating in a short transverse edge, the tarsi are slender and normal, the abdomen of females is elongate and fairly narrow, the coxae III are simple and the collaral lamella is inconspicuous, without any considerable median emargination. In the *fumosa* group the scutellum is irregularly coarsely punctured, slightly less elevated, and culminates in a point, the tarsi are somewhat thickened and more or less abbreviated, with exte-



riorly flattened metatarsus, the abdomen of females is stout and broadly oval, the apical rim of coxae III is more or less projecting and the collaral lamella is more or less conspicuous, with distinct median emargination.

The *fumosa* group thus seems to be more closely related to *Tosquinetia* than the *metallica* group. In each of the two groups, species with and without abdominal white marks occur.

### *Morphological characters*

Except for the difference in the structure of the scutellum of females, described above, the genus *Epijoppa* agrees with *Tosquinetia* in all morphological characters. The area superomedia is smooth, as a rule, only exceptionally longitudinally rugose; the carinae coxales are always distinct, the costulae often are.

### *Chromatic characters*

In contrast to *Tosquinetia*, in the majority of species the wings are deeply and evenly infuscated, and in about 50% of the species the abdomen is blue-black without white abdominal markings. From the African continent only one species (*holerythros*, new species) with ferruginous basic color of the entire body has been recorded, another from Madagascar.

### *Remarks*

The *metallica* group contains one complex of extremely similar forms, including also the type species *metallica* Szépligeti, referred to in this paper as the *verecunda* complex. The taxonomic difficulty of this complex is increased by geographical variability and by normal sexual dimorphism, particularly as the two oldest names are based on males, which are structurally even more uniform than the females. Mr. E. Diller from the Zoologische Sammlung des Bayerischen Staates, Munich, Germany, has assisted in the attempt to use the structure of the genitalia for separating the species, preparing and drawing the genitalia (figs. 111-126). The result is this: one species of the complex (*bilobata* new species) which can be identified anyway by external characters, shows a quite different structure of the genitalia from the two others, inter se very similar species. The difference between the two latter species in the genitalia is less obvious, but nevertheless visible. The method deserves further attention but first needs research concerning the possible range of variation of this character.

### Key to the species and subspecies of *Epijoppa* Morley Females and Males

- |  |    |
|--|----|
| 1. Abdomen without distinct white marks. ....  | 2  |
| Abdomen with distinct white marks. ....  | 15 |
| 2. Head, thorax, and abdomen blue-black. (Apical half of wings rather distinctly infuscated; scutellum gradually ascending to the top, coarsely longitudinally striate; area superomedia rugose-opaque; length 12-13 mm.) ....   |    |
| ..... 10. <i>dimidiata</i> Morley, ♂   |    |
| ..... Uganda   |    |
| At least the head, often thorax partially to entirely red. ....  | 3  |
| 3. Abdomen predominantly to entirely ferruginous, sometimes anterior tergites with irregular infuscations, tending to be stronger in males than in females, showing in bright light an indistinct purplish-blue tinge; wings not |    |

distinctly infuscated. (Thorax ferruginous, in males sometimes propodeum infuscated; flagellum of males without annulus; length 13-14 mm.)

13. *holerythros*, new species, ♀♂

Cape Province

Abdomen uniformly deep blue-black; wings usually uniformly and deeply infuscated.

4. Median lobe of mesoscutum bipartite; area superomedia and postpetiole coriaceous, without striation or distinct rugosity; flagellum pale ferruginous/ (close to orange), with infuscated tip; wings slightly infuscated; thorax uniformly light ferruginous. (Length 14 mm.) 14. *rubricata* Morley, ♀

Southern Nigeria

Median lobe of mesoscutum not bipartite; area superomedia and postpetiole of different sculpture, the latter striate, the former smooth or rugose; flagellum of females dark, often with annulus; wings evenly and deeply infuscated; thorax extensively black or blue-black.

5. Scutellum irregularly and coarsely punctured; tarsi III somewhat abbreviated and thickened, the metatarsus flattened on exterior side (figs. 100-102); stout species with broad-oval abdomen. 6

Scutellum rather regularly and coarsely longitudinally striate, tarsi III not abbreviated, slender; slenderer species with more elongate abdomen. (Collaral lamella inconspicuous, medially neither produced nor bipartite.)

*verecunda* complex 7

6. Thorax, including mesoscutum and scutellum blue-black, only pronotum and prosternum red; collaral lamella inconspicuous, not medially widened and without any considerable median emargination. (Apical rim of coxae III more or less strongly projecting ventrally on inner side; flagellum with complete annulus in both sexes; length 15-19 mm.) 6. *fumosa* Morley, ♀♂

Kenya to Southern Rhodesia, at altitudes from 700 to 2000 m.

Mesoscutum and scutellum red; collaral lamella more conspicuous than in *fumosa*, medially distinctly produced and bilobate by a fairly deep median emargination. (Apical rim of coxae III moderately projecting ventrally on inner side; flagellum without annulus in both sexes; length 15-17 mm.)

4. *bilobata*, new species, ♀♂

Coastal zone of East Africa from Zanzibar to Durban

7. ♀♀. 8  
♂♂. (Flagellum black, without annulus.) 13

8. Apical rim of coxae III conspicuously projecting ventrally on inner side; temple profile in vertical view as shown in figure 109; large species, 19 mm long. (Flagellum without annulus.) 3. *grandis*, new species, ♀

Northeastern Tanganyika: foot E. Usambara Mts. (lowland jungle).

Apical rim of coxae III not noticeably projecting ventrally on inner side; temple profile in vertical view differing from *grandis* as shown in figures 107, 110; smaller species, 11.5-14 mm long. 9

9. Temple profile in vertical view somewhat narrowed behind eyes, rather long and scarcely curved (fig. 110); rugae on mesoscutum forming, on the average, a more regular pattern than in alternative species, several rugae usually running in parallel curves around anterior parts of the lateral smooth longitudinal bands (fig. 103). (Length 13-16 mm; probably confined to mountain forests.) 2. *metallica* (Szépligeti), ♀ 10

Temple profile in vertical view less narrowed behind eyes, shorter and more curved (fig. 107); rugae on mesoscutum more irregular, in particular the series of parallel curved rugae on lateral lobes lacking (fig. 105). (Length 11-16 mm.) 1. *verecunda* (Tosquinet), ♀ 11

10. Flagellum without annulus. 2a. *metallica metallica* (Szépligeti), ♀

Northern and eastern Tanganyika:

Kilimanjaro, Usambara Mts., Uluguru Mts.

Flagellum with dorsal white annulus. 2b. *metallica annulata*, new subspecies, ♀

Northern Transvaal

11. Flagellum without annulus. (Longitudinal striation on tergites 2 and 3 strong and extensive; in great majority of specimens mesosternum and meso-

pleura, usually also areae superoexternae, red; coxae II black.)

1c. *verecunda angolae*, new subspecies, ♀

Western Angola: south of the Cuanza River (lowlands).

Flagellum with white annulus.

12

12. Longitudinal striation on tergites 2 and 3 strong and extensive; mesosternum, mesopleura, areae superoexternae, and also coxae II, red.

1d. *verecunda occidentalis*, new subspecies, ♀

Ivory Coast

Longitudinal striation on the third tergite subobsolete, restricted to the very base; mesosternum, mesopleura, areae superoexternae, and coxae II, partially to entirely black.

1b. *verecunda tanzanica*, new subspecies, ♀

Eastern and southwestern Tanganyika: lowlands.

13. Longitudinal striation on the third tergite strong and extensive. (Head uniformly red, without yellowish markings; prosternum and coxae in great majority of specimens black.)

13a

Longitudinal striation on the third tergite weak and limited to the base of the tergite.

14

- 13a. Genitalia as in figs. 112, 116, 120, 124. 1c. *verecunda angolae*, new subspecies, ♂

Western Angola: south of the Cuanza River; lowlands.

Genitalia as in figs. 111, 115, 119, 123. 2a. *metallica metallica* (Szépligeti), ♂

Northern and eastern Tanganyika: mountain forests.

14. Inner orbits with faint yellowish mark level with antennal sockets; wings evenly and deeply infuscated from base to apex. (Costulae distinct; areae superoexternae fairly densely longitudinally rugose.)

1b. *verecunda tanzanica*, new subspecies, ♂

Eastern and southwestern Tanganyika: lowlands.

Head uniformly red, without yellowish mark; wings deeply infuscated, except whitish apex. (Costulae obsolete; areae superoexternae with a few longitudinal rugae.)

1a. *verecunda verecunda* (Tosquinet), ♂

Cape Province

15. Tergites 4-7 with broad apical white bands not laterally abbreviated; mesopleura below speculum with pronounced longitudinal depression almost from anterior to posterior border of mesopleura. (Wings clear; collaral lamella fairly conspicuous, bilobate.)

16

Only tergites 6 and 7 with laterally abbreviated apical white bands or apical marks. (Rarely also the fifth tergite with narrowly white apical margin.)

17

16. Tergites 1-3 orange; face and clypeus (except narrowly black middle), cheeks, and orbits around eyes, white. (Length 17-18 mm.)

11. *madagassa* (Heinrich), ♀

Madagascar

Basic color of tergites 1-3 or 2 and 3 metallic blue; head orange, without white markings. (Length 15-17 mm.)

12. *coeruleiventris* (Heinrich), ♀

Madagascar

17. Large, stout species, with broad-oval abdomen; tarsi III more or less distinctly thickened and sometimes abbreviated, the metatarsus flattened on exterior side (figs. 100-102); wings deeply infuscated, sometimes except whitish apices; scutellum coarsely, irregularly punctured; collaral lamella fairly conspicuous and bipartite. (Mesoscutum blue-black.)

18

Slenderer, usually smaller species with more elongated abdomen; tarsi III slender, not abbreviated, normal; wings clear or, if slightly infuscated, then darker toward apex than toward base; scutellum fairly regularly longitudinally striate; collaral lamella inconspicuous, without median emargination. (Mesoscutum blue-black or red.)

20

18. Tarsi III only slightly thickened and not abbreviated; wings uniformly and deeply infuscated from bases to apices; apical rim of coxae III with moderate protrusion ventrally on inner side. (Length 17 mm.)

7. *fumosops*, new species, ♀

Southern Rhodesia

Tarsi III distinctly thickened and abbreviated (fig. 101); wings deeply infuscated, except for their whitish apices; apical rim of coxae III with fairly

- strong protrusion ventrally on inner side (figs. 98, 99). (Length 15-19 mm.)  
 ..... 5. *manyarae*, new species 19
19. Head uniformly red, without yellowish mark on inner orbits; fifth tergite without white apical margin; third tergite extensively and very coarsely striate nearly to the apex; protruding lamella on apex of coxae III extends onto ventral surface (fig. 98). (Length 15 mm.)  
 ..... 5a. *manyarae manyarae*, new subspecies. 10  
 Tanganyika, west of Lake Manyara
- Head red, with yellowish mark on inner orbits; fifth tergite with narrowly white apical margin; third tergite with considerably weaker striation; protruding lamella on apex of coxae III not extending onto ventral surface (fig. 99). (Length 15-19 mm; in males sides of face broadly white and flagellum with complete, broad annulus.)  
 ..... 5b. *manyarae camerunensis*, new subspecies, ♀♂  
 Central African Republic and Nigeria
20. ♂♂ (only known male of this group); mesoscutum, except middle of median lobe, and the propodeum extensively to entirely blue-black; head red (except black occipital and temple regions), with yellowish mark on inner orbits; flagellum without annulus. (Length 16 mm.)  
 ..... 8b. *stuckenbergi littoralis*, new subspecies, ♂  
 Southeastern Cape Province: East London
- ♀♀  
 21. Mesoscutum blue-black. (Head uniformly red; thorax uniformly blue-black except red collar, middle of pronotum, and mark on the middle of anterior border of mesoscutum; length 17 mm.)  
 ..... 8a. *stuckenbergi stuckenbergi*, new subspecies, ♀  
 Natal: Pietermaritzburg
- Mesoscutum red.  
 22. Thorax entirely or nearly entirely red (in type specimen declivity of propodeum bluish-infuscated); first flagellar segment about three times as long as wide; widest flagellar segment scarcely wider than long; femora in lateral view slightly slenderer than in alternative species. (Length 16 mm.)  
 ..... 8b. *stuckenbergi littoralis*, new subspecies, ♀  
 Southeastern Cape Province: East London
- Thorax extensively blue-black: only prosternum, pronotum, mesoscutum, scutellum, upper part of mesopleura, and part of prepectus, red; first flagellar segment 2.5 times as long as wide; the widest flagellar segment 1.3 times as wide as long; femora III slightly thicker than in alternative species. (Length 16 mm.)  
 ..... 9. *amboimensis*, new species, ♀  
 Western Angola: Gabela

### 1. *Epijoppa verecunda* (Tosquinet)

#### Distribution

Cape Province (type locality); Tanganyika; Angola; Ivory Coast; at low altitudes.

#### Preamble

This species is the oldest named species of the tribe's most complex group of forms which were all regarded as one species until now. Unfortunately, the type specimen is a male, and to make things even more complicated, the scutellum, a diagnostically important part, is missing. Furthermore, the type specimen is the only one of this mainly tropical group ever recorded from Cape Province.

All the forms referred to above are chromatically distinguished by very strongly infuscated wings, lack of white markings and blue-black (or in parts black) basic color of the body, combined with red head and

at least red mesoscutum, sometimes also with other parts of the thorax red. Specific differences are found only in the sculpture of tergites 2 and 3, in some cases also the proportions of tarsi III and the shape of the collaral lamella; females differ subspecifically and specifically (in a very restricted degree also individually) in the presence or absence of a white flagellar annulus, whereas the flagellum of males is apparently uniformly black in all forms.

The type specimen of *Joppa verecunda* Tosquinet shows the following diagnostically important characters: (1) the longitudinal striation on the middle of second and the base of third tergites is rather weak and irregular; (2) the collaral lamella is inconspicuous, not distinctly emarginate medially and not bent backward; (3) the propleura (and upper part of mesopleura) are rather weakly and irregularly rugose; (4) the coxae III have not the slightest protrusion on the ventro-apical rim; (5) the forewings are apically whitish, distinctly less infuscated than the rest, a fact not due to fading as it is mentioned in the original description („... le bord externe plus clair ...“).

The total of these characters reveals (1) that my synonymization of *metallica* Szépligeti with this species was incorrect and (2) that there are no identical specimens in the comprehensive material of this group from Central, East, and West Africa I have examined, (3) that the most closely related form occurs in the lowlands of Tanganyika; this form and another from the West African lowlands, I am treating below tentatively as associated subspecies. It must be kept in mind that the diagnosis of this species particularly its subspecific associations will remain somewhat hypothetical until further topotypical specimens of the nominate form, including the matching female, are found.

### Male

*Red are: head, scape, pronotum, usually exterior part of prepectus, mesoscutum, scutellum, subalarum, and a small patch below the latter; rest of thorax and tergites 1-3 blue-black; tergites 4-7, legs II and III including coxae and the flagellum black; legs I including coxae predominantly brownish, more or less infuscated as is usually the prosternum; wings uniformly deeply infuscated, in type specimen forewings apically obscurely whitish; length 11.5-13 mm.*

*Flagellum.*—With 37-38 segments; transverse bristle-ridges on ventral side rather prominent. Black, ventrally sometimes brownish, without white annulus; scape bright red, sometimes dorsally somewhat infuscated.

*Head.*—Structure as described for the tribe. Uniformly red, in specimens from Tanganyika with a faint yellowish mark on inner orbits level with antennal sockets.

*Thorax.*—Structure as described for the tribe; collaral lamella inconspicuous, scarcely emarginate medially; trough behind collare with some weak, irregular transverse and oblique rugosity; pattern of rugae on middle of mesoscutum between the two exterior smooth bands sometimes rather irregular (fig. 105); scutellum (lacking in South African type specimen) rather regularly longitudinally striate; area superomedia usually a little longer than wide, entirely smooth, or only on anterior part; areae superoexternae in type specimen with only a few weak longitudinal rugae,

extensively smooth, in specimens from Tanganyika fairly regularly and distinctly longitudinally rugose; costulae obsolete in type specimen, fairly distinct in other populations; areae coxales distinct; longitudinal rugae on mesopleura above speculum and particularly on propleura fairly irregular and weak. Metallic blue-black; the following red: pronotum, mesoscutum, scutellum, tegulae, subalarum, small patch below subalarum, usually exterior parts of prepectus and prosternum, the latter usually infuscated, sometimes black; tip area of scutellum sometimes infuscated.

*Legs*.—Coxae simple. Without white markings; legs II and III, including coxae, black, the latter with more or less distinct blue tinge, the femora and ventral side of tibiae sometimes reddish; legs I predominantly reddish-brown, their coxae usually basally infuscated, their trochanters and sometimes base of femora dorsally infuscated, their tarsi blackish.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Deeply infuscated, in type specimen from South Africa, apices of forewings whitish.

*Abdomen*.—Median field of postpetiole strongly aciculate; prominence of longitudinal striation on second and third tergites varying geographically: considerably stronger in the western subspecies *angolae*, new subspecies, than in the eastern subspecies *tanzanica*, new subspecies (when compared under the same magnification). Tergites 1-3 metallic blue-black, 4-7 black.

### *Female*

*Head* uniformly red; red on thorax at least as extensive as described for the male, tending, however, to include the mesosternum partially or entirely and sometimes even the entire mesopleura; the black on rest of thorax, particularly on mesosternum and on mesopleura, with less distinct metallic-blue tinge than in male, sometimes entirely without blue tinge; tergites 1-3 blue-black, 4-7 black, usually with dull-red tinge; legs and wings as in male; flagellum with or without white annulus, varying geographically; length, 11-16 mm.

*Flagellum*.—Structure as described for the tribe; with 39-42 segments, the first about 2.5 times as long as wide, the 13th approximately square, the widest slightly wider than long. Black, in populations from Tanganyika and Ivory Coast with dorsal white annulus, usually on segments 8 (apex) to 12 (base), in population from Angola without white annulus; scape and pedicel red.

*Head*.—Structure as described for the tribe. Uniformly red.

*Thorax*.—Structure as described for the male, but the rugae on propleura, upper part of mesopleura and on areae supereoexternae considerably stronger, denser, and more regular than in males. Red color more extensive than in males, including usually at least part of the mesosternum, often the entire mesosternum and the entire mesopleura, sometimes also the areae supereoexternae, in West African subspecies occasionally even the entire propodeum.

*Legs and wings*.—As in male.

*Abdomen*.—As in male; the last tergite, or several of the apical tergites, often dull-reddish.

### 1a. *Epijoppa verecunda verecunda* (Tosquinet)

Figs. 113, 117, 121, 125

*Joppa verecunda* Tosquinet, 1896, Mém. Soc. Ent. Belg., pp. 101-103. ♂.

*Epijoppa verecunda* Morley, 1915, Rev. Ichn., IV, p. 51, ♂♀. (Many localities given: the description, however, evidently refers to a complex of several different forms. all localities therefore are meaningless.)

*Pyramidellus verecundus* Heinrich, 1935, Mission Scient. de l'Omo, III, p. 232, ♂. (*Pyramidellus metallicus* Szépligeti wrongly as synonym; the record of *verecundus* from Kenya to be deleted.)

#### Types

*Holotype*.—♀, "Çapland, Drege S." Z.M.H.U. Scutellum missing.

#### Distribution

Cape Province (type locality); all other records need confirmation, as most of them probably refer to other similar forms.

#### Male

(Only type specimen known). *Wings strongly infuscated but apically translucent; head red, without yellow mark on inner orbits; areae superoexternae with only a few irregular longitudinal rugae, costulae obsolete; third tergite with very weak and short longitudinal striation.*

### 1b. *Epijoppa verecunda tanzanica*, new subspecies

Fig. 105

#### Types

*Holotype*.—♀, "Dar es Salaam, Tanganyika, 14.9.1961. G. Heinrich". C.G.H. II.

*Allotype*.—♂, same locality, 10.9.1961. C.G.H. II.

*Paratypes*.—3 ♀♀, 1 ♂, same locality, 10.-21.9.1961; 3 ♀♀, Tanganyika, Uluguru Mts., near Morogoro, 700 m, 4.-10.I.1962; 2 ♀♀, S.W. Tanganyika, Mbeya, 18.XI.1962. All in C.G.H. II.

#### Distribution

Tanganyika: coastal lowland near Dar es Salaam (type locality), low altitudes in east Tanganyika and southwest Tanganyika (paratypes).

#### Male

*Differs from the type specimen of verecunda Tosquinet by wings evenly and deeply infuscated from base to apex, by a yellowish mark on inner orbits level with antennal sockets, by distinct and fairly dense longitudinal rugosity on the areae superoexternae and distinct costulae; striation on third tergite weak and short as in nominate form.*

#### Female

*Flagellum with white annulus; coxae II entirely or partially black; red color on thorax tending to be more extensive than in male, including usually part of the mesosternum, sometimes the entire mesosternum and the entire mesopleura; longitudinal striation on the third tergite obsolete except at the very base as in male; the longitudinal rugosity on propleura and the transverse rugae on mesopleura above speculum much more pronounced than in male, strong and regular.*

**1c. *Epijoppa verecunda angolae*, new subspecies**

Figs. 107, 112, 116, 120, 124

**Types***Holotype*.—♀, "Angola, südl. Gabela, 28.VII.54." C.G.H. II.*Allotype*.—♂, same data. C.G.H. II.*Paratypes*.—6 ♀♀, 4 ♂♂, same locality, 5.-31.VII.54; 3 ♀♀, 8 ♂♂, Angola, Quitondo (Calulo distr.), 11.8.-2.9.1957. All in C.G.H. II.**Distribution**

Western Angola: Calulo district and near Gabela (south of Cuanza River).

**Preamble**

This form differs clearly from *tanzanica* Heinrich in both sexes by the stronger and more extensive striation on the second and particularly on the third tergite. Females differ in addition by the lack of white flagellar annulus (constant in all 10 specimens); in both these characters the form agrees with the species *metallica* Szépligeti from the higher mountains of northeastern Tanganyika, but the pattern of the mesoscutal rugae, the ecology (inhabitant of tropical lowlands), and particularly the color of the thorax seem to indicate a close relationship to *verecunda* Tosquinet rather than to *metallica*.

**Male**

Wings uniformly and deeply infuscated as in *verecunda tanzanica* Heinrich, the striation on the second and third tergites, however, considerably stronger and more extensive than in subspecies *tanzanica* and in subspecies *verecunda*; prosternum and coxae I in great majority of specimens black; head uniformly red, without yellowish markings on inner orbits.

**Female**

Flagellum in contrast to *verecunda tanzanica* without annulus; longitudinal striation on third tergite (as in the male), much more extensive and stronger than in *tanzanica*; red on thorax, on the average, more extensive than in females of *tanzanica*, in overwhelming majority of specimens including the entire mesosternum and mesopleura, usually also the areae supereoexternae, rarely the entire thorax; coxae II black.

**1d. *Epijoppa verecunda occidentalis*, new subspecies****Types***Holotype*.—♀, "Côte d'Ivoire, Makono, 5.-6.I.1957, J. de Beaumont". C.G.H. II.*Paratype*.—1 ♀, same data. C.G.H. II.**Distribution**

Ivory Coast.



### Female

Agrees with *verecunda angolae* Heinrich in the strongly striated sculpture of second and third tergites and also in the extensive red color of the thorax, including the entire mesosternum and mesopleura, and the areae supereoexternae; also the coxae I and II red; flagellum in contrast to *angolae* with narrow dorsal white annulus, as in subspecies *tanzanica* Heinrich; differs from the latter in the stronger striation of the third tergite and in the considerably more extensive red color on the thorax and coxae.

### 2. *Epijoppa metallica* (Szépligeti)

Figs. 103, 110, 111, 115, 119, 123

#### Distribution

Mountain ranges of northern and eastern Tanganyika; Nyasaland; northern Transvaal.

#### Preamble

This is the second named species of the *verecunda* complex and, like *verecunda* Tosquinet, was originally based on the male sex alone. The type specimens of *verecunda* and *metallica* are so similar that I was not able to find any tangible difference in structure or color and therefore synonymized the two species in 1935. Recent examination of more comprehensive material and comparison of the genitalia have revealed that in spite of the external similarity, we are here dealing with two distinct species and that even a number of further species may be contained in this complex. In northeastern Tanganyika one form, in all probability a subspecies of *verecunda* (*tanzanica* Heinrich), is found in the coastal lowland and at lower altitudes in the interior, a second at higher altitudes, between about 800 m and 1600 m; of the second form only females were obtained; they match the type specimen of *metallica* in color and sculpture and occur at the same altitudes; I have therefore associated these females with *metallica* and made this hypothesis the basis of the treatment of this species.

For distinguishing the females of *verecunda* and *metallica*, one chromatic character is available, although not applicable in all cases: in the overwhelming majority of females of *verecunda* the prepectus, mesosternum, and mesopleura (or one of these parts) are partially to entirely red, in *metallica* all three parts are constantly entirely black or blue-black. In addition, the sculpture of the second and third tergites offers, at least in the eastern part of Africa, a differential character for the females of the two species as well as for the males: the striation of tergites 2 and 3, in particular of the third tergite, is much more prominent in *metallica* than in *verecunda* when compared under equal, low magnification. There is also a slight difference in head structure between the females of the two species (figs. 107, 110), and the pattern of rugae on the mesoscutum is usually more regular in *metallica* than in *verecunda* (figs. 103, 105).

#### Male

Red are: head, scape, pronotum, mesoscutum, scutellum, subalarum, and a small mark below the latter; rest of thorax and tergites

1-3 metallic blue and blue-black; tergites 4-7, flagellum, prosternum, and all legs, including coxae, black, tergites 4-7 with metallic-blue tinge; wings fairly deeply but not always quite evenly infuscated; length 13-14 mm.

*Flagellum*.—With 38-42 segments; transverse bristle-ridges on ventral side rather prominent. Black, ventrally sometimes dull brownish; scape and pedicel red.

*Head*.—Structure as described for the tribe. Uniformly red.

*Thorax*.—Structure as described for the tribe; collaral lamella inconspicuous, without distinct median emargination; trough behind collare with some weak, irregular transverse and oblique rugosity; area supero-media smooth, in type slightly wider than long, with bulging sides, sometimes slightly longer than wide; areae superoexternae with distinct and regular, somewhat oblique, longitudinal rugae; costulae and areae coxales distinct; longitudinal rugae on mesopleura regular and rather strong in type specimen; scutellum more or less coarsely longitudinally striate. Metallic blue; the following red: pronotum, mesoscutum, tegulae, subalarum, with a very small area below it, and scutellum (the latter sometimes partially, in type specimen even uniformly, black); prosternum black.

*Legs*.—Coxae simple. Without white markings; uniformly black, including all coxae; legs I sometimes with slight brownish tinge.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Moderately strongly and not quite evenly infuscated.

*Abdomen*.—Postpetiole, broad middle of second tergite to near its apex, and the third tergite to beyond middle, fairly coarsely, longitudinally striate. Tergites 1-3 metallic blue, 4-7 black with blue tinge, or sometimes black-brown.

### Female

*Head* uniformly orange; orange are also: mesoscutum, scutellum, tegulae, prosternum, pronotum, and subalarum with a small mark below it; the rest of the thorax and the abdomen bright metallic blue; all legs, including coxae, uniformly black; flagellum uniformly black, without, or, in one subspecies, with white annulus; length 13-16 mm.

*Flagellum*.—Structure as described for the tribe; with 40-44 segments, the first nearly three times as long as wide, about the 14th square, the widest slightly wider than long. Black, with or without dorsal white annulus (geographically varying); scape and pedicel orange, the latter usually apically infuscated; sometimes the basal segments of flagellum orange (in 2 specimens from Usambara Mts.).

*Head*.—Structure as described for the tribe; temple profile (fig. 110) behind eyes longer and nearly straight in contrast to *verecunda tanzanica*, upper frons slightly concave (fig. 110). Uniformly orange.

*Thorax*.—Structure as described for the male. Metallic blue; the following orange: pronotum, prosternum, mesoscutum, scutellum, tegulae, and subalarum with a small area below it; prosternum sometimes partially infuscated.

*Legs and abdomen*.—As in male; in two specimens from the Usambara Mts. all coxae and femora partially red or brown.

*Wings*.—As in male, but more strongly and evenly infuscated.

## 2a. *Epijoppa metallica metallica* (Szépligeti), new combination

*Pyramidellus metallicus* Szépligeti, 1910, Sjöstedt's Kilim.-Meru Exp., VIII, p. 64 and pl. 5, fig. 1, ♂.

*Pyramidellus verecundus* Heinrich, 1935, Miss. Scient. de l'Omo, III, p. 232, ♂ (*metallicus* Szépligeti erroneously as synonym).

### Distribution

Northern and eastern Tanganyika: Kilimanjaro (type locality); ♀♀ from Western and Eastern Usambara Mts., and Uluguru Mts. (C.G.H. II.); ♂ Kenya: Taveta, 750 m (Heinrich, loc. cit.); medium to higher altitudes.

### Types

*Lectotype*.—♂, "Sjöstedt, Kibonoto Kulturzone, 29. April."; designated by Heinrich, 1964. N.R.

*Paratypes*.—5 ♂♂, same locality. N.R.

*Neallotype*.—♀, "Tanganyika, W. Usambara Mts., 1600 m, Lushoto, 15.III.1962." C.G.H. II.

### Female

*Flagellum without white annulus.*

### Male

*See description of species.*

## 2b. *Epijoppa metallica annulata*, new subspecies

### Types

*Holotype*.—♀, "N. Transvaal, Elim, 800-900 m, Junod." Z.M.H.U.

### Distribution

South Africa: Transvaal.

### Preamble

The holotype agrees with *metallica metallica* Szépligeti from the northern mountains of Tanganyika, as described above, in color and in the coarse aciculation of the third tergite; its head structure differs distinctly from *verecunda tanzanica* Heinrich and is almost identical with *metallica*. These facts seem to indicate the subspecific association.

### Female

*Flagellum with dorsal white annulus, in type specimen on segments 7 (apex) to 12.*

## 3. *Epijoppa grandis*, new species

Fig. 109

### Types

*Holotype*.—♀, "Tanganyika, E. Usambara Mts., Lunguza, 300 m." C.G.H. II.

### Distribution

Northeastern Tanganyika: foot of the Eastern Usambara Mts.; tropical lowland jungle.

### Preamble

A third form of the *verecunda* complex, very similar to *metallica* Szépligeti. Agrees with *metallica* female in the lack of flagellar annulus, coarse striation of the second and third tergites and in the distribution of the blue, black, and red color, the latter being absent on the prepectus, mesosternum, and almost entire mesopleura. Differs from *metallica* by considerably larger size, by head structure as described below and shown in figure 109, and also in ecology, as *grandis* in contrast to *metallica*, inhabits lowland jungles. The ecological difference is confirmed by the fact that a specimen of *metallica* with typical head structure and size (Z.M.H.U.) has been collected at Amani in the high mountain region of the same mountain range (Eastern Usambara).

### Female

*Head uniformly red; red are also: mesoscutum, scutellum, tegulae, base of prosternum, pronotum, and subalarum with a small area below it; the rest of the thorax and the abdomen blue-black; all legs, including coxae, uniformly black; flagellum uniformly black, without annulus; length 19 mm.*

*Flagellum.*—Structure as described for the tribe; with 44 segments, the first nearly three times as long as wide, about the 14th square, the widest slightly wider than long. Uniformly black; scape and base of pedicel red.

*Head.*—Structure as described for the tribe; outline of head in vertical view slightly different from *metallica*: temple profile somewhat more curved and distinctly shorter, in comparison to the distance of eyes on vertex, than in *metallica* (fig. 109). Uniformly red.

*Thorax.*—Structure as described for *metallica*, but pattern of rugae on mesoscutum not quite as regular; orange color replaced by red; red are: pronotum, base of prosternum, mesoscutum, scutellum, tegulae, and subalarum with a small area below it; the rest blue-black.

*Legs, wings, and abdomen.*—As in *metallica* female; the abdomen less bright, rather dark metallic blue.

### 4. *Epijoppa bilobata*, new species

Figs. 108, 114, 122, 126

### Types

*Holotype.*—♀, "Durban, Natal, 13.II.63., G. Heinrich." C.G.H. II.

*Allotype.*—♂, "Mfongosi, Zululand, W.E. Jones, April-May 1934." S.A.M.

*Paratypes.*—1 ♀, "Tanganyika, Dar es Salaam, 14.II.61." C.G.H. II; 1 ♀, "H. C. Burnup, Tongaat '08-9." S.A.M.; 1 ♀, 1 ♂, same data as the preceding. C.G.H. II; 1 ♂, same data as allotype. S.A.M.

### Distribution

Coastal zone of East Africa from Zanzibar (Z.M.H.U.) south to Durban (type locality).

### Preamble

This species too displays the uniform coloration of the *verecunda* complex, but differs from the three preceding species by a number of structural characters much more decisively than these species differ from each other: (1) median part of collaral lamella distinctly produced backward and bipartite by distinct median emargination; (2) apical rim of coxae III on inner part of ventral side with fairly distinct protrusion; (3) tarsi III distinctly thickened and exteriorly flattened; (4) dorsal surface of scutellum not regularly longitudinally striate but coarsely irregularly punctured; (5) genitalia of males (figs. 114, 118, 122, 126), strongly differentiated from the preceding species.

### Female

*Head* uniformly red; red are also: mesoscutum, scutellum, tegulae, prosternum, pronotum, subalarum, more than upper half of mesopleura with at least exterior part of prepectus; rest of thorax and the abdomen blue-black; all legs, including coxae, black, only coxae I often extensively red, legs I often partially brownish; flagellum uniformly black, exceptionally with indication of a very narrow annulus; length 15-17 mm.

*Flagellum*.—Structure as described for the tribe; with 40-42 segments, the first about 2.5 times as long as wide, the 15th nearly square, none wider than long. Black; in one specimen with dorsal whitish spots on segments 11 and 12; scape and pedicel red, the latter apically infuscated.

*Head*.—Structure as described for the tribe; wide in dorsal view, the outline of temples behind eyes distinctly curved (fig. 108). Uniformly red.

*Thorax*.—Structure as described for the tribe and genus; median part of collaral lamella distinctly widened and produced backward, medially emarginate, forming two rounded lobes of moderate size; rugosity of mesoscutum rather coarse and irregular; surface of scutellum not longitudinally striate but coarsely and irregularly punctured; area superomedial large, medially rounded in front and projecting toward postscutellum, sometimes wider than long, smooth, the areae superoexternae regularly longitudinally rugose; longitudinal striation on mesopleura rather coarse and regular above, before, and slightly below speculum, vertical striation on propleura irregular and fairly weak. Red; propodeum blue-black; mesosternum and less than lower half of mesopleura black; usually also prepectus more or less extensively infuscated on each side of its middle.

*Legs*.—Apical rim of coxae III with moderately large protrusion ventrally on inner side, the protruding lamella usually extending as a short, indistinct carina onto the ventral side of coxae; tarsi III thickened and somewhat abbreviated, the metatarsus flattened on outer side. Black, including coxae; coxae I usually red in front; sometimes also trochanters, femora, and tibiae I red-brown on interior side.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Evenly and deeply infuscated.

*Abdomen*.—Broad-oval, the second tergite about as wide apically as medially long, or slightly wider; postpetiole aciculate; median part of second tergite coarsely aciculate nearly to the end, of third tergite to beyond middle. Blue-black.

### Male

Collaral lamella smaller than in female; color as described for female; prepectus, on the average, more extensively, sometimes nearly entirely, black; flagellum without annulus; length 13-14 mm.

### Remark

One male from Tanga (Z.M.H.U.) differs from allotype by red mesosternum, prepectus, coxae, and trochanters, and by purplish-red propodeum; it may represent a distinct subspecies or just an individual variation.

## 5. *Epijoppa manyarae*, new species

Figs. 98, 99, 101

### Distribution

Tanganyika: Escarpment west of Lake Manyara; Central African Republic: Bozoum, Ouahm River.

### Preamble

A fairly large species, with broadly oval abdomen, similar in appearance and related to *bilobata* Heinrich, but differing by: (1) dark blackish-blue or metallic-blue thorax, except red pronotum; (2) apical white marks on tergites 6 and 7; (3) whitish-translucent apices of the deeply infuscated wings; (4) differently structured protrusion on coxae III (figs. 98, 99); (5) more abbreviated tarsi III (fig. 101); (6) sculpture of mesoscutum as described below. Characters (1) and (6) are shared by the next two species.

### Female

Dark metallic blue; head and prothorax, sometimes also prepectus and prosternum, red; tergites 6 and 7 with apical white marks; wings deeply infuscated, except whitish apices from areolet to tip; flagellum with complete white annulus; length 15-19 mm.

**Flagellum.**—Structure as described for the tribe; in the nominate form with 42 segments, the first fully 3 times as long as wide, about the 15th approximately square, the widest scarcely wider than long. Black, with complete white annulus on segments 7 (apex) to 14 or 15; scape entirely, pedicel partially or predominantly red.

**Head.**—Structure as described for the tribe; head in vertical view wide, outline of temples distinctly curved. Uniformly red, in subspecies *camerunensis* inner orbits with yellowish mark.

**Thorax.**—Structure as described for the tribe and genus; collaral lamella distinctly widened toward middle and somewhat produced backward, with deep median emargination; trough behind collare smooth; rugae on mesoscutum comparatively fine, running in very dense zigzag pattern, the smooth longitudinal bands comparatively narrow; scutellum pyramidal, culminating in a point, its surface coarsely, irregularly punctured; area superomedia usually somewhat longer than wide, almost smooth, its lateral carinae weak; costulae obsolete; areae coxales distinct; smooth specular area fairly large, longitudinal striation above, before and slightly below

it rather strong; striation on propleura incomplete and weak. Black-blue, only pronotum and sometimes prepectus and prosternum red.

*Legs*.—Apical rim of coxae III distinctly protruding ventrally on inner side, forming a carina which in nominate form (but not in *manyarae camerunensis*, new subspecies) extends somewhat onto the ventral side of coxae (figs. 98, 99); tarsi III thickened and abbreviated, metatarsus flattened on exterior side (fig. 101). Uniformly black, including coxae; legs I sometimes brownish in western subspecies.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Strongly infuscated, except apices which are translucent from areolet on.

*Abdomen*.—Broad-oval, the second tergite apically slightly wider than medially long; postpetiole rather finely aciculate, the second and third tergites coarsely longitudinally striate, varying geographically in degree and extent; second sternite medially, basally, and apically broadly membranous and white. Tergites 1-3 blue-black, 4-7 black, in western subspecies sometimes reddish, the sixth and seventh with laterally abbreviated apical white bands, in subspecies *camerunensis* the fifth tergite with narrowly white apical margin.

#### Male

*Sides of face* broadly yellowish-white, the white band continuing and at the same time tapering out on inner orbits to shortly above level of antennal sockets; *flagellum* with broad, complete white annulus; otherwise as in female; length 15-19 mm.

*Flagellum*.—Tips missing in all known specimens. Black, with complete white annulus on segments 14 (apex) to 22 or 24; scape and pedicel predominantly red.

#### 5a. *Epijoppa manyarae manyarae*, new subspecies

Fig. 98

#### Types

*Holotype*.—♀, "Tanganyika, W. of Lake Manyara, escarpment, 1200 m, 6.VIII.1962." C.G.H. II.

*Paratype*.—1 ♀, same data. C.G.H. II.

#### Distribution

Tanganyika: Escarpment, west of Lake Manyara.

#### Female

*Head* uniformly red, without yellowish mark on inner orbits; *thorax* uniformly blue-black, except red pronotum and sometimes prosternum; fifth tergite without apical white margin; third tergite extensively and very coarsely striate nearly to apex; protruding lamella on apex of inner side of coxae III extending onto ventral surface (fig. 98); length 15 mm.

*Flagellum*.—With 42 segments, with complete white annulus on segments 7 (apex) to 15; scape red; pedicel predominantly blackish.

### 5b. *Epijoppa manyarae camerunensis*, new subspecies

Fig. 99

*Epijoppa fumosa* var. *apicalis* Morley, 1915, Rev. Ichn. IV, p. 51, ♀ (Nigeria).

#### Types

*Holotype*.—♀, "Uamgebiet, Bosum, 11.-20.6.14., Tessmann S." Z.M.H.U.

*Allotype*.—♂, same data. Z.M.H.U.

*Paratypes*.—1 ♀, 2 ♂♂, same data. C.G.H. II.; 1 ♂, same locality, 1.-10.6.14., 4 ♂♂, same locality, 11.-27.14. Z.M.H.U.

#### Distribution

Central African Republic: Bozoum, Ouahm River (type locality); Nigeria (Morley, loc. cit.).

#### Female

Head red with yellowish mark on lower end of inner orbits; thorax blue-black, except red pronotum, prosternum, and prepectus, in one specimen mesothorax reddish-tinged (faded?); fifth tergite with narrowly white apical margin; striation on third tergite considerably weaker than in subspecies *manyarae*, and scarcely reaching to the middle of the tergite; protruding lamella on apex of inner side of coxae III not extending onto ventral surface of coxae (fig. 99); length 15-19 mm.

*Flagellum*.—Tips missing in all known specimens. With complete white annulus on segments 7 (apex) to 14; scape and pedicel red.

#### Male

For description, see species.

### 6. *Epijoppa fumosa* Morley

*Dinotomus bicolor* Szépligeti, 1903, Ann. Hist. Nat. Mus. Hung., V, p. 483, ♀; name preoccupied.

*Epijoppa fumosa* Morley, 1915, Rev. Ichn. IV, p. 51, ♀ ♂.

*Dinotomus africanus* Morley, 1915, Rev. Ichn. IV, pp. 62-63, ♀; new name for *Dinotomus bicolor* Szépligeti (preoccupied).

*Epijoppa fumosa* Morley, 1926, Ann. S. Afr. Mus., XXIII, p. 439, ♀; record from Salisbury.

#### Types

*Holotypes*.—*Epijoppa fumosa* Morley, ♀, "Nyasaland, Mlanje, June 13, 1913, S. A. Neave." B.M. No. 3b-85. *Dinotomus bicolor* Szépligeti, ♀, "Dt. Ost. Afrika." M.N.M.

#### Distribution

From Kenya through Tanganyika, Nyasaland (type locality), and from Northern Rhodesia south to Salisbury, Southern Rhodesia; found in the lowlands (1 ♂, Morogoro, 700 m, C.G.H. II.) and up to 2600 m (1 ♀, Mt. Rungwe, 2600 m, C.G.H. II.).

#### Preamble

A large and striking species, blue-black, with red head and pronotum, similar in color and size to *manyarae* Heinrich, but without white abdominal markings and with the wings deeply and evenly infuscated to the tips; collaral lamella inconspicuous, scarcely emarginate in the middle; coxae III



with moderately protruding apical rim on interior side of apex; tarsi III abbreviated and thickened.

### *Female*

*Blue-black; head, pronotum, and prosternum, sometimes also prepectus, red; legs black, including coxae, legs I sometimes extensively reddish; flagellum black with white annulus; length 15-19 mm.*

*Flagellum.*—Structure as described for the tribe; with 44 segments, the first more than 3 times as long as wide, the 14th approximately square, the widest scarcely wider than long. Black, with complete white annulus on segments 8 (apex) to 13, the first segment often basally ferruginous; scape and pedicel red.

*Head.*—Structure as described for the tribe. Uniformly red.

*Thorax.*—Structure as described for the tribe and genus; collaral lamella inconspicuous, not widened medially and without evident median emargination; rugosity of mesoscutum comparatively fine, nearly reticulate, the rugae mainly in irregular zigzag lines; the three smooth longitudinal bands comparatively narrow; scutellum pyramidal, culminating in a point, its surface coarsely irregularly punctured, the apical slope with some coarse, longitudinal, converging rugae; area superomedia smooth, usually slightly longer than wide, distinctly projecting toward postscutellum medially in front; costulae obsolete, areae coxales defined; striae on mesopleura above and before speculum fairly coarse and regular, striation on propleura incomplete and irregular, usually interspersed with punctures on upper part. Blue-black, pronotum and at least basal part of prosternum, usually the entire prosternum, and sometimes prepectus, red, in specimens from Southern Rhodesia mesothorax also extensively red.

*Legs.*—Apical rim of coxae III more or less strongly protruding ventrally on inner side; tarsi III distinctly abbreviated and thickened, their metatarsus flat on exterior side. Uniformly black; coxae, trochanters, and femora I often red or reddish; apical margin of trochanters I, or I and II, dorsally narrowly white.

*Wings.*—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Uniformly and deeply infuscated.

*Abdomen.*—Broadly oval, the second tergite apically as wide or wider than medially long; postpetiole finely aciculate, second and third tergites coarsely longitudinally striate, the second nearly to the apex, the third to beyond the middle. Blue-black, tergites 1-3 with a slightly greenish reflection.

### *Male*

*As in female; flagellum with white annulus.*

*Flagellum.*—With 43-45 segments; complete white annulus on segments 14 or 16 or 17 to 19 or 20 or 21.

## **7. *Epijoppa fumosops*, new species**

Fig. 102

### *Types*

*Holotype.*—♀, "Chirinda Forest, Southern Rhodesia, Nov. 1930". C.G.H. II.

### Distribution

Southern Rhodesia.

### Preamble

Another large and handsome blue-black species with broad-oval abdomen, in general appearance very similar (and in structure closely related) to *manyarae* Heinrich and *fumosa* Morley, but clearly differing from these two species by decidedly slenderer tarsi III (fig. 102); in addition differing from *manyarae* by the wings being uniformly deeply infuscated to the apex, from *fumosa* by the presence of white marks on tergites 6 and 7. In color nearly identical with *stuckenbergi stuckenbergi*, new subspecies, but strongly differing from the latter by the wide abdomen, coarsely punctured (instead of longitudinally striate) scutellum, and by the much weaker striation of the postpetiole.

Median part of collaral lamella moderately produced, with fairly distinct median emargination; apical rim of coxae III somewhat protruding ventrally on inner side.

### Female

*Blue-black, legs black, head and pronotum red; tergites 6 and 7 with apical white marks; flagellum with white annulus; length 17 mm.*

*Flagellum.*—Structure as described for the tribe; with 44 segments, the first more than 3 times as long as wide, the 14th approximately square, the widest scarcely wider than long. Black, with complete white annulus on segments 8 (apex) to 14; apices of segments before annulus brownish; scape and pedicel red, apically infuscated.

*Head.*—Structure as described for the tribe. Uniformly red.

*Thorax.*—Structure as described for the tribe and genus; collaral lamella moderately large, slightly produced in the middle, with fairly distinct median emargination; rugosity of mesoscutum as in *fumosa*; scutellum pyramidal, culminating in a point, dorsally coarsely and irregularly rugose-punctate; area superomedia smooth, areae superoexternae longitudinally rugose; costulae obsolete, areae coxales distinct; mesopleura above, before, and slightly below speculum strongly longitudinally striate; striation on propleura irregular and incomplete, on its upper part interspersed with some punctures.

*Legs.*—Apical rim of coxae III with moderate protrusion apically on inner side; tarsi III not thickened, fairly slender, metatarsus flattened on exterior side. Uniformly black, including coxae; legs I blackish-brown.

*Wings.*—Nervulus postfurcal; areolet pentagonal; radius sinuate; evenly and fairly deeply infuscated from base to apex.

*Abdomen.*—Broad-oval, second tergite nearly as wide apically as medially long; postpetiole very finely aciculate; second and third tergites coarsely longitudinally striate, the second almost to the apex, the third to beyond middle. Dark metallic blue, tergites 4-7 black, 6 and 7 with laterally abbreviated white bands, the one on the sixth tergite medially emarginate in front.

### 8. *Epijoppa stuckenbergi*, new species

#### Distribution

Natal, southeastern Cape Province.

#### Preamble

A typical species of the genus *Epijoppa* Morley with slender, somewhat elongate abdomen and elongate and slender tarsi III. Chromatically distinguished mainly by the uniformly bright-red (in males partially black) head, always without white markings, combined with blue-black abdomen (the basic color of the apical tergites usually slightly red-tinged) with white marks on tergites 6 and 7. The color of thorax and legs varies geographically from almost uniformly black to almost uniformly red. Sculptural characteristics are: the very dense and very irregular rugosity of the mesoscutum, the regular and dense longitudinal striation of the pyramidal scutellum, and the broadly horseshoe-shaped area superomedia, which may be smooth or finely irregularly rugose; coxae III of females simple, collaral lamella inconspicuous.

#### Female

Head always uniformly red, thorax varying geographically from predominantly black to uniformly red, always without white markings; abdomen blue-black, the apical 2-4 tergites usually faintly red-tinged; sixth tergite with short apical white band, the seventh with apical white mark, the fifth usually narrowly margined with white in the middle; legs varying geographically from uniformly black to predominantly red; wings clear, usually slightly infuscated beyond middle; flagellum black, with dorsal white annulus; length 16-17 mm.

*Flagellum*.—Structure as described for the tribe; with 41-42 segments, the first fully 3 times as long as wide, the 14th approximately square, the widest scarcely wider than long. Black, with dorsal white annulus on segments 7 (apex) or 8 to 12 or 13 (base); segments before annulus with brownish tips; scape ventrally red.

*Head*.—Structure as described for the tribe. Always uniformly red, only mandible teeth black.

*Thorax*.—Structure as described for the tribe and the genus; collaral lamella inconspicuous and without distinct median emargination; mesoscutum very densely and very irregularly rugose, the three smooth longitudinal bands distinct; the gradual basal slope of the pyramidal scutellum very densely regularly longitudinally striate; lateral slopes and upper part of the apical slope likewise with strong parallel striation; area superomedia usually broadly horseshoe-shaped, in front almost contiguous to postscutellum, very finely, irregularly rugose or smooth; areae superoexternae fairly regularly obliquely longitudinally rugose; costulae obsolete; carinae coxales distinct; mesopleura above, before and below speculum very strongly longitudinally striate. Black, with only collare, middle of pronotum, and middle of base of median lobe of mesoscutum red, varying subspecifically to uniformly red.

*Legs*.—Coxae simple; tarsi long and slender. Uniformly black, geographically varying to predominantly red.

*Wings*.—Nervulus postfurcal, areolet rhomboidal; radius sinuate; scarcely infuscated, with the apical part (beyond stigma) sometimes rather distinctly infuscated.

*Abdomen*.—Postpetiole medially distinctly aciculate, dorsal surface of second and third tergites very strongly so. Black, tergites 1-3 with bluish tinge, tergites 4-7 or 6-7 usually with a dull-reddish tinge; sixth tergite with short apical white band, the seventh with apical white mark.

#### Male

Description based on specimens of subspecies *littoralis*, new subspecies, from southeastern Cape Province.

*Flagellum* black, without annulus; *vertex*, most of occiput and temple region black; *thorax* extensively black: pronotal ridge, tegulae, subalarum, prosternum, mesosternum, mesoscutum (except middle of median lobe), propodeum (except metapleura and sometimes except area superomedia and declivity); *legs* varying from predominantly black to predominantly red, including coxae; otherwise as in female.

#### Remark

The species is named in honor of Mr. B. R. Stuckenberg of the Natal Museum in Pietermaritzburg, who assisted my collecting activities around Pietermaritzburg in a most friendly way.

#### 8a. *Epijoppa stuckenbergi stuckenbergi*, new subspecies

##### Types

*Holotype*.—♀, "South Africa, Pietermaritzburg, 10.-16.II.63." C.G.H. II.

##### Distribution

Natal: Pietermaritzburg.

##### Female

*Thorax* predominantly black; red are only: collare, middle of pronotum behind collare, middle of anterior part of median lobe of mesoscutum; *legs* uniformly black; length 17 mm.

#### 8b. *Epijoppa stuckenbergi littoralis*, new subspecies

##### Types

*Holotype*.—♀, "South Africa, East London, 27.VII.1961." C.G.H. II.

*Allotype*.—♂, same data. C.G.H. II.

*Paratypes*.—1 ♀, 1 ♂, same data. C.G.H. II.

##### Distribution

Southeastern Cape Province: East London.

##### Female

*Thorax* uniformly red, sometimes postscutellum and/or declivity of propodeum slightly infuscated with blackish-blue; *legs*, including coxae, partially to predominantly red; length 16 mm.

*Legs*.—Red; in type specimen the trochanters, coxae II and III toward apex, all tarsi and the tibiae dorsally blackish-infuscated, the femora II and III brownish; in paratype coxae, trochanters, and femora (except apices) without infuscations.

#### Male

See description under species.

#### Remark

The two females (type and paratype) of this subspecies are not completely identical. In the type specimen the temples seem to be a trifle wider than in the paratype, and the area superomedia too is somewhat wider and shorter. In view of the identity of all other characters and to the fact that the two specimens were collected at the same spot and the same time, I believe that these differences are only a matter of individual variation.

### 9. *Epijoppa amboimensis*, new species

#### Types

*Holotype*.—♀, "Angola, km. südl. Gabela, 16.VIII.1954." C.G.H. II.

#### Distribution

Western Angola: Gabela.

#### Preamble

I have little doubt that this is the West African vicariant of *stuckenbergi* Heinrich from Natal and Cape Province, but the first flagellar segment is distinctly shorter than in *stuckenbergi*, the area superomedia is much wider than long, the femora III are slightly thicker and the metapleura are transversely rugose-punctate; the total of these differences seems to suggest specific distinction.

#### Female

*Head*, pronotum, prosternum, mesoscutum, and scutellum uniformly red; propodeum and abdomen blue-black, the sixth tergite with short apical white band, the seventh with apical white mark; black are also: prepectus partially, mesosternum except middle, more than lower half of mesopleura, and legs II and III almost entirely; flagellum black with ferruginous base and with white annulus; length 16 mm.

*Flagellum*.—Structure as described for the tribe; with 42 segments, the first nearly 2.5 times as long as wide, the 12th approximately square, the widest about 1.3 times as wide as long. Black, segments 8-12 with dorsal white annulus; segments before annulus apically and ventrally brownish; scape, pedicel, and segments 1-2 ferruginous.

*Head*.—Structure as described for the tribe; temple profile slightly wider than in *stuckenbergi*. Uniformly red, only mandible teeth black.

*Thorax*.—Structure as described for the tribe and genus; collaral lamella inconspicuous, not emarginate medially; mesoscutum very densely and very irregularly rugose; scutellum pyramidal, but not quite as strongly elevated as in *stuckenbergi*, the basal slope regularly and very strong-

ly longitudinally striate, the apical slope coarsely and irregularly rugose; area superomedia distinctly wider than long, slightly bulging laterally, smooth; costulae distinguishable, carinae coxales prominent; the areae superoexternae regularly longitudinally rugose; mesopleura above, before, and below speculum very strongly and densely longitudinally striate, the smooth speculum reduced in size by striation; metapleura coarsely transversely rugose-punctate. Red are: pronotum, prosternum, mesoscutum, scutellum, lateral parts and middle of prepectus, middle of mesosternum, less than upper half of mesopleura (except black band along posterior border); the rest black, propodeum blue-black.

*Legs*.—Coxae III simple; tarsi III not thickened or abbreviated; femora somewhat thicker than in *stuckenbergi*. Legs II and III black, including coxae; tip of femora II brownish; legs I red; base of coxae and trochanters I dorsally infuscated.

*Wings*.—Nervulus almost interstitial; areolet rhomboidal; radius sinuate. Clear, slightly infuscated toward apex.

*Abdomen*.—Structure as described for the tribe; moderately slender; petiole and middle of postpetiole distinctly aciculate; median part of second tergite and the third to beyond middle strongly aciculate; sclerotized plates of second sternite comparatively wide, leaving only the plica membranous. Blue-black, sixth tergite with short apical white band, the seventh with apical white mark.

#### 10. *Epijoppa dimidiata* Morley

*Epijoppa dimidiata* Morley, 1915, Rev. Ichn., IV, p. 52, ♂.

##### *Types*

*Holotype*.—♂, "Entebbe, Uganda, 28.VIII.11. C. C. Gowdey." B. M. No. 3b-88.

##### *Distribution*

Uganda.

##### *Preamble*

The type is a male with pyramidal scutellum; the generic position of the species is therefore not certain, as it could belong to *Tosquinetia* Ashmead or to *Epijoppa* Morley. The chromatic characters, including the apically clouded wings, suggest relationship to *Tosquinetia* rather than to *Epijoppa*, but the gradually ascending, coarsely longitudinally striate scutellum suggests *Epijoppa*. The species is therefore tentatively included in the latter genus. The rugose-opaque area superomedia represents a special character of the species, unusual for the genus *Tosquinetia* as well as for *Epijoppa*.

##### *Male*

Blue-black without white markings, except for minute white dots on interior orbits level with antennal sockets; femora III red, their apical one-fourth black; about apical half of wings rather distinctly infuscated; flagellum without annulus; according to original description front tibiae bright red on inner side (not visible in type specimen); length 12-13 mm.

*Head*.—Structure as described for the tribe; clypeus projecting medio-apically a trifle more distinctly than usually. Uniformly black, with white dots on inner orbits level with antennal sockets.

*Thorax*.—Structure as described for the tribe; propodeum, including area superomedia, densely, irregularly rugose; most of carination of horizontal part obsolete; sculpture of mesopleura resembling *corrugata* Tosquinet: smooth area of speculum large, extending close to the anterior border of mesopleura, which are densely and regularly longitudinally striate above speculum; propleura densely obliquely striate; scutellum pyramidal, with gradually ascending, coarsely longitudinally striate anterior slope, the steep posterior slope coarsely reticulate. Blue-black.

*Legs*.—As described above.

*Wings*.—With distinct dark cloud covering the apical half almost to the apex.

*Abdomen*.—Postpetiole medially finely longitudinally rugose; second and third tergites extremely strongly and rather regularly longitudinally striate on nearly entire surface, their apices and surface of following tergites sparsely and coarsely punctured. Blue-black.

### 11. *Epijoppa madagassa* (Heinrich), new combination

Fig. 106

*Pyramidellus madagassus* Heinrich, 1938, Mém. Acad. Malg., XXV, pp. 35-36, ♀.

#### Types

*Holotype*.—♀, "Madagascar, Rogez, 600 m, V.-VI.1931, leg. A. Seyrig." C.G.H. I.

*Paratypes*.—2 ♀♀, same locality, IX.-X.1931, leg. A. Seyrig. C.G.H. I. and C.G.H. II.

#### Distribution

Madagascar: Rogez, Périnet, Diégo-Suarez, Montagne d'Ambre (Heinrich, loc. cit.).

#### Preamble

This Madagascan species agrees well in most of the essential structural characters with the typical forms of this genus from the African continent, but differs from them strikingly in the orange, instead of metallicblue, basic color of the abdomen with very extensive white markings, furthermore in the wholly clear wings, in the less prominent and less extensive aciculation on tergites 2 and 3, and in the long transverse depression on mesopleura below speculum.

#### Female

*Head* white with black parts; *thorax*, *abdomen*, and *legs* orange; *basic color* of tergites 4-7 black, *mesoscutum* and *propodeum* usually with infuscated parts; tergites 4-7 with apical white bands; *flagellum* black, with white dorsal annulus; *length* 17-18 mm.

*Flagellum*.—Structure as described for the tribe; with 47 segments, the first about 3.3 times as long as wide, the 13th square, the widest nearly 1.5 times as wide as long. Black, with dorsal (nearly complete) white annulus on segments 6 (apex) to 13 or 14; scape ventrally brownish.

*Head*.—Structure as described for the tribe; malar space about 1.3 times as long as width of mandible base; occiput distinctly depressed medially above carina occipitalis, the latter strongly prominent. White; the following black: a narrow longitudinal median band on face and on upper part of clypeus, middle of frons between white orbits, ocellar, occipital, and temple regions, the black nowhere reaching to the border of eyes; posterior part of lower cheeks orange.

*Thorax*.—Structure as described for the tribe and genus; collaral lamella fairly conspicuous, deeply emarginate medially; pattern of rugae on mesoscutum different from the continental African species of the genus (fig. 106); scutellum ascending to a short transverse ridge, the lateral declivities of its pyramidal part with a row of strong transverse rugae, the ascending dorsal surface more or less strongly longitudinally rugose-punctate, the apical declivity concave; area superomedia in front nearly contiguous to postscutellum, with distinct costulae before middle, distinctly narrowed from costulae toward postscutellum; areae superoexternae regularly and strongly longitudinally rugose; mesopleura above and below the speculum densely longitudinally striate, with distinct longitudinal depression below speculum. Orange; the lateral smooth longitudinal bands and the areae superoexternae blackish-brown-infuscated.

*Legs*.—Coxae III simple. Uniformly orange, including coxae; only the tarsi infuscated.

*Wings*.—Nervulus strongly postfurcal; areolet rhomboidal; radius sinuate. Clear.

*Abdomen*.—Semiamblypygous, nearly oxygygous; gastrocoeli not transverse, on exterior side almost as long as apically wide; postpetiole medially aciculate; second tergite regularly aciculate between gastrocoeli (the striae curving at base to both sides, surrounding the gastrocoeli basally on inner part), with a median longitudinal ridge to beyond middle, on both sides of the ridge irregularly, longitudinally striate; third tergite only basally aciculate; rest of tergites 2 and 3 densely, irregularly rugose-punctate, the second tergite more coarsely than the third; second and third sternites predominantly membranous, the second with only a small, narrow, irregularly shaped sclerotized plate, the third with a more regularly shaped, somewhat bigger one. Orange; basic color of tergites 4-7 usually black, these tergites with broad apical white bands, the one on the fourth tergite strongly narrowed medially, more often interrupted, the one on the fifth tergite medially narrowed; sometimes the third tergite also apically infuscated.

## 12. *Epijoppa coeruleiventris* (Heinrich), new combination

*Pyramidellus coeruleiventris* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 36, ♀.

### *Types*

*Holotype*. —♀, "Madagascar, Rogez, 600 m, IX.-X.1931, leg. A. Seyrig." C.G.H. I.

*Paratypes*. —1 ♀, same data, XI.-XII.1931. C.G.H. II.; 3 ♂♂, Madagascar, Rogez. M.N.H.N.

### *Distribution*

Madagascar: Rogez, Ampandrandava.



### Preamble

This form agrees so completely with *madagassa* Heinrich in structure and sculpture that its specific distinction seems subject to doubt. On the other hand, the two forms are so strikingly different in color that it seems likewise hard to accept the hypothesis that they are mere individual variations of the same species. And yet they could be only just that, or else two distinct species, as they are at least in parts of their range sympatric, and thus not to be regarded as associated subspecies. As there is so far no proof for one or the other hypothesis, I am maintaining the specific status of this form, believing it to be correct.

### Female

Head orange, without white markings, the vertex more or less extensively black, the frons and occipital region ferruginous-red; thorax uniformly orange, without infuscations; basic color of tergites 1-3 or 2 and 3 metallic blue; tergites 4-7 black, with broad apical white bands; bases, sides and apices of tergites 1-3 more or less extensively reddish-white or pale orange; legs orange, tarsi I and II and base of tarsi III, less intensely also tibiae II and III, infuscated; flagellum black, with dorsal white annulus; length 15-17 mm.

For the structure and sculpture, see *madagassa* Heinrich.

### Remarks

There is also a record (Heinrich, loc. cit.) of 3 specimens, probably from Montagne d'Ambre, and of one from east of Tananarive, which all agree with *coeruleiventris* in the blue basic color of anterior tergites, but have extensively white-banded orbits (like *madagassa*). These bands, however, in contrast to *madagassa*, are broadly interrupted on the vertex. I have reexamined these specimens (N.M.H.N.) and it seems to me that they may belong to *madagassa* as a distinct subspecies, or perhaps to a third species rather than to *coeruleiventris*.

## 13. *Epijoppa holerythros*, new species

### Types

*Holotype*.—♀, "South Africa, East London, 27.VII.1961." C.G.H. II.

*Allotype*.—♂, same data. C.G.H. II.

*Paratypes*.—2 ♀♀, 1 ♂, same data. C.G.H. II.; 1 ♀, "Van Stadens Mth., C.P." and 2 ♂♂, "Jeffreys Bay, C.P." S.A.M.

### Distribution

South Africa, Cape Province.

### Preamble

A typical species of the genus, distinguished by the nearly uniformly ferruginous-red color without distinct white markings. Collaral lamella fairly conspicuous, in females with distinct median emargination. Apex of coxae III of females with very slight protrusion and with inconspicuous more or less distinct, very short longitudinal carina.

### Female

Nearly uniformly ferruginous-red; apex and sides of propodeum usually, lower half of mesopleura and the mesosternum sometimes, rarely also the first tergite or apices of the second and third with irregular slight infuscations, some of which may show an indistinct bluish tinge in sunlight; tergites 6 and 7 lighter than the rest, without white markings; flagellum with white annulus; length 13-14 mm.

*Flagellum*.—Structure as described for the genus; with 38-39 segments, the first about 3.5 times as long as wide, the 13th and the widest approximately square. With complete white annulus on segments 8-12, segments before annulus blackish-brown, their ventral side and apices light brown, segments beyond annulus dorsally black; scape ferruginous.

*Head*.—Structure as described for the tribe; clypeus with a small median projection; clypeus, face, and apical part of cheeks moderately densely and moderately strongly punctured, the rest smooth. Uniformly ferruginous-red.

*Thorax*.—As described for the tribe and for the genus; collaral lamella fairly conspicuous and medially distinctly emarginate; mesoscutum with the typical three smooth longitudinal bands, the rest coarsely, densely and very irregularly rugose; scutellum pyramidal, culminating in a point, with steep basal and vertical apical slope, the basal slope coarsely rugose-punctate, the apical slope with a few convergent longitudinal rugae or carinae; propodeum short, steeply declivous; area superomedia large, widened horseshoe-shaped, medially projecting toward postscutellum, varying from regularly longitudinally rugose to predominantly smooth and shiny, the areae superoexternae longitudinally more or less regularly rugose; mesopleura before and above speculum regularly longitudinally striate, below speculum rather longitudinally rugose-punctate; metapleura densely and coarsely punctate, without rugosity. Uniformly ferruginous-red, apical part and sides of propodeum usually more or less distinctly and more or less extensively infuscated (sometimes also lower half of mesopleura and the mesosternum infuscated).

*Legs*.—Ventral side of coxae III with only very slight protrusion on apex of interior side, which usually emits a very short carina onto ventral side of coxae; tibiae III with rather distinct longitudinal depression on exterior side; tarsi III slightly thickened. Uniformly ferruginous, tarsi III a trifle infuscated.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Clear.

*Abdomen*.—Postpetiole distinctly and densely aciculate; broad middle of second and third tergites very strongly longitudinally striate, the sides of both tergites and the apex of the third coarsely rugose-punctate; middle and apex of second sternite broadly membranous. Ferruginous-red; sometimes one or several of anterior tergites irregularly, slightly infuscated in parts; tergites 6 and 7 lighter-colored than the anterior tergites.

### Male

*Flagellum* without annulus; tergites 2 and 3 tend to be more extensively infuscated than in female, sometimes predominantly blackish with slight bluish tinge; tibiae III dorsally and the tarsi III more distinctly infus-

cated than in female, sometimes entirely black; sometimes also propodeum predominantly and usually the basal slope of scutellum blackish-infuscated, rarely the coxae in parts blackish; otherwise as in female.

*Flagellum*.—With 37-39 segments. Black, ventrally brownish; scape ferruginous, dorsally usually blackish.

#### 14. *Epijoppa rubricata* Morley

*Epijoppa rubricata* Morley, 1915, Rev. Ichn., IV. p. 53, ♀.

##### *Types*

*Holotype*.—♀, "Akwele, S. Nigeria, 14.V.1910, J. J. Simpson." B. M. No. 3b-90.

##### *Distribution*

Southern Nigeria.

##### *Preamble*

An aberrant species of unclear generic position. The distinctly bipartite median lobe of mesoscutum resembles the two Madagascan *Compsophorus*, but the scutellum of the female is pyramidal, though not as strongly elevated and not of the same structure as in typical *Epijoppa*; the area superomedia is large and neither smooth nor rugose, but finely coriaceous; the postpetiole shows the same fine sculpture; tergites 2 and 3 are strongly aciculate; on account of the latter character in combination with the scutellum culminating in a point, the species is tentatively attributed to the genus *Epijoppa*.

##### *Female*

*Head, thorax and legs including coxae, trochanters, and tarsi uniformly light ferruginous, as are the flagella (except infuscated tips); abdomen and propodeum blue-black; length 14 mm.*

*Flagellum*.—As described for the tribe; not at all widened beyond middle. Light ferruginous (close to orange), tip blackish.

*Head*.—As described for the tribe; median field of face a trifle convex; edge between face and cheeks slightly indicated. Uniformly light ferruginous.

*Thorax*.—Median lobe of mesoscutum distinctly bipartite in front; scutellum not strongly elevated above postscutellum but culminating in a point, longitudinally striate; area superomedia large, without distinct macrosculpture, but finely coriaceous, the bordering carinae obsolete; adjacent parts of areae superoexternae with the same fine sculpture; mesopleura longitudinally striate above speculum, the latter somewhat extended toward anterior border of mesopleura. Light ferruginous, the propodeum blue-black.

*Legs*.—Coxae III ventrally fairly sparsely and finely punctured, finely coriaceous between punctures, subopaque. Light ferruginous.

*Wings*.—Slightly infuscated.

*Abdomen*.—Postpetiole very finely coriaceous; tergites 2 and 3 strongly aciculate, the following tergites irregularly punctured. Blue-black.

### 39. Genus *Pyramidamblys*, new genus

Fig. 104

*Type species*.—*Epijoppa pygidifer* Morley

*Distribution*

Uganda.

*Preamble*

In the original description of his *Epijoppa pygidifer*, Morley mentions, with reference to the apex of its abdomen, that „so extraordinary is this structure that a new genus would be requisite for the present species . . .“ I think that this statement is correct. Considering the great structural conformity of the numerous species of this tribe, the specialization of the type species seems to be considerable indeed.

*Pyramidamblys* is very closely related to *Epijoppa* Morley but differs from the latter by two distinctive characters:

1. Apex of the elongate, parallel-sided abdomen of the females blunt and amblypygous.
2. Apex of second tergite and about the apical third of the third smooth, with scattered punctures.

The other morphological characters agree with *Epijoppa*.

#### 1. *Pyramidamblys pygidifer* (Morley), new combination

*Epijoppa pygidifer* Morley, 1919, Proc. Zool. Soc. London, p. 120, ♀.

*Types*

*Holotype*.—♀, "Entebbe, Uganda, C. C. Gowdey, Aug. 1911." B. M. No. 3b-84.

*Distribution*

Uganda.

*Preamble*

This species is the giant among the African species of the tribe Compsophorini and distinguished by its elongate, subcylindrical, amblypygous abdomen, resembling in appearance an American *Conocalama* species.

*Female*

Blue-black; tergites 6 and 7 with apical white marks; head, scape, and pronotum red; wings uniformly and deeply infuscated; flagellum black with white annulus; length 23 mm.

*Flagellum*.—Structure as described for the tribe; with 50 segments, the 12th approximately square, the widest about 1.5 times as wide as long. Black, with white annulus on segments 8 (apex) to 18; scape red.

*Head*.—Structure as described for the tribe. Uniformly red.

*Thorax*.—As described for the tribe; collaral lamella with straight upper border, not medially emarginate; area superomedia wide, smooth; areae superoexternae with smooth basal and longitudinally rugose apical parts; basal and apical slope of the pyramidal scutellum very coarsely

longitudinally rugose; smooth area of speculum very large, nearly reaching to anterior border of mesopleura. Blue-black, the prothorax red.

*Legs*.—Blue-black.

*Wings*.—Blue-black-infuscated.

*Abdomen*.—Amblypygous, apically blunt, elongate, almost parallel-sided, the second tergite distinctly, the third slightly longer than wide; apical margin of the second, and about apical third of the third tergite smooth, with scattered punctures. Blue-black; about apical half of the sixth and the seventh tergites predominantly white.

## 2. *Pyramidamblys tangae*, new species

Fig. 104

### *Types*

*Holotype*.—♀, "D. O. Afrika, Tanga, 1909." Z.M.H.U.

### *Distribution*

Tanganyika: Tanga.

### *Preamble*

This species agrees with the type species in the amblypygous structure of the abdomen (fig. 104) and also shares with it the smooth, sparsely punctured apical belts of tergites 2 and 3, but these belts are much narrower, the size of the species is considerably smaller, and the last tergites are apically white-banded. Collaral lamella fairly conspicuous, with distinct median emargination; apical rim of coxae III with conspicuous protrusion ventrally on inner side; scutellum not clearly pyramidal but rather strongly gibbose, a culminating point, however, slightly indicated.

### *Female*

Blue-black, head uniformly, thorax partially, red; smooth apical bands on tergites 2 and 3, and basic color of tergites 4-7 dark brown, tergites 6 and 7 with apical white bands; the following red: pronotum, tegulae, scutellum, longitudinal bands on mesoscutum between infuscated median and lateral lobes, prescutellar carinae, apex of mesoscutum, subalarum, and patch below it; legs predominantly red-brown, coxae II and III blue-black; wings almost clear; flagellum with white annulus; length 14 mm.

*Flagellum*.—(The greater part missing.) First segment about 3 times as long as wide, the 12th segment square. Black, with dorsal white annulus on segments 7-12; scape and pedicel red.

*Head*.—Structure as described for the tribe. Uniformly red.

*Thorax*.—Structure as described for the tribe; collaral lamella fairly conspicuous, with distinct median emargination; rugosity of mesoscutum rather coarse and regular, the pattern of rugae similar to *Epijoppa metallica* Szépligeti (fig. 103); scutellum strongly gibbose, subpyramidal, not culminating in a point but in a bluntly rounded area; anterior surface of scutellum with scattered, coarse punctures, declivity with a few converging coarse rugae; area superomedia polished, its lateral bordering carinae obsolete in type specimen; areae superoexternae irregularly rugose-punctate; costulae obsolete, carinae coxae partially indistinct; speculum not extended toward anterior border of mesopleura, longitudinal striation

of the latter above, before, and below speculum strong and regular; vertical striation on propleura moderately strong. Blue-black, prosternum black-brown; the following light ferruginous-red (close to orange): pronotum, scutellum, tegulae, subalarum and patch below it, basic color of mesoscutum: the latter with a broad, longitudinal blackish-infuscated band on each lobe.

*Legs*.—Apical rim of coxae III ventrally on inner side with fairly conspicuously projecting carina, extending a short distance onto the ventral surface of coxae; tarsi slender. Dark red-brown, the tarsi and coxae I blackish-brown, coxae II and III blue-black; apical margin of trochanters I and II dorsally whitish.

*Wings*.—Nervulus postfurcal; areolet rhomboidal; radius sinuate. Nearly clear.

*Abdomen*.—Comparatively narrow, the second tergite slightly longer than apically wide; postpetiole medially very finely aciculate; second and third tergites coarsely longitudinally striate, the former close to the apex, the latter to beyond middle, both tergites apically smooth, with some scattered punctures; tergites 6 and 7 apically membranous and truncate, the apex of the abdomen thus blunt and subamblypygous; second sternite medially broadly, the third less broadly, both apically moderately broadly membranous and white. Tergites 1-3 metallic blue, the smooth apical belts of tergites 2 and 3 red-brown; basic color of tergites 4-7 blackish-brown; tergites 6 and 7 with laterally abbreviated apical white bands.

### VIII. Tribe *Ctenocalini* Heinrich

*Ctenocalini* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 40-41.

*Type genus*.—*Ctenocalus* Szépligeti.

#### *Distribution*

Africa south of the Sahara and Madagascar.

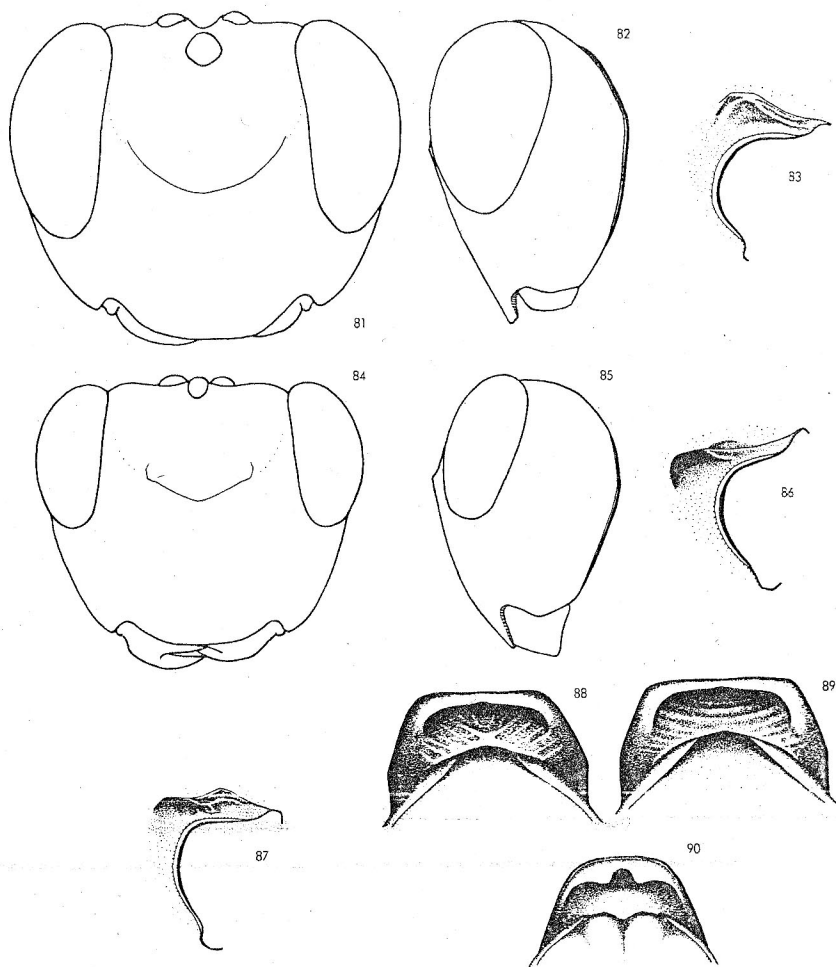
#### *Preamble*

The forms included in this tribe all show, in the general appearance, some similarity to the Compsophorini Heinrich. There are, in particular, certain parallels in the structure of head, scutellum, and propodeum, although none of these parts agree fully with the tribe mentioned. The structure of the mandibles shows the most striking differentiation. In the *Ctenocalini* the subapical tooth is always bent out of the plane of the apical tooth, sometimes far enough to make the mandible appear sickle-shaped, the subapical tooth being situated almost in a vertical plane with the apical tooth and thus nearly hidden by it.

#### *Morphological characters*

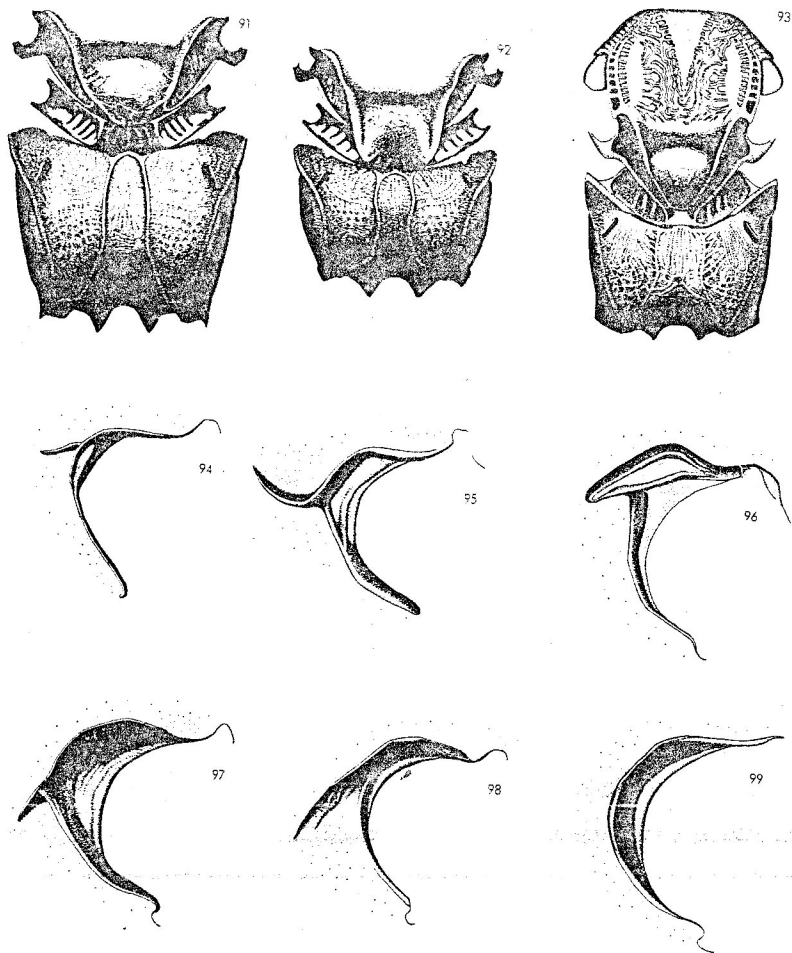
*Flagellum*.—Of females bristle-shaped, long and very slender, ventrally flattened beyond middle but not, or only slightly widened, apical portion very long and strongly attenuated. Of males with or without transverse bristle-ridges and nodosity and with or without tyloids.

*Head*.—(Fig. 130). Always rather thick, with wide temples and wide cheeks; face, clypeus, and cheeks somewhat similar to the *Listrodromini*



## XV.

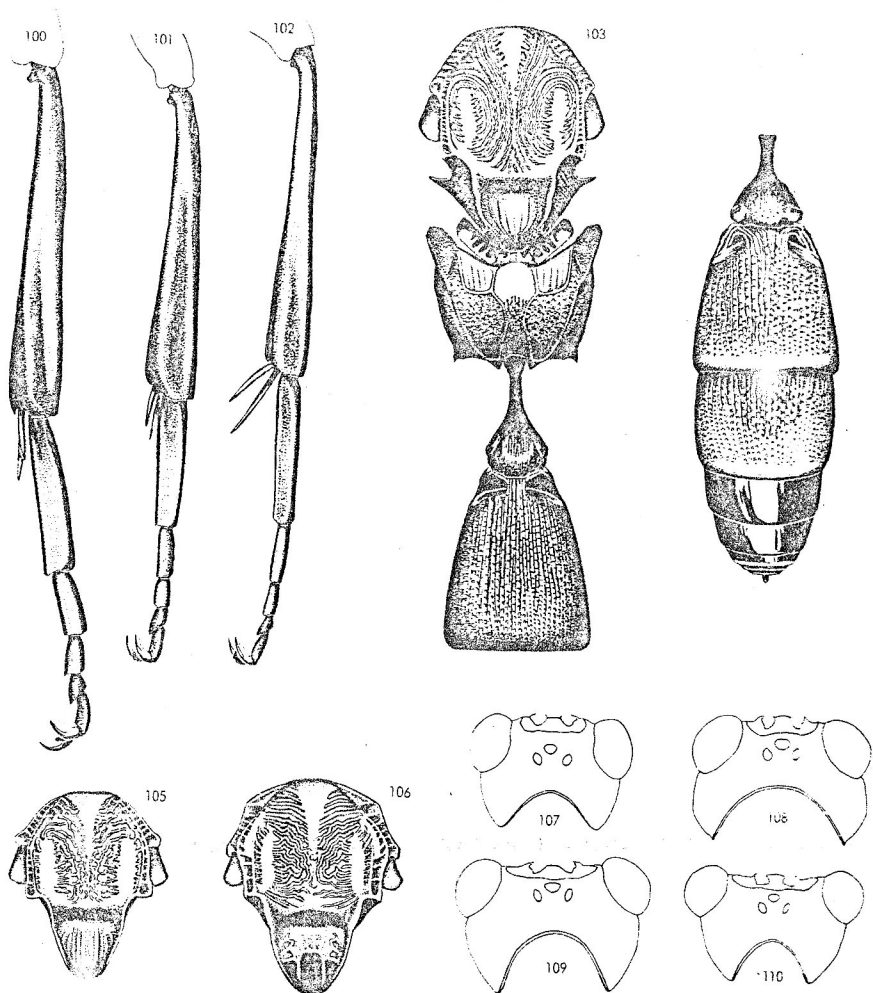
Figs. 81-90. *Compsophorus seyrigi* Heinrich, ♀: 81, head, frontal view; 82, head, lateral view; 83, apico-ventral protrusion on coxae III; *Oxyjoppa thoracica* (Morley), ♀: 84, head, frontal view; 85, head, lateral view; 86, apico-ventral protrusion on coxae III; 89, collaral trough; *Oxyjoppa flavobalteata* Cameron) ♀: 87, apico-ventral protrusion on coxae III; 88, collaral trough; 90, *Compsophorus mirandus* Saussure, ♀, collaral lamella and bipartite median lobe of mesoscutum.



## XVI.

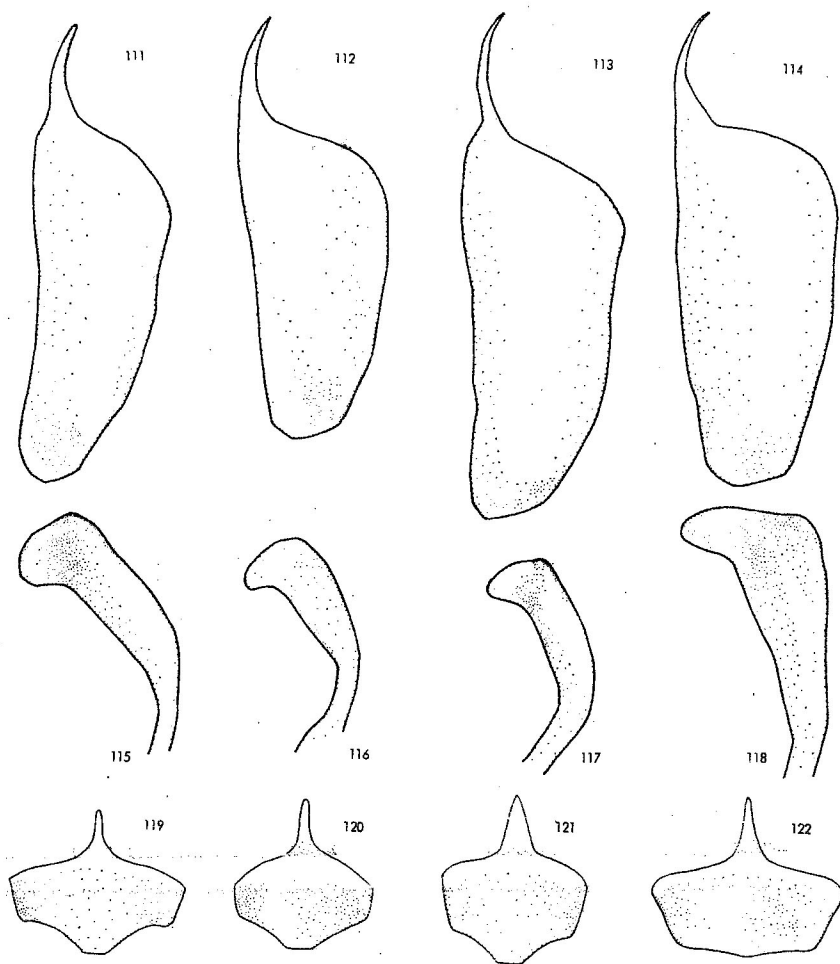
Figs. 91-99. *Eccoptosagellus androplites* Heinrich: 91, scutellum and propodeum, ♀; 92, scutellum and propodeum, ♂; 93, *Tosquinetia crassidentata* Heinrich, ♀: thorax and propodeum; 94-99, apico-ventral protrusion on coxae III: 94, *Tosquinetia micans* (Tosquinet), ♀; 95, *Tosquinetia triangulifer* (Morley), ♀; 96, *Tosquinetia crassidentata* Heinrich, ♀; 97, *Tosquinetia viridescens* Heinrich, ♀; 98, *Epijoppa manyarae* Heinrich, ♀; 99, *Epijoppa manyarae camerunensis* Heinrich, ♀.





## XVII.

Figs. 100-110. Tibiae and tarsi III: 100, *Epijoppa fumosa* Morley, ♀; 101, *Epijoppa manyarae* Heinrich, ♀; 102, *Epijoppa fumosops* Heinrich, ♀; 103, *Epijoppa metallica* (Szépligeti), ♀: thorax and tergites 1-2; 104, *Pyramidamblys tangae* Heinrich, ♀: abdomen; 105, *Epijoppa verecunda tanzanica* Heinrich, ♀: mesoscutum and scutellum; 106, *Epijoppa madagassa* (Heinrich), ♀: mesoscutum and scutellum; temple profile in vertical view: 107, *Epijoppa verecunda angolae* Heinrich, ♀; 108, *Epijoppa bilobata* Heinrich, ♀; 109, *Epijoppa grandis* Heinrich, ♀; 110, *Epijoppa metallica* (Szépligeti), ♀.



## XVIII.

Figs. 111-122. Valva: 111, *Epijoppa metallica* (Szépligeti); 112, *Epijoppa verecunda angolae* Heinrich; 113, *Epijoppa verecunda verecunda* (Tosquinet); 114, *Epijoppa bilobata* Heinrich; penis: 115, *Epijoppa metallica*; 116, *Epijoppa verecunda angolae*; 117, *Epijoppa verecunda verecunda*; 118, *Epijoppa bilobata*; hypopygium: 119, *Epijoppa metallica*; 120, *Epijoppa verecunda angolae*; 121, *Epijoppa verecunda verecunda*; 122, *Epijoppa bilobata*.

and Compsophorini, but not so completely deprived of plastic features, in particular the malar depression usually recognizable; sides of clypeus usually distinctly converging, its lateral corners rounded, the apical margin thinned and, as a rule, slightly emarginate medially, the labrum distinctly projecting; mandibles as described in preamble; occiput broadly and deeply emarginate.

*Thorax*.—(Figs. 127, 128). Collare sometimes lamelliform; mesoscutum not or only slightly longer than wide; notauli usually short or indicated at the base only, except in *Ctenocalops*, new genus, in which they are extraordinarily developed and very long; sternaui obsolete; scutellum always more or less strongly raised, sometimes even pyramidal, strongly carinate laterally; propodeum more or less abbreviated, the areae dentiparae more or less deeply curved downward; carination varying between complete and almost entirely obsolete; basal furrow very narrow or entirely absent.

*Legs*.—Moderately long; claws sometimes strongly pectinate in females; coxae III in type species of *Ctenocalops* with tooth.

*Wings*.—Nervulus interstitial to distinctly postfurcal; areolet rhomboidal, in *Seyrigiella* Heinrich even short-petiolate; radius distinctly sinuate; clear with tendency to develop infuscated pattern.

*Abdomen*.—Of females oxygygous or semiamblypygous, fairly short and broadly oval to longish-oval; petiole usually slender; postpetiole without median field or with a narrow one, in *Seyrigiella* the median field replaced by a high ridge; gastrocoeli always transverse and deep, with narrowed space between them; thyridia distinct; tergites 2-3 or 2-4 strongly sclerotized and coarsely sculptured; sternites 1-3 or 1-4 only partially or not at all sclerotized; hypopygium of males fairly short, bluntly triangular.

### *Chromatic characters*

The tribe is chromatically rather diversified; thorax, as a rule, red or ferruginous with restricted, or without, white markings; exceptionally head and thorax black with rich white markings; white anal markings are more often present than not; the basic color of the abdomen may be of the ferruginous, or of the black (or metallic blue) type; dark pattern on the wings occurs in several species.

### **Key to the genera of *Ctenocalini* Heinrich**

1. Notauli (fig. 128) extraordinarily long and pronounced. (Claws of females not pectinate; coxae III of females sometimes with tooth; propodeum abbreviated, area superomedia transverse and contiguous in front to narrow basal furrow of propodeum.) ..... 43. *Ctenocalops* Heinrich  
Uganda, Zanzibar, Natal, Angola
- Notauli absent or very short (fig. 127) and inconspicuous. .... 2
2. All claws of females simple; carination of propodeum complete and very distinct. (Wings clear; abdomen of females subparallel-sided, apically more or less blunted.) ..... 42. *Magwengiella* Heinrich  
Madagascar, Congo
- All claws, or at least claws I and II, of females strongly pectinate; carination of propodeum obsolete to a greater or smaller extent or indistinct throughout. (Wings often with dark pattern.) ..... 3
3. All claws of females pectinate; frons without horn; postpetiole without high

median ridge; tergites not extraordinarily sclerotized.

40. *Ctenocalus Szépligeti*

Northern Tanganyika, Uganda

Only claws I and II of females pectinate; frons with distinct median horn;

postpetiole with very high median ridge (fig. 129); anterior tergites extra-

ordinarily sclerotized, convex, and separated by pronounced sutures (fig. 129).

(Abdomen metallic blue, with white apical bands.) 41. *Seyrigiella* Heinrich

Madagascar

#### 40. Genus *Ctenocalus* Szépligeti

Figs. 127, 130

*Ctenocalus* Szépligeti, 1910, Sjöstedt's Kilim.-Meru Exped., pp. 51 and 54.

*Magwenga* Morley, 1919, Proc. Zool. Soc. London, p. 166.

*Ctenocalus* Heinrich, 1933, Mitt. Zool. Mus. Berlin, XIX, p. 162; *Magwenga* Morley as synonym.

*Type species.*—*Ctenocalus cephalotus* Szépligeti.

#### Distribution

Tanganyika: Dar es Salaam and foot of the Usambara Mts.; Uganda: western shores of Lake Victoria; low altitudes.

#### Preamble

Within the tribe, this genus is distinguished by the combination of the following three characters: (1) all claws of females strongly pectinate; (2) propodeum without or with incomplete carination; (3) notauli obsolete, indicated only at the very base.

#### Morphological characters

*Flagellum.*—Structure as described for the tribe.

*Head.*—Structure as described for the tribe; clypeus with obliquely converging sides, latero-apically rounded.

*Thorax.*—As described for the tribe; notauli indicated at the very base only; scutellum convex, the lateral carinae high (in one species apically projecting), running down the steep apical slope of the scutellum, converging toward the border of the postscutellum; propodeum gradually curved down, without carination, or only with rudiments.

*Legs.*—All claws of females distinctly pectinate.

*Wings.*—As described for the tribe.

*Abdomen.*—Of females semiamblypygous; petiole narrow, abruptly widening into the wide, medially convex, sparsely punctured postpetiole; gastrocoeli triangular, transverse, large, with narrowed space between them and with large thyridia.

#### Key to the species of *Ctenocalus* Szépligeti

##### Females

1. Abdomen black, with only the apex of the seventh tergite white; thorax uniformly black; forewings with two distinct strongly infuscated bands, one below stigma, the other on apex; length 11 mm. .... 2. *maculipennis* (Morley)  
Uganda

Abdomen black, except partially whitish to entirely red first tergite, with broad apical white bands on tergites 5-7; thorax uniformly ferruginous; infuscated bands on wings absent or incomplete; length 12-14 mm. .... 2

2. Scutellum with lateral carinae not projecting apically; carination of propodeum, particularly limitation of area superomedia, almost entirely missing; length

- 13-14 mm. .... 1. *cephalotus* Szépligeti  
Northeastern Tanganyika, South Africa
- Lateral carinae of scutellum lamelliform (fig. 127), straight, converging gradually toward apex of scutellum and apically projecting, scutellum slightly emarginate apically between the projections of lateral carinae; carination of propodeum (fig. 127) partially recognizable, in particular area supe-  
romedia and parts of costulae indicated; length 12 mm.
- ..... 3. *schizoaspis*, new species  
Eastern Tanganyika, near Dar es Salaam

### 1. *Ctenocalus cephalotus* Szépligeti

*Ctenocalus cephalotus* Szépligeti, 1910, Sjöstedt's Kilim.-Meru Exped., p. 54, ♀.

*Neotypus gravidus* Morley, 1926, Ann. S. Afr. Mus., XXIII, pp. 443-444, ♀; new synonymy.

#### Types

*Holotypes*.—*Ctenocalus cephalotus* Szépligeti, ♀, "Mombo, Sjöstedt, Usambara, Juni." N. R.; *Neotypus gravidus* Morley, ♀, "Mahila R., Kapie River, May 1912, Rhodesia Museum." S.A.M.; (flagella and tarsi III missing).

#### Distribution

Northeastern Tanganyika: foot of the Usambara Mts. (type locality); South Africa (type locality of *Neotypus gravidus*).

#### Female

*Head* black, becoming dull ferruginous toward face and cheeks, lateral fields of face moderately infuscated; *thorax* dull ferruginous, apex of propodeum blackish; *abdomen* black, except ferruginous first segment, tergites 5-7 with broad apical white bands; *legs* III blackish, except ferruginous coxae and trochanters, and except white tarsal segments 3 and 4; *legs* I and II predominantly ferruginous, with tibiae and femora whitish in front; *flagellum* black with white annulus; length 13-14 mm.

*Flagellum*.—Structure as described for the tribe; with 42 segments (type), the first about 6 times as long as wide, the widest about square. Black with white annulus on segments 7-12.

*Head*.—Structure as described for the tribe; cheek profile moderately narrowed toward mandible base, with nearly straight outline; malar space slightly longer than width of mandible base; temple profile scarcely narrowed behind eyes, nearly straight; temples and cheeks wide in lateral view; clypeus with oblique sides, apico-laterally rounded; occiput deeply emarginate. Color as described above.

*Thorax*.—Structure as described for the tribe; scutellum and propodeum as described for the genus. Uniformly dull ferruginous; apex of propodeum black.

*Legs*.—All claws strongly pectinate. Color as described above.

*Abdomen*.—Structure as described for the genus. Color as described above.

## 2. *Ctenocalus maculipennis* (Morley)

*Magwenga maculipennis* Morley, 1919, Proc. Zool. Soc. London, p. 166, ♀.

*Ctenocalus maculipennis* Heinrich, 1933, Mitt. Zool. Mus. Berlin, XIX, p. 162, ♀: (generic position changed to *Ctenocalus*).

### Types

*Holotype*.—♀, "Uganda Prot., w. shores of Vic. Nyanza, Buddu, 3700 ft." B. M. No. 3b-77.

*Paratype*.—1 ♀, same locality, 3800 ft.. Tero Forest, southeast of Buddu, 26. Sept. 1911. B. M.

### Distribution

Uganda, west of Lake Victoria, at 1250 m.

### Female

*Black, coxae and trochanters light ferruginous-red, apex of seventh tergite narrowly white; tarsi III with white annulus; wings with distinct, strongly infuscated band below stigma and a less strongly infuscated apical band; flagellum black with white annulus; length 11 mm.*

*Flagellum*.—Structure as described for the tribe; with 42 segments, the first about 6 times as long as wide, about the 12th square, the widest scarcely 1.5 times as wide as long. Black, with white annulus on segments 8-13.

*Head*.—Structure as described for the tribe; temple profile not narrowed behind eyes, broadly rounded; malar space somewhat longer than width of mandible base; occiput deeply emarginate. Black.

*Thorax*.—Structure as described for the tribe; mesoscutum finely coriaceous, with scattered punctures on base and lateral lobes; notauli fairly distinct at base; scutellum fairly short, moderately raised above post-scutellum, dorsally strongly convex, with scattered punctures, laterally with high carinae except at the very apex; propodeum finely coriaceous, short, gradually sloping, without carination except parts of lateral carinae of area posteromedial. Black.

*Legs*.—All claws strongly pectinate. Black, coxae and trochanters light ferruginous-red.

*Wings*.—Nervulus postfurcal; areolet with intercubiti not quite coalescent in front. Clear, with one strongly infuscated band below stigma and a not quite so strongly infuscated apical band.

*Abdomen*.—Structure as described for the genus; postpetiole without median field, convex, finely coriaceous, with few scattered punctures; tergites 2-4 irregularly, rather coarsely and fairly densely punctured; ovipositor scarcely projecting. Black, apex of seventh tergite narrowly white.

### Male

Based on a specimen from Entebbe, Uganda in B.M.: *claws not pectinate; facial orbits white; seventh tergite without white markings; otherwise as in female; flagellum and tarsi III with white annulus as in female.*

### 3. *Ctenocalus schizoaspis*, new species

Figs. 127, 130

#### Types

*Holotype*.—♀, "Tanganyika, Dar es Salaam, 20.IX.1961." C.G.H. II.

*Allotype*.—♂, same locality, 16.IX.1961. C.G.H. II.

*Paratypes*.—2♂♂, same locality. 16. and 25.IX.1961. C.G.H. II.

#### Distribution

Eastern Tanganyika, coastal lowland.

#### Preamble

In color similar to *cephalotus* Szépligeti; distinguished by the specialization of the lateral carinae of scutellum described below, and by more extensive carination of the propodeum.

#### Female

Head black, middle of face and cheeks dark-reddish-tinged; white are: frontal orbits narrowly, labrum, and mandibles; thorax dull ferruginous, only prosternum blackish; abdomen black, tergites 5-7 with broad apical white bands, petiole whitish, apical part of postpetiole indistinctly pale; legs predominantly black or blackish, anterior side of tibiae and femora I and II, dorsal marks on coxae I and II, and the third segments of tarsi III white; wings clear, with indication of a partially interrupted infuscated band below stigma; flagellum black, with white annulus; length 12 mm.

*Flagellum*.—Structure as described for the tribe; with 39 segments, the first nearly 6 times as long as wide, all longer than wide. Black, including scape, with complete white annulus on segments 8-14.

*Head*.—(Fig. 130), Structure as described for the tribe: cheeks and temples very wide in lateral view; cheek profile in frontal view slightly narrowed toward mandible base, slightly curved; malar space somewhat longer than width of mandible base; temple profile scarcely narrowed behind eyes. long and nearly straight: occiput very deeply emarginate; clypeus apico-laterally rounded, its median apical part a trifle depressed. Color as described above.

*Thorax*.—(Fig. 127). Structure as described for the tribe; notauli scarcely indicated at the base; mesoscutum and scutellum irregularly coarsely punctured, smooth and shiny between punctures; outline of scutellum nearly square; the lateral carinae lamelliform, straight, slightly converging toward apex of scutellum and apically projecting, then running down the steep apical slope, converging toward postscutellum; apex of scutellum between the laterally projecting carinae slightly emarginate, the structure of the scutellum thus resembling the Oriental genus *Eccoptosage* Kriechbaumer (= *Acanthojoppa* Cameron); propodeum coarsely, irregularly rugose; carination partially recognizable, in particular area superomedial and parts of costulae indicated, carinae dentiparae interiores rather distinct throughout. Dull ferruginous, prosternum blackish.

*Legs*.—All claws strongly pectinate. Legs III black, including coxae, the third segment of tarsi III white; legs II and I blackish-brown, anterior side of tibiae and femora I and II, and dorsal marks on coxae I and II white.

*Wings*.—Nervulus distinctly postfurcal; areolet with intercubiti almost coalescent in front; radius sinuate. Clear; forewing with indistinct, slightly infuscated crossband below stigma.

*Abdomen*.—Structure as described for the genus; postpetiole sparsely and coarsely irregularly rugose-punctate; tergites 2-4 densely and coarsely rugose-punctate; space between gastrocoeli very narrow. Color as described above.

#### Male

*Basic color of entire head black, frontal orbits without white line; propodeum more or less extensively infuscated; postpetiole varying from predominantly blackish to predominantly pale ochreous; claws not pectinate; otherwise exactly as female.*

*Flagellum*.—With 37-38 segments, without tyloids. Black, including scape, with complete white annulus on segments 13 (apex) or 14 to 18.

### 41. Genus *Seyrigiella* Heinrich

Figs. 129, 131

*Seyrigiella* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 41.

*Type species*.—*Seyrigiella superba* Heinrich, monobasic.

#### Distribution

Madagascar.

#### Preamble

This genus may be considered as representing the highest degree of specialization reached by the *Ctenocalini*, and its type species is one of the prettiest of all the Ethiopian Ichneumoninae. The relationship to *Ctenocalus* Szépligeti is clearly evident, but the structure of the extremely sclerotized anterior tergites and also the specialized frons and scutellum indicate generic distinction.

#### Morphological characters

*Flagellum*.—Of females bristle-shaped, extremely slender, long and strongly attenuated toward apex, ventrally flattened beyond middle but not at all widened; of males as in *Ctenocalus* without tyloids but in contrast to the latter genus, segments with distinct transverse bristle-ridges and thus somewhat nodose.

*Head*.—Structure generally as described for the tribe, but frons below lower ocellus with rather strongly projecting, pointed horn; face with fairly distinct, slightly convex median field, lower part of face separated from malar space by a fairly distinct edge.

*Thorax*.—Structure as described for the tribe; mesoscutum strongly convex and very short, slightly wider than long; notauli basally indicated; scutellum (fig. 131) only laterally carinate, subpyramidal, steeply ascending from the extremely deep basal furrow to a culminating blunt transverse ridge, then likewise steeply declivous to the postscutellum, the anterior declivity slightly convex, the posterior declivity slightly concave; propodeum (fig. 129) short, in front completely contiguous to postscutellum, gradually curved downward, almost without carination, coarsely rugose-



punctate; a smooth, elongate and very narrow area superomedia usually indicated; apical part of lateral carinae of area posteromedia usually distinct; pronotal ridge somewhat swollen; the completely flat mesosternum separated from the mesopleura by a fairly sharp edge; middle of the mesopleura forming a wide, deep diagonal trough which includes the large speculum.

*Legs*.—In contrast to *Ctenocalus*, only claws I and II strongly pectinate; claws III simple.

*Wings*.—Nervulus distinctly postfurcal; areolet rhomboidal, short-petiolate; radius distinctly sinuate; in type species clear with blackish-infuscated pattern.

*Abdomen*.—(Fig. 129). Tergites 1-4 unusually strongly sclerotized and strongly convex, densely and coarsely punctured, separated from each other by pronounced, deeply incised sutures; the postpetiole has, in place of the median field, a strongly raised longitudinal ridge, forming a subpyramidal elevation; gastrocoeli deep, transverse, with narrow space between them; tergites 5-7 for the most part hidden under tergite 4.

### 1. *Seyrigiella superba* Heinrich

Figs. 129, 131

*Seyrigiella superba* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 42, ♀♂; (pl. VI, fig. 47, abdomen, fig. 51, head; pl. III, fig. 13, colored illustration of female).

#### *Types*

*Holotype*.—♀, "Vatondrangy, Madagascar, XII.29, leg. A. Seyrig."

C.G.H. I.

*Allotype*.—♂, same data. C.G.H. II.

#### *Distribution*

Madagascar: Mount Vatondrangy, Antsirabe, Tananarive.

#### *Female*

*Head and thorax bright red; abdomen bright metallic blue: petiole and broad apical bands on tergites 5-7 white; legs red with some black or infuscated parts, tarsi III with narrow white annulus; wings with a pattern of deeply infuscated marks; flagellum black, without annulus; length 11 mm.*

*Flagellum*.—Structure as described for the genus; with 37 segments, the first about 6 times as long as wide, the widest approximately square. Blackish-brown, without annulus; scape bright ferruginous.

*Head*.—Structure as described for the tribe and genus; face and base of clypeus fairly densely and coarsely punctured. Bright ferruginous-red; face, clypeus, and mandibles with yellow tinge.

*Thorax*.—Structure as described for the tribe and genus; mesoscutum and scutellum coarsely and rather densely punctured. Bright ferruginous-red; sterna yellow-tinged.

*Legs*.—Coxae ferruginous, the coxae I and II ventrally yellow-tinged, coxae III dorsally infuscated; femora, tibiae, and tarsi I and II yellowish, dorsally blackish; femora III dull ferruginous, moderately infuscated on dorsal and on interior side; tibiae III blackish-brown-infuscated except narrowly pale base; tarsi III black, with white third segment.

*Wings*.—Clear; the following parts of forewings deeply infuscated: basal part of discoidal cell (to the ramellus), apex from shortly beyond areolet nearly to the tip, and a small mark somewhat below the apical cloud at the exterior border of the wing.

*Abdomen*.—Structure as described for the genus. Color as described above; sternites 1-3 membranous and whitish, the second and third sternites with a bluish-black sclerotized plate on each side; the following sternites with white apical bands.

#### Male

*Femora III* more extensively and strongly infuscated than in female; *tarsi III* with more extensive white annulus, from apex of second to base of fifth segment; otherwise as in female.

*Flagellum*.—With 37 segments, slightly nodose, without tyloids. Black, scape ferruginous.

#### 42. Genus *Magwengiella* Heinrich

*Magwengiella* Heinrich, 1938, Mém. Acad. Malgache, XXV, p. 42.

*Type species*.—*Magwengiella obtusa* Heinrich; by original designation.

#### Distribution

Madagascar and Central Africa (Congo).

#### Preamble

The genus differs from *Ctenocalus* Szépligeti and from *Seyrigiella* Heinrich by (1) complete and prominent carination of the propodeum, (2) impectinate claws of females and (3) slightly more elongate and nearly parallel-sided abdomen. The median part of the apical margin of clypeus is slightly emarginate.

#### Morphological characters

*Flagellum*.—Of females bristle-shaped, slender, ventrally flattened but not widened beyond middle, strongly attenuated at apex; of males with fairly long row of longish-oval tyloids, which are hairy and therefore difficult to see; segments slightly nodose with distinct transverse bristle-ridges.

*Head*.—Structure generally as described for the tribe; face, clypeus, and cheeks almost as featureless as in Listrodromini: median field of face not indicated, lower part of face not separated from malar space by an edge and clypeus not separated from face; clypeus slightly depressed, thinned, and slightly emarginate medio-apically; frons below lower ocellus with a very slight median elevation, bearing an indication of a longitudinal furrow.

*Thorax*.—Structure as described for the tribe; mesoscutum less convex than in *Ctenocalus*; notauli fairly distinct at the base; scutellum strongly convex, in the Central African species even pyramidal, laterally strongly carinate; propodeum in front contiguous to postscutellum, as short as in *Ctenocalus*, curved down backward, with complete and very distinct carination, including carinae coxales, only lateral carinae of area basalis obsolete; area superomedia in type species almost parallel-sided and contiguous to postscutellum, in other species approximately semioval and sepa-

rated from postscutellum by the space of the area basalis; costulae at or beyond middle; pronotal ridge somewhat swollen.

*Legs*.—Claws not pectinate.

*Wings*.—Nervulus interstitial; areolet with intercubiti coalescent in front, or almost so; radius slightly sinuate; clear.

*Abdomen*.—Of females semiamblypygous, subparallel-sided, and often appearing apically truncate; postpetiole fairly wide, with somewhat prominent, sometimes basally fairly distinctly defined median field, coarsely and moderately densely punctured; gastrocoeli deep, transverse, the space between them narrowed; tergites 2-4 strongly sclerotized and very densely and coarsely rugose punctate; the space between gastrocoeli and the narrow base of third and fourth tergites aciculate; hypopygium of males of the type species short, bluntly triangular; in females tergites 6 and 7 usually more or less retracted and thus partially hidden under the fifth tergite, giving the abdomen a blunt, or apically somewhat truncate appearance.

### Key to the species of *Magwengiella* Heinrich

#### Females

1. Thorax black, with very rich white markings; mesoscutum nearly smooth, with only a few scattered fine punctures; abdomen uniformly ferruginous, apical tergites without black or white parts; scutellum subpyramidal. (Length 11 mm.) ..... 3. *congica*, new species  
Congo
- Thorax ferruginous, with restricted black markings and some white ones; mesoscutum coarsely and moderately densely punctured; tergites 5-7 black, with broad apical white bands; scutellum simply convex. .... 2
2. Area superomedia longer than wide, with subparallel sides, in front contiguous to postscutellum; flagellum with about 36 segments, black, without annulus; length 10-11 mm. .... 1. *obtusa* Heinrich  
Madagascar
- Area superomedia broadly horseshoe-shaped, somewhat wider than long, in front not contiguous to postscutellum, but separated from it by ample space of area basalis; flagellum of females with about 40 segments and with broad dorsal white annulus; length 14 mm. .... 2. *major* Heinrich  
Madagascar

#### 1. *Magwengiella obtusa* Heinrich

*Magwengiella obtusa* Heinrich, 1938, Mém. Acad. Malg., XXV, p. 43; pl. IV, fig. 18 (head in front view); pl. II, fig. 7 (colored illustration of female).

#### Types

*Holotype*.—♀, "Tananarive, Madagascar, leg. A. Seyrig." C.G.H. I.

*Allotype*.—♂, "Madagascar, Bekily, ca. 600 m, III.-IV.1932, leg. A. Seyrig." C.G.H. II.

*Paratypes*.—2 ♀♀, same data as allotype. C.G.H. I. and C.G.H. II.

#### Distribution

Madagascar: Ampandrandava, Tananarive.

#### Female

Head white, with some black markings; thorax ferruginous with restricted white and black markings; abdomen ferruginous, tergites 5-7 ex-

### Preamble

Differs from the two Madagascan species in structure only by the subpyramidal scutellum, in sculpture by the vey sparsely punctured mesoscutum, and in color by the black thorax with rich white pattern.

### Female

*Head white with some black markings; thorax black with very rich white pattern; abdomen red, without white anal marks, first segment black; coxae I and II almost entirely white, coxae III black and white; femora ferruginous, tibiae slightly, tarsi more strongly infuscated; flagellum black without annulus; length 11 mm.*

*Flagellum.*—Structure as described for the genus; with 35 segments, the first fully 2.5 times as long as wide, in lateral view the 13th square, the widest, seen from the flat side, slightly wider than long. Black, including scape; without annulus; flat part brownish.

*Head.*—Structure as described for the tribe and genus; face and clypeus densely and fairly finely punctured, frons, temples, and occiput impunctate. The following white: labrum, clypeus, and face (all except a common median longitudinal black band), frontal orbits broadly, large marks on temple orbits, cheeks predominantly up to temple region (except longitudinal black band on malar space and except posterior black margin).

*Thorax.*—Structure as described for the tribe and genus; notauli basally fairly distinct; in contrast to the two Madagascan species, mesoscutum very finely coriaceous, nearly smooth, with only a few scattered fine punctures; scutellum subpyramidal, steeply ascending from the very deep basal furrow to a culminating median point, then very steeply declivous, laterally carinate, the apical slope with some longitudinal rugae; propodeum coarsely and densely punctured (the areae superoexternae somewhat less densely than the rest), space of area basalis and area supero-media smooth, the latter longer than wide, semielliptic, narrowed toward area basalis. Black; the following white: collare, pronotal ridge, pronotal base, subalarum, two short median longitudinal stripes on mesoscutum, prescutellar carinae, lateral carinae of scutellum and its apex, postscutellum, carinal triangle, areae posteroexternae, large mark on metapleura, posterior upper corner of mesopleura, broad transverse band on lower half of mesopleura, outer part of prepectus.

*Legs.*—Femora comparatively stout; claws not pectinate. Coxae I and II predominantly white, coxae III black, white on interior side and on interior half of dorsal side; femora ferruginous, femora I ventrally white (except base); tip of femora II whitish on inner side; tibiae moderately infuscated, tibiae I yellowish on inner side; trochanters dorsally brown, ventrally white; tarsi blackish-infuscated.

*Wings.*—Nervulus interstitial; areolet with intercubiti not quite coalescent in front; radius sinuate; clear.

*Abdomen.*—Structure and sculpture as described for the genus. Ferruginous-red, without white anal pattern; first segment black.

### 43. Genus *Ctenocalops*, new genus

Fig. 128

*Type species*.—*Xenojoppa fossifrons* Morley

#### *Distribution*

Uganda, Angola, Natal, Zanzibar.

#### *Preamble*

This genus is uniquely distinguished among the genera of this tribe, as well as within the entire African fauna of Ichneumoninae, by the unusually deeply impressed and unusually long notauli. A second striking character is the structure of the propodeum, which is shorter than usual, with the area superomedia much wider than long, its straight anterior border contiguous to the narrow basal furrow of the propodeum, the lateral carinae converging toward apex. All other characters, in particular the structure of mandibles, head, scutellum, and abdomen, agree well with the other genera of the Ctenocalini. The type species has little in common with the Oriental genus *Xenojoppa* Cameron, except the appendix of the coxae III.

#### *Morphological characters*

*Flagellum*.—Of females (broken in specimens of type species) seemingly bristle-shaped and slender; of males (in type of *angolensis*, new species) slightly nodose, segments with transverse bristle-ridges; without tyloids.

*Head*.—General structure, including mandibles and clypeus, as described for the tribe; malar space short; frons below lower ocellus (as in *Magwengiella* Heinrich) with a slight longitudinal elevation which bears a shallow longitudinal furrow.

*Thorax*.—(Fig. 128). Structure as described for the tribe; notauli extraordinarily developed and very long, occupying nearly the whole length of mesoscutum; scutellum strongly convex, laterally carinate; propodeum of the broken type, very short, declivity approximately twice as long as horizontal part medially; area superomedia as described in preamble; areae dentiparae not separated from areae superoexternae, abbreviated, more or less distinctly transversely striate; declivity coarsely reticulate-rugose, without distinct carination; basal furrow of propodeum narrow.

*Legs*.—Moderately long; claws of females not pectinate; coxae III in females of type species with tooth.

*Wings*.—As described for the tribe; areolet rhomboidal, sometimes short-petiolate.

*Abdomen*.—General structure as described for the tribe; apex of abdomen of females (type species) somewhat truncate and semiamblypygous; postpetiole without distinct median field, uniformly coarsely punctured or medially nearly smooth.

# Key to the species of *Ctenocalops* Heinrich<sup>1)</sup>

## Females

1. Head black, with white frontal orbits and white vertical spots; tergites 5-7 with broad apical white bands; thorax uniformly ferruginous, white-marked only on apex of pronotal ridge; coxae III without tooth. (Length 9 mm.) ..... 3. *brevicollis* (Tosquinet)  
Zanzibar, Natal
- Head predominantly white; only seventh tergite white-marked; thorax dorsally more or less extensively black, with more extensive white markings; coxae III of females sometimes with tooth. (Mesoscutum with two short median white lines.) ..... 2
2. Basic color of mesoscutum and scutella, horizontal part of propodeum and the areae posteroexternae black; propleura and mesopleura partially black; tergites 6 and 7 partially black; length 13 mm. (Coxae III with tooth.) ..... 1. *fossifrons* (Morley)  
Uganda
- Black on thorax restricted to the three lobes of mesoscutum; tergites 6 and 7 without black parts; length 10 mm. .... 2. *angolensis*, new species (hypothetical: based on male)  
Angola

## 1. *Ctenocalops fossifrons* (Morley), new combination

*Xenopoppa fossifrons* Morley, 1919, Proc. Zool. Soc. London, p. 163, ♀.

*Xenopoppa fossifrons* Heinrich, 1938, Mém. Acad. Malgache, XXV, p. 37, ♀; (under genus *Tosquinetia* Ashmead it is mentioned that this species does not belong to *Tosquinetia* nor to the same tribe.)

## Types

*Holotype*.—♀, "Entebbe, Uganda." B.M. No. 3b-349.

## Distribution

Uganda.

## Preamble

The tooth on inner side of coxae III (near apex) of females is the most distinctive character of this species.

## Female

Head yellowish-white with some black parts; thorax dorsally predominantly black, with rich yellow markings, sterna predominantly reddish, pleura yellowish; mesoscutum with two short yellow median lines, sides of scutellum and postscutellum yellow; legs predominantly ferruginous; flagellum black with dorsal white annulus; abdomen red, tergites 6 and 7 partially blackish, the seventh tergite with white apical mark; length 13 mm.

*Flagellum*.—Missing.

*Head*.—Structure as described for the tribe and genus. Yellowish-white; the following black: middle of frons broadly, ocellar and occipital region.

*Thorax*.—Structure as described for the tribe and genus; about basal half of notauli pronounced; mesoscutum and scutellum coarsely, irregularly punctate, the former more sparsely than the latter; pronotal ridge somewhat swollen; declivity of propodeum about twice as long as horizon-

<sup>1)</sup> See also *ruficeps*, new species, in Addenda, to this volume.

tal part medially, area superomedia almost twice as wide as long. Dorsally predominantly black; the following yellow: collare, pronotal ridge, pronotal base, two short median lines on mesoscutum, subalarum, prescutellar carinae, sides of scutellum, postscutellum, area posteromedia; the following black: median part of propleura, patch on mesopleura below subalarum, mesoscutum, scutella (except yellow markings mentioned above), horizontal part of propodeum, areae posteroexternae; pleura and sterna pale ferruginous with yellow tinge.

*Legs*.—Claws not pectinate; coxae III ventrally on inner side near apex with distinct tooth. Ferruginous; tibiae III dorsally at base and apex, and all tarsi somewhat infuscated; anterior coxae partially yellow-tinged.

*Wings*.—As described for the genus.

*Abdomen*.—Structure as described for the tribe and genus; median field of postpetiole not defined, finely rugose, the lateral fields densely punctured. Red, the seventh tergite with white anal mark, the sixth tergite apically, the seventh medially blackish.

## 2. *Ctenocalops angolensis*, new species

Fig. 128

### *Types*

*Holotype*.—♂, "Angola, 30 km n. of Quiculungo, Sept./Okt. 1957."  
C.G.H. II.

### *Distribution*

Angola.

### *Preamble*

The type specimen is the only known male of this genus. It matches the female of *fossifrons* Morley in structure and sculpture very well, but is considerably smaller and much lighter in color. Whether it indeed represents a distinct species or a mere subspecies of *fossifrons* will remain doubtful until discovery of the opposite sexes of the two forms.

### *Male*

*Head* white with some black and dark ferruginous parts; thorax light ferruginous and yellowish with rich white markings, only the three lobes of the mesoscutum predominantly blackish; mesoscutum with two short median white lines, scutellum laterally slightly yellow-tinged; legs predominantly light ferruginous; flagellum dorsally blackish-brown, without annulus; abdomen uniformly light ferruginous, the seventh tergite with apical whitish margin; length 10 mm.

*Flagellum*.—With 38 segments, slightly nodose, without tyloids. Dorsally blackish-brown including scape, ventrally ferruginous; scape ventrally yellowish.

*Head*.—Structure as described for the tribe and genus; malar space very short, about one-third as long as the width of mandible base; median field of face somewhat prominent, separated from the clypeus by a slight transverse suture; face, clypeus, and lower cheeks strongly and fairly densely punctured, the rest smooth. White; the following black: middle of

frons broadly, ocellar and occipital regions, the black on the latter becoming dull red toward temples and projecting onto the temples to the very margin of eyes.

*Thorax*.—Structure as described for the tribe and genus; notauli very pronounced, for almost whole length of mesoscutum (fig. 128); mesoscutum coarsely and fairly densely, scutellum coarsely and very densely punctured; sides of propodeum and area superomedia densely and coarsely rugose-punctate, the declivity very coarsely reticulate-rugose, areae dentiparae finely and regularly transversely striate; postscutellum longitudinally rugose. Light ferruginous, the three lobes of mesoscutum blackish-infuscated; sterna, prepectus, and lower belt of pleura yellowish; the following whitish: collare, pronotal ridge and base, subalarum, two short median lines on mesoscutum, two inconspicuous short lateral lines on exterior margin of mesoscutum (before prescutellar carinae), sides of scutellum faintly.

*Legs*.—Light ferruginous; coxae and trochanters I and II yellowish; tarsi III infuscated.

*Wings*.—Nervulus postfurcal; areolet rhomboidal, short-petiolate; radius scarcely sinuate. Clear.

*Abdomen*.—Structure as described for the tribe and genus; postpetiole without defined median field, densely and coarsely punctured; second tergite and the third except apex, very densely and fairly coarsely rugose-punctate, the following tergites sparsely and very finely punctured. Uniformly light ferruginous, the seventh tergite with narrowly white apical margin.

### 3. *Ctenocalops brevicillus* (Tosquinet), new combination

*Ichneumon brevicillus* Tosquinet, 1896, Mém. Soc. Ent. Belg., pp. 39-41, ♀.

*Cratichneumon brevicillus* Berthoumieu, 1904, Gen. Ins., XVIII, p. 39, ♀.

#### Types

*Holotype*.—♀, "Bondel, Zanzibar". Z.M.H.U. No. 26318.

#### Distribution

Zanzibar (type locality); Natal (B.M.).

#### Female

*Head* black, with restricted white markings, occipital region dark red; thorax uniformly ferruginous; tergites 1-3 predominantly ferruginous, 4 and 5 black, 6 and 7 predominantly white, the fifth with apical white band; legs I and II predominantly ferruginous, legs III infuscated; flagellum black with white annulus; length 9 mm.

*Flagellum*.—Structure as described for the tribe. Black, with white annulus on segments 7 (apex) to 14 (base).

*Head*.—Structure as described for the tribe and genus; median field of face somewhat convex and separated from the clypeus by a slight transverse suture; face and clypeus punctured. Black; the following white: frontal orbits down to slightly beyond antennal sockets, spots on vertical orbits, inconspicuous dots on corners of clypeus; occipital region dark-redtinged.



*Thorax*.—Structure as described for the tribe and genus; area supero-media transverse, rectangular; carinae dentiparae interiores and carinae metapleurales fairly distinct, rest of carination, except area supero-media, lacking; mesoscutum and scutellum coarsely rugose-punctate; notauli pronounced, extending close to the basal furrow of scutellum. Ferruginous, except for a white mark on apex of pronotal ridge; prosternum infuscated.

*Legs*.—Rather stout; claws not pectinate. Legs I and II predominantly ferruginous, their coxae blackish, basally ferruginous, their trochanters blackish, their femora with infuscated stripe on posterior side; legs III black, their coxae ferruginous-marked.

*Wings*.—Nervulus interstitial; areolet rhomboidal. Clear.

*Abdomen*.—Structure as described for the tribe; tergites 1-3 coarsely rugose-punctate. First tergite ferruginous, second tergite somewhat infuscated, lighter toward apex, the third tergite blackish with red tinge, the fourth tergite uniformly black, the following 3 tergites black with broad apical white bands.

#### Remark

A female from "Natal, Kloof, 1500 m, August 1926" in B.M. probably belongs to this species, but may perhaps represent a different subspecies, as the color of legs III differs slightly, only the bases of femora III and tibiae III being infuscated.

### IX. Tribe *Platylabini* Heinrich

*Platylabini* Heinrich, 1934, Mitt. Zool. Mus. Berlin, pp. 64, 67, 130.

*Type genus*.—*Platylabus* Wesmael

#### Distribution

Holarctic, Oriental, and Ethiopian, probably also Neotropical, regions.

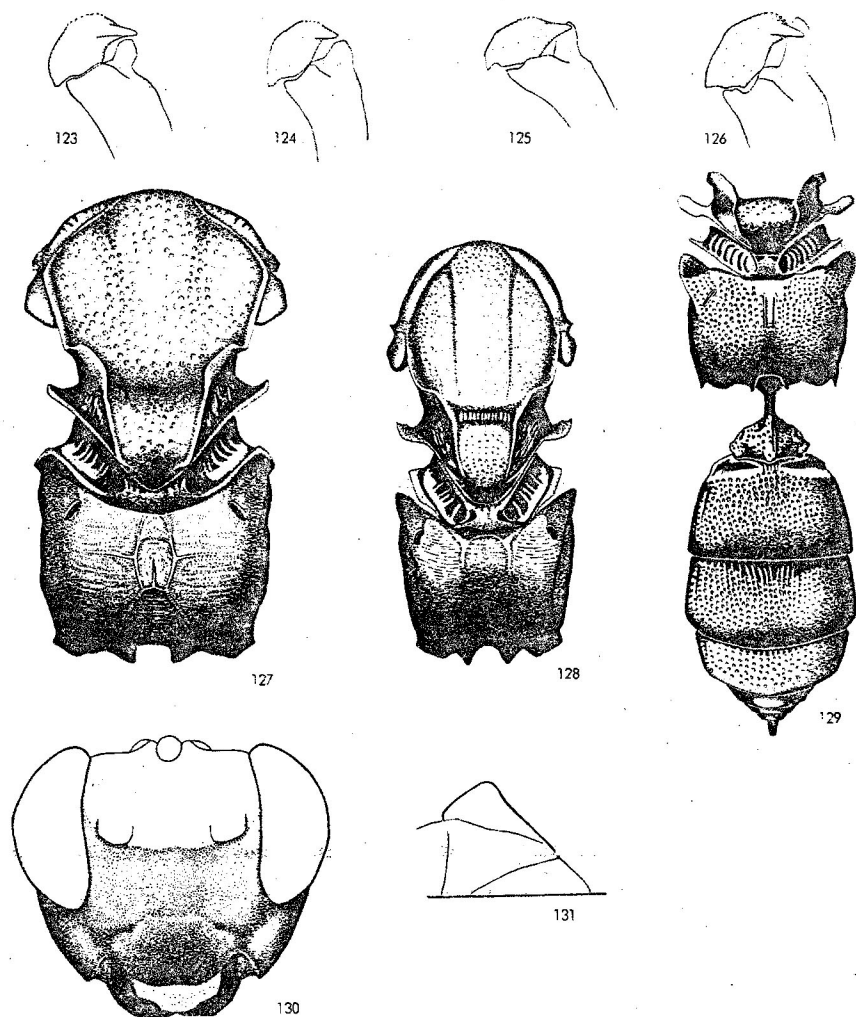
#### Hosts

Geometridae (Lepidoptera Heterocera), with very few exceptions.

#### Preamble

Perhaps the most clearly defined tribe of the subfamily in morphological as well as biological characters. Distinguished, in the great majority of forms, by the combination of two characters: the convex clypeus and the more or less widened, dorsally flattened petiole.

Among the 20 species described from Africa in the genus *Platylabus* by Morley (12), Cameron (6), and Tosquinet (2) none belong there or even to the tribe *Platylabini*. Altogether only five true *Platylabini* have been named so far from the Ethiopian region, among them only one typical *Platylabus* Wesmael: *Platylabus massayae* Gribodo from Ethiopia. The other four species are: *Ichneumon bicinctorius* Thunberg, *Spanophtus ruficeps* Cameron, *Hoploplatystylus seyrigi* Heinrich, and *Afrectopius kenyae* Heinrich. A host of new species will be described below; they belong to the genus *Afrectopius* Heinrich as does also *Ichneumon bicinctorius*. This genus, with an abundance of species, inhabits the cloud forests of the high mountains of East Africa; it occurs also at lower altitudes in the moderate climates of South Africa.



## XIX.

Figs. 123-131. Digitus: 123, *Epijoppa metallica* (Szépligeti); 124, *Epijoppa verecunda angolae* Heinrich; 125, *Epijoppa verecunda verecunda* (Tosquinet); 126, *Epijoppa bilobata* Heinrich; 127, *Ctenocalus schizoaspis* Heinrich, ♀, thorax; 128, *Ctenocalus angolensis* Heinrich, ♂, thorax; 129, *Seyrigiella superba* Heinrich, ♀, scutellum, propodeum, and abdomen; 130, *Ctenocalus schizoaspis* Heinrich, ♀, head, frontal view; 131, *Seyrigiella superba* Heinrich, ♀, scutellum, lateral view.

### *Morphological characters*

*Flagellum*.—Of females very long and slender, bristle-shaped, usually extremely attenuated at apex, ventrally flattened beyond middle but not, or scarcely, or at the most moderately, widened; of males, in majority of species, without tyloids; exceptionally male flagellum deeply serrate.

*Head*.—Clypeus more or less strongly convex; usually temple and cheek profile distinctly to considerably narrowed; mandibles slender with delicate teeth, the lower often slightly out of plane of upper.

*Thorax*.—Mesoscutum more or less convex, often mesothorax considerably raised above propodeum; scutellum always more or less raised above postscutellum and more or less extensively carinate laterally; notauli and sternauli sometimes distinct; carination of propodeum sometimes complete, varying to partially obsolete, in majority of species costulae lacking; areae dentiparae tend to form small projections or apophyses in some genera; spiracles of propodeum varying from elongate-oval to small and circular.

*Legs*.—Long and slender; claws never pectinate, coxae III never with scopa: tarsi III of females sometimes abbreviated.

*Wings*.—Nervulus in overwhelming majority of forms interstitial, occasionally somewhat postfurcal; areolet pentagonal, narrowed in front, often quadrangular; radius straight to slightly curved.

*Abdomen*.—Of females usually comparatively short and approximately oval, with blunted apex; elongate, slender, and tapering toward apex only in the genus *Hypomecus* Wesmael and related forms (not recorded from Africa); hypopygium of females usually covering most of slit of ovipositor, tending toward prolongation, and sometimes surpassing last tergite in length; gastrocoeli varying generically from deep and transverse (*Platylabus* Wesmael) with usually strongly narrowed space between, to entirely lacking; petiole usually dorsally flattened and distinctly wider than high; postpetiole with or without defined median field, never regularly aciculate, usually almost smooth or irregularly finely rugose, in some small forms (not recorded from Africa) punctate.

### *Chromatic characters*

Predominant colors red (or brown) or black, or both colors in combination, in the Holarctic region sometimes blue; white or yellow anal marks occur, but are not the rule; tergites rarely white- or yellow-banded in Holarctic and Ethiopian fauna, usually in Oriental tropics. Sexual dichroism not great.

### *Biological notes*

With the exception of two Palaearctic species of the genus *Platylabus* (parasitizing larvae of the genus *Drepana*) the hosts of all Platylabini, as far as known, are Geometridae. The female deposits the egg in the almost grown larva.

# Key to the genera of the *Platylabini* Heinrich of Africa

Figs. 132-136

1. Propodeum with long apophyses (figs. 134, 135). (*Gastrocoeli* obsolete.) ..... 2  
 Propodeum without apophyses, at the most areae dentiparae with inconspicuous short projections. (*Gastrocoeli* obsolete or present.) ..... 3
2. Scutellum strongly raised above postscutellum, completely carinate, not punctate; cheeks and temples strongly narrowed, with fine sculpture; clypeus strongly convex; spiracles of propodeum almost circular. (In the only known species, abdomen black and white, thorax red.) ..... 45. *Hoplectopius*, new genus  
 Scutellum moderately raised above postscutellum, not at all carinate, coarsely and densely punctured all over; cheeks and temples wide, entire head coarsely punctured; clypeus scarcely convex; spiracles of propodeum oval. (In the only known species, abdomen black and red, thorax black.) ..... 47. *Hoploplatystylus* Schmiedeknecht
3. Gastrocoeli transverse, each wider than the space between them. (Carination of propodeum normal.) ..... 43. *Platylabus* Wesmael  
 Gastrocoeli narrower than the space between them, or obsolete. .... 4
4. Gastrocoeli more or less distinct. (Spiracles of propodeum elongate-oval.) ..... 5  
 Gastrocoeli obsolete. .... 6
5. Postpetiole coarsely and densely punctured, or coarsely rugose; carination of horizontal part of propodeum obsolete (fig. 163); flagellum of male serrate (fig. 132); hypopygium of male normal. (Entire body unusually coarsely punctured.) ..... 48. *Spanophatnus* Cameron  
 Postpetiole medially finely irregularly rugose-coriaceous; carination of horizontal part of propodeum complete and very clear; flagellum of male not at all serrate, without tyloids; structure of hypopygium of male unique: bifurcate, that is, medially deeply emarginate, each side strongly projecting (fig. 246). (Mandibles very long and slender, particularly in female, almost sickle-shaped, with rudimental subapical tooth (figs. 245, 247).) ..... see 118. *Rhadinodontops*, new genus
6. Temples strongly narrowed behind eyes; clypeus distinctly convex; spiracles of propodeum nearly circular; propodeum with distinguishable horizontal and declivous parts; small species, 6-10 mm long. (Carination of propodeum partially to almost entirely obsolete (fig. 133)) ..... 46. *Afrectopius* Heinrich  
 Temples widened behind eyes; clypeus not convex, in female its apical border even slightly bent upward; spiracles elongate; propodeum gradually declivous from shortly beyond base; larger species, 12-14 mm long. (Carination of propodeum obsolete, except carinae metapleurales.) ..... 48. *NeEURylabia*, new genus

## 44. Genus *Platylabus* Wesmael

*Platylabus* Wesmael, 1844. Nouv. Mém. Acad. Sci. Bruxelles, 18, pp. 150, 153.

Type species.—*Platylabus rufus* Wesmael; designated by Ashmead, 1900.

### Distribution

Holarctic, Oriental, and Ethiopian regions.

### Preamble

The combination of the following three characters distinguishes this genus from the others of the tribe: (1) gastrocoeli transverse, fairly deep, the space between them narrowed; (2) spiracles of propodeum not round or almost so, but distinctly oval or elongate; (3) propodeum without long apophyses.

### Morphological characters

*Flagellum*.—Of females as described for the tribe, sometimes moderately widened beyond middle; of males as a rule without tyloids, sometimes with rudimentary ones, exceptionally with bacilliform tyloids.

*Head*.—As described for the tribe.

*Thorax*.—As described for the tribe; scutellum strongly raised above postscutellum, laterally carinate; costulae usually obsolete; area supero-media approximately square or rectangular; apices of areae dentiparae usually blunt, tending, however, to form short tooth-like projections in some species, but not long real apophyses; spiracles of propodeum long-slit-shaped to short-oval.

*Legs*.—Moderately long and slender; tarsi III of females often somewhat abbreviated.

*Abdomen*.—Postpetiole with fairly distinct median field, almost smooth or irregularly, finely rugose, its lateral outlines gradually widening somewhat toward apex and usually somewhat undulate; gastrocoeli fairly deep, usually transverse, with narrowed space between; thyridia distinct; apex of female abdomen blunt, the hypopygium long, sometimes surpassing apex of last tergite in lateral view; ovipositor usually slightly projecting.

### 1. *Platylabus massayae* Gribodo

*Platylabus massayae* Gribodo, 1879, Ann. Mus. Civ. Genova, XIV, p. 344, ♂.

*Platylabus massayae* Tosquinet, 1896, Mém. Soc. Ent. Belge, V, pp. 110-112, ♂; detailed redescription.

### Types

*Holotype*.—♂, "Scioa, Mahal-Uonz, Antinoro, III.1877." M.C.H.N.

### Distribution

Ethiopia.

### Preamble

This is so far the only true *Platylabus* recorded from Africa south of the Sahara. It is related to the European *vibratorius* Thunberg and could well be the vicariant form of one of the Palaearctic species of this group.

### Male

*Head and thorax* black, with white markings, scutellum white except base; abdomen red, tergites 5-7 black; legs predominantly red, coxae and trochanters, apex of femora III, the tarsi III entirely and the tibiae III predominantly, black; flagellum black without annulus; length 7 mm.

*Flagellum*.—With 33 segments, without tyloids. Black, including scape.

*Head*.—Black, the following white: clypeus laterally, facial orbits, frontal orbits up to lower ocellus, base of mandibles, apex of cheeks at mandible base, short line on middle of outer orbits.

*Thorax*.—Mesoscutum strongly convex, without notauli, densely and coarsely punctured; mesopleura densely and finely punctured; scutellum dorsally sparsely punctured, shiny; costulae obsolete; areae dentiparae apically a trifle projecting. Black; the following white: collare, scutellum except base, mark on tegulae, subalarum.

**Legs.**—Coxae and trochanters black, coxae I and trochanters I and II ventrally white; femora, tibiae, and tarsi predominantly red; black are: apex of femora III, the tibiae III except for a reddish annulus shortly beyond base, and the tarsi III.

**Wings.**—Areolet pentagonal, strongly narrowed in front, close to quadrangular.

**Abdomen.**—Petiole very wide, gradually widened from base to spiracles; postpetiole with very clearly defined, wide median field; space between gastrocoeli strongly narrowed. Tergites 1-4 red, 5-7 black.

**(*Platylabus opaculus*)**

*Platylabus opaculus* Morley, 1926, Ann. S. Afr. Mus., XXIII, p. 445, ♀: nec Thomson.

This European species has been recorded by Morley from Natal. According to Morley's publication the record was based on a female, captured by A. Marshall during 1893. This specimen was located in Cape Town (S.A.M.); it bears an identification label as "*Platylabus opaculus*" and all data (locality and collector) as given in the publication. However, it is neither a *Platylabus* nor a female, but a male belonging to the tribe Ichneumonini (perhaps to the genus *Thyrateles* Perkins or *Ichneumon* Linnaeus), in color somewhat similar to *Platylabus opaculus*. The name of the latter species can be eliminated from the list of the African fauna.

**45. Genus *Hoplectopius*, new genus**

Fig. 134

**Type species.**—*Hoploplatystylus seyrigi* Heinrich

**Distribution**

Madagascar.

**Preamble**

When I described in 1938 what was and still is the only known representative of the tribe Platylabini from Madagascar as *Hoploplatystylus seyrigi*, I was in doubt about the correct generic position of this species. It was strikingly distinguished by the long apophyses of the propodeum (fig. 134), a character which Schmiedeknecht stressed as the most distinctive for his genus *Hoploplatystylus*, described from Tunisia. Consequently, I associated the Madagascan form tentatively with the genus *Hoploplatystylus*, mentioning that further research in classification of the African Platylabini may reveal the necessity to revise its generic position. A recent reexamination of two specimens (paratypes) of the type species of *Hoploplatystylus*, facilitated by the kind cooperation of Dr. K.W.R. Zwart of the Landbouwhogeschool in Wageningen (Holland), made it clear that the Tunisian form has little in common with the Madagascan except the apophyses, which are also different in structure. The generic separation of the two forms is quite obvious and very pronounced.

The relationship of the Madagascan species to *Hoploplatystylus smitsvanburgi* Schmiedeknecht is very remote. It is instead closely related

to *Afrectopius* Heinrich from the African mainland, being distinguished from that genus mainly by long apophyses on the propodeum and by pronounced notauli. This type of differentiation of a Madagascan genus from a corresponding genus of the African mainland is paralleled by the two cases of *Rhadinodonta* Szépligeti (continental Africa)—*Rhadinodonto* Heinrich (Madagascar), and *Phaisura* Cameron (continental Africa)—*Phaisurella* Heinrich (Madagascar).

#### *Morphological characters*

*Flagellum*.—Of females bristle-shaped, extremely long and slender; of males with long row of inconspicuous, long and very narrow bacilliform thyloids.

*Head*.—Structure as described for the tribe; outlines of temples and cheeks strongly narrowed behind eyes and toward mandible base; clypeus strongly convex; face and clypeus finely and densely punctured, coriaceous between punctures.

*Thorax*.—Structure as described for the tribe; spiracles small, almost circular; basal half of notauli pronounced, very sharply impressed; sternauli distinct; horizontal part of propodeum (fig. 134) medially distinctly shorter than declivity, with nearly complete carination (except costulae); area superomedia approximately square, rather clearly defined all round; areae dentiparae drawn out into long upward-curved apophyses.

*Legs*.—As described for the tribe.

*Wings*.—Nervulus interstitial; areolet almost quadrangular; radius slightly sinuate.

*Abdomen*.—As described for the tribe; petiole long, about 5 times as long as medially wide, dorsally flat, distinctly wider than high; postpetiole without distinct median field, slightly constricted between spiracles and apex, dorsally with some fine irregular rugosity; gastrocœli obsolete, thyridia weak but recognizable, rather far from base of second tergite.

#### *Hoplectopius seyrigi* (Heinrich), new combination

*Hoploplatystylus Seyrigi* Heinrich, 1938, Mém. Acad. Malgache, XXV, p. 49, ♀♂.

#### *Types*

*Holotype*.—♀, "Madagascar, Ankaratrageb. 1800 m, XII-II., leg. A. Seyrig." Torso; abdomen destroyed by dermestids. C.G.H. I.

*Allotype*.—♂, same data. C.G.H. II.

*Paratypes*.—1 ♀, same data. C.G.H. I.; 1 ♀, Madagascar, Rogez, IX.-X.1931. C.G.H. II.

#### *Distribution*

Madagascar.

#### *Female*

Head black, inner orbits white; thorax uniformly red, only prosternum and sometimes pronotal base black; abdomen black, second tergite from base to beyond middle white, tergites 4-7 with broad apical white

bands; legs including coxae extensively red, all tarsi and trochanters and most of legs III black or blackish; flagellum with dorsal white annulus; length 9 mm.

*Flagellum*.—Very long and slender, bristle-shaped, not at all widened beyond middle, with 37 segments, the first more than 6 times as long as wide, all distinctly longer than wide. Black, including scape, with dorsal white annulus on segments 6-10.

*Head*.—Temple and cheek profiles very strongly narrowed; occiput steeply declivous immediately behind ocelli and eyes; malar space slightly longer than width of mandible base; mandibles strongly narrowed from shortly beyond base, with small teeth, the lower a trifle out of plane of upper; clypeus rather strongly convex, parallel-sided, laterally bounded by distinct, longitudinal furrows; face and clypeus densely and fairly strongly punctured, frons nearly smooth. Black, upper part of facial orbits, and frontal orbits not quite up to lower ocellus, narrowly white.

*Thorax*.—Mesoscutum densely punctured, but not quite opaque; sternauli distinctly, notauli very sharply impressed to about middle of mesoscutum; scutellum raised high above postscutellum, dorsally strongly convex, carinate all round, with vertical apical slope; carination of propodeum, except carinae coxales and costulae, fairly complete but partially indistinct owing to coarse rugosity; areae dentiparae with very long and strong apophyses; area superomedia longer than wide, parallel-sided; spiracles very short-oval, almost round. Red, only prosternum and sometimes pronotal base black.

*Legs*.—Predominantly red, including coxae; coxae III at least apically, sometimes predominantly, rarely entirely, black, coxae I and II rarely extensively blackish-infuscated; all trochanters and trochantelli and all tarsi always black.

*Wings*.—Nervulus interstitial; areolet almost quadrangular; radius slightly sinuate. Clear.

*Abdomen*.—Petiole distinctly wider than high and flattened; the postpetiole likewise flat, its median field weakly indicated, very wide in comparison with the strongly narrowed lateral fields, irregularly and finely rugose; gastrocoeli obsolete, thyridia weakly indicated, rather remote from the base of second tergite; second tergite very finely punctate and coriaceous, basally with some irregular rugosity. Black; white are: about basal half of second tergite (the white on the sides more extended than in the middle), broad apical bands on tergites 4-7.

### Male

*Sides of face and clypeus broadly white, sometimes face and clypeus almost uniformly white, except only a longitudinal median black line; scape ventrally white; otherwise as in female.*

*Flagellum*.—(Allotype); with 38 segments, with inconspicuous, very narrow tyloids on segments 8-22. Black, with dorsal white annulus on segments 7 (apex) to 13 (base); scape ventrally white-marked.



#### 46. Genus *Afrectopius* Heinrich

Fig. 133

*Afrectopius* Heinrich, 1935, Miss. Scient. de l'Omo, III, pp. 232-233.

Type species.—*Afrectopius kenyae* Heinrich

##### Distribution

African continent; in tropical Africa confined to high mountain forests; in South Africa at low altitudes.

##### Preamble

*Afrectopius* is closely related to *Ectopius* Wesmael and still more closely to *Linytus* Cameron. It shares with these two genera the small, nearly circular spiracles of the propodeum, the obsolete gastrocoeli, and the general shape of the first segment. It differs from them by the structure of the propodeum, which is not abbreviated, the horizontal part being about equal in length to the declivity, and especially by the incomplete propodeal carination, which is almost completely lacking in the type species (except for the distinct carinae metapleurales). In some other species the area superomedia and a few other carinae may be distinct, but the carination is never as complete and as distinct as in *Linytus*. The flagellum is very long and extremely slender, much more so than in *Linytus*. In addition the notauli are usually only indicated at base in *Afrectopius*, but are distinct to about the middle of the mesoscutum in *Linytus*.

##### Morphological characters

*Flagellum*.—Of females bristle-shaped, extremely long and slender; of males with long row of usually long and narrow bacilliform tyloids.

*Head*.—Structure as described for the tribe; outlines of temples and cheeks rather strongly narrowed behind eyes and toward mandible base, the temples in vertical view slightly rounded; clypeus strongly convex; face and clypeus densely punctured, coriaceous between punctures.

*Thorax*.—Structure as described for the tribe; spiracles small, almost round; notauli basally indicated by a shallow impression, sternaui somewhat more distinct; horizontal part of propodeum (fig. 133) slightly slanting toward declivity, approximately as long as the latter; carination nearly entirely obsolete in type species and some others, only carinae metapleurales always very distinct; in a number of species the area superomedia more or less clearly limited but costulae always lacking; apices of areae dentiparae tend to project from hardly at all to quite distinctly; sculpture of propodeum always densely and more or less finely irregularly rugose.

*Legs*.—As described for the tribe.

*Wings*.—Areolet pentagonal, strongly narrowed in front; nervulus usually interstitial, rarely somewhat postfurcal.

*Abdomen*.—As described for the tribe; petiole flat and distinctly wider than high, gradually curved and widened into postpetiole; the latter (fig. 133) without distinct median field, with protruding spiracles and somewhat constricted behind spiracles, usually very finely and irregularly rugose; gastrocoeli obsolete, thyridia present but often rather indistinct.

## Color

Red or black, or both colors combined; in a group of species white (or yellow) anal pattern present; other white markings, if present, restricted; wings clear, in some high-mountain species yellowish-tinged.

Key to the species of *Airectopius* Heinrich

## Females and Males

1. Scutellum white. .... 2  
Scutellum red or black. .... 8
2. Abdomen black, with or without white pattern. .... 3  
Abdomen predominantly red, with or without white anal marks. (Only ♂♂ known.) .... 7
3. Tergites 1-2 with apical white bands. see *Spanophatnus bicinctorius* (Thunberg). ♀ Cape Province  
Tergites 1-2 without bands. .... 4
4. Abdomen uniformly black, without white markings. (Legs, including coxae, red; white are: pronotal ridge broadly, collare, tegulae, and subalarum; length 7 mm.) .... 4. *melanopygus*, new species. ♂♀  
Mt. Meru and W. Usambara Mts.  
Abdomen with white anal pattern. (Group *ulugurensis*; partim.) .... 5
5. Femora II and III predominantly red, dorsally infuscated. (Scutellum and postscutellum yellow; collare, subalarum, and in male also facial orbits white; length 9 mm.) .... 7. *rufifemur*, new species. ♂♂  
Uluguru Mts.
- Femora II and III uniformly deep black. .... 6
6. Postscutellum white; subalarum and collare less extensively, apical band on fourth tergite more extensively white than in alternative species; facial orbits of males not white. (Length 8-10 mm.) 5. *ulugurensis*, new species. ♂♂  
Uluguru Mts.  
Postscutellum black, subalarum and collare more extensively, apical band on fourth tergite less extensively white than in alternative species; facial orbits of males white. (Length 8-10 mm.) 6. *usambaricus* new species, ♂♂  
Western Usambara Mts.
7. Apical white bands on tergites 4 (or 5) to 7; pronotum and mesoscutum red, except infuscated bands on lateral lobes of mesoscutum; facial orbits white. (Head black; collare white; flagellum tricolored; length 9-10 mm.)  
8. *tricolor*, new species. ♂  
Uluguru Mts.
- White anal pattern lacking; pronotum and mesoscutum uniformly black; facial orbits not white. (Head black, collare white; flagellum tricolored, but white annulus rather indistinct; length 8 mm.) 9. *parensis*, new species. ♂  
Paré Mts.
8. Basic color of abdomen black, at the most first tergite red. .... 9  
Basic color of abdomen, or at least of entire tergites 1 and 2 red. .... 14
9. Abdomen with at most tergite 7 white-marked. (Wings distinctly yellowish-tinged; head, thorax, abdomen, and legs black, flagellum of male without, of female with indication of annulus; length 9 mm.)  
3. *meruensis*, new species, ♂♂  
Mt. Meru
- Abdomen with distinct white bands, or with more extensive white markings. 10
10. Thorax, including propodeum and scutellum, uniformly black. (Head black, without white markings; tergites 5-7 with apical white bands; femora predominantly red; length 9 mm.) .... 14. *nigrithorax*, new species, ♂  
Uluguru Mts.
- Thorax, or at least mesoscutum and scutellum, and/or propodeum red or brown. 11
11. Prothorax and mesothorax with scutellum uniformly deep black; propodeum, coxae, and trochanters II and III vivid red. (Head, rest of legs, and ab-

domen except first segment black, tergites 6 and 7 with white marks; length 10 mm.) 2. *gessi*, new species, ♀

Cape Town

At least scutellum and part of mesoscutum, usually entire mesoscutum, sometimes entire thorax red or brownish. 12

12. Sides of face, pronotal base, collare, subalarum and apex of pronotal ridge white; mesoscutum dull ochreous, the lateral lobes infuscated; dorsal surface of propodeum uniformly black, areae metapleurales dull ochreous; tergites 6 and 7 with apical white bands, the apical margin of fifth tergite narrowly white, length 6 mm. 1. *kenyae* Heinrich, ♀

Mt. Kenya

Head and thorax without white markings; mesoscutum usually clear red, sometimes lateral lobes infuscated; propodeum varying from red to black; tergites 5-7 with broad apical white bands; length 9-10 mm. (Only the ♂♂ known.) 13

13. Flagellum without annulus; anterior third of notauli pronounced, anterior parts of all three lobes of mesoscutum rather strongly convex. (Mesoscutum, scutellum, upper 2/3 of mesopleura, and entire propodeum, red.) 15. *empeyi*, new species, ♂

Transvaal

Flagellum with broad white annulus; anterior third of notauli distinct but not as strongly impressed as in *empeyi*; anterior parts of the three lobes of mesoscutum not markedly convex. 13a

- 13a. Femora black. (In the majority of specimens thorax black, only mesoscutum and scutellum red.) 13a. *rungeensis rungeensis*, new subspecies, ♂

Southwestern Tanganyika: Mt. Rungwe

Femora predominantly red. (Thorax in holotype uniformly red.) 13b. *rungeensis mdando*, new subspecies, ♂

Southwestern Tanganyika: Livingstone Mts.

14. Abdomen with at the most the seventh tergite whitish-marked; wings yellow-tinged. (Thorax varying from extensively red to predominantly black; legs varying from predominantly red to black.) 3. *meruensis*, new species, ♀♂, erythristic phase

Mt. Meru

Tergites 5-7 or 6 and 7 with distinct apical white marks or bands; wings not yellow-tinged. (Head and thorax without white markings; flagellum tricolored.) 15

15. Femora II and III black; abdomen usually from apex of third tergite on blackish-infuscated, at least tergites 5-7 with black basic color. (Pronotum, mesoscutum, scutella, and parts of propodeum red; fifth tergite with narrow apical white margin, usually abruptly widened medially, sixth and seventh tergite with broad, medially widened, apical white bands; length 8-9 mm.) 12. *melanisticus*, new species, ♀♂

Western Usambara Mts.

Femora II and III and basic color of entire abdomen red. 16

16. Mesoscutum black, except red outer margin and longitudinal red lines between median lobe and lateral lobes; propodeum black, except red declivity and space of area supermedia. (Coxae uniformly black; tergites 5-7 with apical white bands; length 10 mm.) 11. *infuscatus*, new species, ♀

Uluguru Mts.

Mesoscutum and horizontal part of propodeum uniformly red. (Usually coxae III or II and III partially to predominantly red; tergites 5-7 or 6 and 7 with apical white bands; length 9-10 mm.) 10. *rungeicola*, new species 17

17. The fifth tergite with fairly conspicuous apical white mark. (In females pedicel black, coxae III extensively to predominantly black.) 10a. *rungeicola rungeicola*, new subspecies, ♀♂

Mt. Rungwe

Only tergites 6 and 7 with white bands. (In females pedicel light ferruginous; coxae III extensively red.) 10b. *rungeicola mdandoensis*, new subspecies, ♀

Livingstone Mts.

### 1. *Afrectopius kenyae* Heinrich

*Afrectopius kenyae* Heinrich. 1935, Miss. Scient. de l'Omo, III, p. 233, ♀.

#### Types

*Holotype*.—♀, "Kenya, Brit. Ost Afrika, VI.31, leg. A. Seyrig"; more than half of the type destroyed by dermestids. C.G.H. I.

#### Distribution

Kenya, Mt. Kenya.

#### Preamble

This species, the type of the genus, is characterized by the complete lack of carination on the propodeum (except for the rather distinct carinae metapleurales), and by the entire lack of projections on the apices of the (not at all defined) areae dentiparae; the sculpture of the horizontal part is densely and finely coriaceous-rugose; the declivity shows a number of longitudinal rugae, but no distinct carinae.

#### Female

*Head*, upper surface of propodeum, and abdomen black, abdomen with white anal pattern, face laterally white; lateral lobes of mesoscutum, parts of pronotum, and the prosternum blackish-brown-infuscated; infuscated are also the dorsal side of coxae III, femora III, and tibiae III and all tarsi; flagellum black with dorsal white annulus; the rest dull ochreous; length 6 mm.

*Flagellum*.—With 32 segments; the first about 6 times as long as wide, and 1.3 times as long as the second segment (measured); all segments much longer than wide. Black, including scape, with dorsal white annulus on segments 7-9.

*Head*.—Structure as described for the genus; face, clypeus, frons, and temples very densely and finely punctured, subopaque. Black, facial orbits white.

*Thorax*.—Structure as described for the genus and in preamble; about anterior third of notauu rarely distinct, mesoscutum very finely and densely coriaceous-punctate, subopaque; scutellum moderately raised above postscutellum, moderately convex, carinate all round, somewhat shiny. Dull ochreous; the following white: collare, pronotal base, apex of pronotal ridge, and subalarum; blackish-infuscated are: prosternum, upper part of propleura, lateral lobes of mesoscutum, tegulae, postscutellum, and upper surface of propodeum.

*Legs*.—Dull ochreous; legs III dorsally infuscated, including coxae; all tarsi blackish.

*Wings*.—Nervulus interstitial; areolet pentagonal, very close to quadrangular; radius straight.

*Abdomen*.—Structure as described for the genus; slightly shiny from end of second tergite. Black; tergites 6 and 7 apically white, also the apical margin of the fifth tergite narrowly white.

## 2. *Afrectopius gessi*, new species

### Types

*Holotype*.—♀, "South Africa, Cape Town, 1.-4.IV.1963." C.G.H. II.

*Paratypes*.—2 ♀♀, same data. C.G.H. II.

### Distribution

South Africa, foot of Table Mountain (Stellenbosch).

### Preamble

The uniformly deep black color of head, prothorax, mesothorax, and abdomen beyond first segment, contrasting strongly with the bright red of the propodeum, first segment and hind coxae, characterizes this species chromatically; in the lack of carination on the propodeum it approaches *kenyae* Heinrich, but the apices of areae dentiparae are usually indicated by a small projection.

Named after Mr. F.W. Gess of the South African Museum, who made possible the excursion to Stellenbosch. where this and other species were collected.

### Female

*Deep black, without white markings, except apical bands on tergites 5-7; propodeum, first tergite, and coxae and trochanters II and III bright red; legs III nearly entirely, legs II and I extensively black; flagellum tricolored, with dorsal white annulus; length 10 mm.*

*Flagellum*.—Bristle-shaped, extremely long and slender, with 38-39 segments, the first about 6 times as long as wide, all considerably longer than wide. Black, segments 1-4 or 5 red, with dorsal white annulus on segments 6 (apex) to 10; apical half ventrally brownish; scape and pedicel black.

*Head*.—Structure as described for the genus; clypeus and face coarsely and densely rugose-punctate; frons between ocelli and antennal cavities finely coriaceous. Uniformly black

*Thorax*.—Structure as described for the genus; anterior third of notauli fairly distinct; mesoscutum very densely and fairly coarsely punctured, subopaque; scutellum polished, strongly raised above postscutellum, with almost vertical apical slope, carinate all round except at the very apex; carination of propodeum obsolete, except distinct carinae metapleurales; apices of areae dentiparae projecting a trifle angularly; space of area superomedia sometimes slightly protruding; exterior carinae of declivity sometimes weakly indicated; mesopleura coarsely and densely rugose-punctate, except small, sparsely punctured speculum. Deep black, including scutella; propodeum bright red.

*Legs*.—Black; red or ferruginous are: coxae and trochanters II and III (coxae II sometimes ventrally, trochanters II sometimes dorsally, blackish-infuscated), base of all femora narrowly, ventral side of femora I and of trochanters I, tibiae I except infuscated tip, about basal half of tibiae II; tarsi I and II basally brownish, infuscated toward apex.

*Wings*.—Nervulus interstitial; areolet pentagonal, strongly narrowed in front; radius very slightly curved toward apex; clear.

**Abdomen.**—Structure as described for the genus; postpetiole more or less finely irregularly rugose, shiny; space between gastrocoeli fairly coarsely, irregularly rugose; rest of second tergite finely coriaceous, the third tergite very finely and fairly sparsely punctured, coriaceous between punctures. Black, the first tergite red; tergites 5 and 6 with apical white bands, the seventh tergite predominantly white.

### 3. *Afrectopius meruensis*, new species

#### Types

*Holotype*.—♀, "Tanganyika, Mt. Meru, 1800 m, 30.VI.1962." C.G.H. II.

*Allotype*.—♂, same data. C.G.H. II.

*Paratypes*.—2 ♀♀, same locality, 1800 and 2700 m, July 1962; 11 ♂♂, same locality, 1800 m. 20.VI.-2.VII.1962. C.G.H. II.

#### Distribution

Mt. Meru, between 1800 and 2800 m.

#### Preamble

Distinguished by the uniformly black color of the entire body and by distinctly yellowish-tinged wings; carination of propodeum obsolete, as in the type species, but the apices of areae dentiparae with a small triangular projection and the sculpture of the propodeum much coarser (irregularly rugose).

#### Female

Uniformly black, including legs; last tergite apically indistinctly whitish; tibiae I brownish on interior side; wings yellowish-tinged; flagellum with dorsal white annulus; length 9 mm; see also paragraph "variability" below.

**Flagellum.**—Bristle-shaped, extremely long and slender, with 35-36 segments, the first about 6 times as long as wide, all segments considerably longer than wide. Black, including scape, with dorsal white annulus on segments 7-8 or 9; annulus sometimes almost lacking; in red phase basal segments orange.

**Head.**—Structure as described for the genus; sculpture as described for *gessi* Heinrich. Uniformly black.

**Thorax.**—Structure as described for the genus; anterior fourth of notauli weakly indicated; mesoscutum finely and fairly densely punctured, coriaceous between punctures, opaque; scutellum dorsally almost smooth, with extremely fine sculpture, strongly raised above postscutellum, with almost vertical apical slope, carinate all round except at the very apex; carination of propodeum exactly as described for *gessi*; mesopleura coarsely and very densely rugose-punctate, including most of speculum, opaque. Uniformly black; in red phase dorsally red.

**Legs.**—Black; tibiae and tarsi brown; tibiae and tarsi II blackish-brown; in red phase femora red.

**Wings.**—As described for *gessi*, but distinctly yellow-tinged.

**Abdomen.**—Structure as described for the genus; postpetiole with fairly distinct, wide median field, irregularly rugose, shiny; space between gastrocoeli weakly rugose at base, rest of second and the third tergite

finely coriaceous, with some scattered, fine punctures. Uniformly black; apex of seventh tergite usually indistinctly whitish; in red phase uniformly red.

#### Male

Uniformly black, including legs; last tergite usually with small apical white mark, rarely the apex of scutellum narrowly white-marked; flagellum with or without annulus, exceptionally entire basal half of flagellum pale orange; length 8-9 mm; see also paragraph "variability" below.

*Flagellum*.—With 35 segments; narrow bacilliform tyloids on segments 8 to about 25, the longest not quite reaching from bases to apices of segments. Black; the basal half (7-8 segments) dark brown, ventrally light brown; exceptionally flagellum basally uniformly orange; sometimes a distinct dorsal white annulus on segments 8 or 9 to 10 present, more frequently instead a faint indication of a dorsal white stripe; usually flagellum without white stripe or annulus.

#### Variability

Simultaneously with the entirely black form described above, and in the same habitat and locality, a series of specimens of both sexes was collected distinguished by red abdomen, propodeum (except metapleura), scutella, mesoscutum, part of pronotum, and femora. In structure and sculpture the black and red specimens are identical. They also share the variability of the white dorsal flagellar annulus, which is present in some specimens, lacking in others. As one intermediate specimen has been found, with only the abdomen red while the thorax is almost entirely black and the legs uniformly black, I am convinced that *meruensis* occurs in a melanistic and erythristic phase. A similar case has not been yet recorded within the tribe Platylabini, but there are many parallels among the Ichneumonini, particularly among the Palaearctic and Nearctic species of the genus *Ctenichneumon* Thomson.

#### 4. *Airectopius melanopygus*, new species

##### Types

*Holotype*.—♀, "Tanganyika, W. Usambara Mts., 2100 m, Magamba, 14.-24.III.1962." C.G.H. II.

*Allotype*.—♂, same data. C.G.H. II.

*Paratypes*.—15♂♂, 4♀♀, same data; 5♂♂, 1♀, Tanganyika, Mt. Meru, 1800 m, VI.1962. C.G.H. II.

##### Distribution

Northern Tanganyika: Western Usambara Mts. and Mt. Meru at altitudes of 1800 and 2100 m.

##### Preamble

One of the smallest species of the genus and the only one distinguished by a black abdomen without anal marks, yellow scutellum, and red legs in combination; propodeum without carination, areae dentiparae without projections, as in type species.

### Female

Black, scutellum and pronotal ridge yellow; legs predominantly red, including coxae; flagellum black, without annulus; abdomen without anal white pattern; length 6-7 mm.

*Flagellum*.—Bristle-shaped, very long and slender, with 30-31 segments, the first about 5 times as long as wide, all distinctly longer than wide. Black, without annulus; segments 1 to about 9 dorsally slightly brownish-tinged, ventrally testaceous.

*Head*.—Structure as described for the genus; clypeus and median field of face densely and fairly coarsely punctured, coriaceous between punctures, subopaque; lateral fields somewhat less densely punctured; frons finely coriaceous. Uniformly black.

*Thorax*.—Structure as described for the genus; only the very base of notauli weakly indicated; mesoscutum finely and moderately densely punctured, coriaceous between punctures, somewhat shiny; scutellum moderately raised above postscutellum, laterally carinate not quite to apex, dorsally extremely finely sculptured, apically rounded; propodeum without carination, apices of areae dentiparae not at all projecting; horizontal part densely and fairly coarsely irregularly rugose-punctate; carinae metapleurales not quite distinct; mesopleura densely rugose-punctate, except sparsely punctate speculum. Black; the following yellow: collare, pronotal ridge broadly, tegulae, subalarum, and scutellum (except lateral and apical slopes).

*Legs*.—Red, including coxae; all tarsi and usually tip of femora III and the tibiae III moderately infuscated.

*Wings*.—Nervulus interstitial; areolet pentagonal, narrowed in front. Clear.

*Abdomen*.—Structure as described for the genus; postpetiole and space between gastrocoeli moderately strongly irregularly rugose-punctate; second and third tergites finely coriaceous-rugose and very finely and sparsely punctate. Uniformly black.

### Male

Almost identical with female; apices of femora III and the tibiae III, on the average, somewhat more extensively and intensively infuscated; apical margins of tergites 5-7 usually narrowly white or whitish; flagellum without annulus (as in female), the ventral side usually more extensively testaceous or pale orange.

*Flagellum*.—With 30-31 segments; narrow bacilliform tyloids on segments 8-21, the longest not quite reaching bases and apices of segments. Black, the basal 8-10 segments slightly brownish-tinged; ventrally testaceous or pale orange, except about 10 apical segments.

### 5. *Afrectopius ulugurensis*, new species

#### Types

*Holotype*.—♀, "Tanganyika, Uluguru Mts., 1600-1800 m, 20.XII.1961." C.G.H. II.

*Allotype*.—♂, same locality, 14.XII.1961. C.G.H. II.

*Paratypes*.—4 ♀♀, 7 ♂♂, same locality, December 1961. C.G.H. II.



### Distribution

Eastern Tanganyika: Uluguru Mts., 1600-1800 m.

### Preamble

In this species, and in a number of others to follow, in contrast to the type species, the areae dentiparae show a small tooth-like projection, and the carination of the propodeum as a whole is not quite as completely obsolete; in particular the anterior part of the area superomedia or its lateral carinae are often recognizable and the exterior carinae of the declivity are usually fairly distinct. The group of species sharing these differences from the type species will be referred to as the "*ulugurensis* group".

The species *ulugurensis* is very similar in general appearance to *usambaricus*, new species. It differs from *usambaricus* as a species as follows: scutellum more raised above postscutellum; speculum (between punctures) coriaceous and completely opaque (less densely coriaceous and slightly shiny in *usambaricus*); postscutellum white, fourth tergite with broad apical white band, facial orbits black (in *usambaricus* postscutellum black, fourth tergite with narrowly white apex, facial orbits white); in addition in males temple profile slightly less narrowed and more curved in *usambaricus* than in *ulugurensis*.

### Female

*Black, including facial orbits; white are: collare, apex of pronotal ridge, scutellum, postscutellum, broad apical bands on tergites 4-7, and usually subalarum; flagellum with not quite complete white annulus; length 8-10 mm.*

*Flagellum.*—Bristle-shaped, very long and slender, with 36-37 segments, the first about 6 times as long as wide, all considerably longer than wide. Black, including scape, with nearly complete white annulus on segments 4 (apex) to 9 or to 11.

*Head.*—Structure as described for the genus; face and clypeus finely and fairly densely punctured, coriaceous between punctures, opaque; frons finely coriaceous, slightly shiny. Uniformly black.

*Thorax.*—Structure as described for the genus; anterior third of notauli weakly indicated; mesoscutum finely and fairly densely punctured, coriaceous between punctures, opaque; scutellum very strongly raised above postscutellum, dorsally convex, and carinate all round, with long, steeply oblique apical slope; horizontal part of propodeum and declivity irregularly rugose, metapleura and mesopleura densely rugose-punctate and opaque, including the speculum which is coriaceous between punctures; areae dentiparae with short tooth-like projections; carination obsolete, except distinct carinae metapleurales, sometimes area superomedia, particularly its anterior part, indicated by weak carinae, often exterior carinae of declivity indicated. Black; the following white: collare, apex of pronotal ridge, scutellum, postscutellum, usually subalarum.

*Legs.*—Black; the very base of femora reddish; apex of femora I and II brownish, the tibiae I ferruginous-brown.

*Wings.*—Nervulus interstitial or postfurcal; areolet pentagonal, strongly narrowed in front; radius slightly sinuate. Clear.

**Abdomen.**—Structure as described for the genus; postpetiole irregularly rugose; second and third tergites finely coriaceous. Black; tergites 4-7 with broad apical white bands.

### Male

*Color exactly as in female; temple profile slightly more rounded and less narrowed behind eyes.*

**Flagellum.**—With 35-36 segments; very narrow bacilliform tyloids on segments 6 or 7 to 22. Black, including scape, with complete white annulus on segments 5 or 6 or 7 to 13.

## 6. *Afrectopius usambaricus*, new species

Fig. 133

### Types

**Holotype.**—♀, "Tanganyika, W. Usambara Mts., 2100 m, Magamba, 11.III.1962." C.G.H. II.

**Allotype.**—♂, same locality, 14.-24.III.1962. C.G.H. II.

**Paratypes.**—3 ♀♀. 13 ♂♂, same locality, 9.-24.III.1962. C.G.H. II.

### Distribution

Northern Tanganyika: Western Usambara Mts., at 2100 m.

### Preamble

Another species of the *ulugurensis* group. Very similar to *ulugurensis* Heinrich; for the differences see preamble to *ulugurensis*.

### Female

*Black, facial orbits white; white are also: collare, apex of pronotal ridge, scutellum (postscutellum always black), subalarum, broad apical bands on tergites 5-7, and a narrower one laterally more abbreviated on the fourth tergite; flagellum with dorsal white annulus; length 8-10 mm.*

**Flagellum.**—Bristle-shaped, very long and slender, with 36 segments, the first about 6 times as long as wide, all considerably longer than wide. Black, including scape, with dorsal white annulus on segments 4 (apex) to 9.

**Head.**—Structure as described for the genus; face and clypeus finely and fairly densely punctured, coriaceous between punctures, nevertheless somewhat shiny (in contrast to *ulugurensis*); frons very finely coriaceous, shiny. Black, facial orbits white.

**Thorax.**—Structure as described for the genus; anterior third of notauli weakly indicated; mesoscutum finely and fairly densely punctured, coriaceous between punctures, somewhat shiny; scutellum high, but not quite as much raised above postscutellum as in *ulugurensis*, dorsally convex and carinate all round, with nearly vertical apical slope; structure and sculpture of propodeum (fig. 133) and pleura as in *ulugurensis*, but pleura slightly shiny. Black; the following white: collare, apex of pronotal ridge (exceptionally whole length of pronotal ridge), subalarum, and scutellum.

**Legs.**—Black; the very base of femora reddish; apex of femora I and II brownish; tibiae and tarsi I light brown, tibiae and tarsi II blackish-brown.

*Wings*.—Nervulus interstitial; areolet pentagonal, strongly narrowed in front; radius slightly sinuate.

*Abdomen*.—Sculpture as in *ulugurensis*. Black, tergites 5-7 with broad apical white bands, the fourth tergite only with narrow, laterally abbreviated, apical band.

#### Male

*Color exactly as in female.*

*Flagellum*.—With 35 or 36 segments; very narrow bacilliform tyloids on segments 7 to about 22. Black, with complete white annulus on segments 5 (rarely), 6 or 7 (apex) to 12, rarely to 13; scape ventrally whitish toward apex.

### 7. *Airectopius rufifemur*, new species

#### Types

*Holotype*.—♀, "Tanganyika, Uluguru Mts., 1600 m, 26.XII." C.G.H. II.

*Allotype*.—♂, same locality, 1500 m, 30.XI.1961. C.G.H. II.

#### Distribution

Eastern Tanganyika: Uluguru Mts., at about 1500 m.

#### Preamble

A species of the *ulugurensis* group. In the somewhat shiny sculpture of mesoscutum and mesopleura it resembles *usambaricus* Heinrich more than *ulugurensis* Heinrich. It differs from both species by red femora, lack of white on the pronotal ridge, and by less pronounced projections on the areae dentiparae. In addition it differs from *ulugurensis* by reduction of the apical white band on the fourth tergite, and in males by white facial orbits. In contrast to *usambaricus* the postscutellum is white.

#### Female

*Black, including facial orbits; femora predominantly red; white are: collare, scutellum, postscutellum, and broad apical bands on tergites 5-7; the fourth tergite medio-apically indistinctly whitish; flagellum with not quite complete annulus; length 9 mm.*

*Flagellum*.—Bristle-shaped, very long and slender, with 36 segments, the first about 6 times as long as wide, all considerably longer than wide. Black, including scape, with dorsal white annulus on segments 4-12 (base); first segment dorsally at base, ventrally more extensively, ferruginous, the following segments up to annulus dark brown.

*Head*.—Structure as described for the genus; face and clypeus finely and fairly densely punctured, coriaceous between punctures, somewhat shiny; frons coriaceous, somewhat shiny. Black.

*Thorax*.—Structure as described for the genus; basal third of notauli weakly indicated; mesoscutum finely and densely punctured, coriaceous between punctures, somewhat shiny; scutellum rather strongly raised above postscutellum, dorsally convex, and carinate all round, with nearly vertical apical slope; horizontal part and declivity of propodeum irregularly rugose, areae spiraculiferae transversely rugose, metapleura and mesopleura (including speculum) densely rugose-punctate, slightly shiny; areae den-

tiparae with rather small projections; carination obsolete, except carinae metapleurales; anterior part of area superomedia and exterior carinae of declivity weakly indicated. Black; the following white: collare, scutellum, postscutellum, a minute dot on subalarum.

*Legs*.—Black, including coxae and trochanters; femora red, dorsally infuscated; tibiae I and II brown, tibiae III blackish-brown, apically black, all tarsi infuscated.

*Wings*.—Nervulus interstitial; areolet pentagonal, strongly narrowed in front; radius slightly sinuate.

*Abdomen*.—Postpetiole and base of second tergite finely irregularly rugose; rest of second and the third tergite coriaceous and very finely punctured, subopaque. Black; apical margins of tergites 2-4 and basal part of fifth tergite brownish, tergites 5-7 with broad apical white bands.

### Male

As female, but facial orbits white; flagellum with complete white annulus; in allotype area superomedia and lateral carinae of horizontal part rather distinct.

*Flagellum*.—With 34 segments; very narrow bacilliform tyloids on segments 8-21. Black, with complete white annulus on segments 7 (apex) to 12; first segment ventrally, and scape on interior side, dull ferruginous.

## 8. *Airectopius tricolor*, new species

### Types

*Holotype*.—♂ "Tanganyika, Uluguru Mts., 1500-1800 m. 14.XII." C.G.H. II.

*Paratypes*.—2♂♂, same locality, 1500 m, 1. and 8.XII.1961. C.G.H. II.

### Distribution

Eastern Tanganyika: Uluguru Mts., 1500-1800 m.

### Preamble

A species of the *ulugurensis* group, in structure closely related to *ulugurensis* Heinrich and *usambaricus* Heinrich. Sculpture of face, pleura, and propodeum slightly coarser than in *ulugurensis*, somewhat shiny, rather similar to *usambaricus*. Differs from both species by the red basic color of abdomen, femora, mesoscutum, and parts of pronotum, and also in the distribution of white (yellow in this species).

### Male

Black; basic color of entire abdomen and mesoscutum, and of parts of pronotum and propodeum red; yellow are: facial orbits, collare, scutellum, postscutellum, sometimes mark on subalarum, broad apical bands on tergites 5-7, and narrow, laterally abbreviated, apical band on fourth tergite; all femora and tibiae, and tarsi I and II red; flagellum tricolored: orange, with complete pale-yellow annulus and black apex; length 9-10 mm.

*Flagellum*.—With 35-37 segments; very narrow bacilliform tyloids on segments (about) 8 to 22. Scape and segments 1-5 light orange, segments 6-12 or 13 (base) white, apex black, pedicel dorsally infuscated.

*Head*.—Structure as described for the genus; clypeus and median part of face comparatively coarsely rugose-punctate, slightly shiny. Black; facial orbits yellow; in one specimen yellow stripe reduced to a small mark.

*Thorax*.—Structure as described for the genus; anterior third of notauli indicated; mesoscutum densely and moderately finely punctured, coriaceous between punctures, slightly shiny; scutellum strongly elevated above postscutellum, dorsally convex, extremely finely coriaceous and shiny, carinate all round; apical slope close to vertical, with vestiges of longitudinal rugosity; horizontal part and declivity of propodeum with comparatively coarse, irregular rugosity and some carination, in particular in all three specimens apical transverse carinae of horizontal part, exterior carinae of declivity, and lateral carinae of area superomedia rather distinct; areae dentiparae with fairly prominent projections; areae spiraculiferae transversely rugose; mesopleura and metapleura including speculum coarsely and densely rugose-punctate. Black; the following red: pronotum (except black patch on posterior upper part of propleura), mesoscutum (except longitudinal black bands on lateral lobes), tegulae, subalarum, median part of horizontal part of propodeum, declivity entirely or extensively, apical part of areae spiraculiferae, and area around spiracles more or less extensively; the following yellow: collare, scutellum, postscutellum, and sometimes spot on subalarum.

*Legs*.—All femora, tibiae I and II, and tarsi I, red; tarsi II slightly infuscated, tip of femora III, tibiae and tarsi III blackish-infuscated; all coxae and trochanters black.

*Wings*.—Nervulus interstitial; areolet pentagonal, strongly narrowed in front; radius slightly sinuate.

*Abdomen*.—Postpetiole and base of second tergite irregularly rugose; rest of second and third tergite densely and fairly strongly punctured and coriaceous. Red; tergites 5-7 with broad apical yellow bands, in two specimens the fourth tergite also with narrow, laterally abbreviated, apical yellow band.

### 9. *Afrectopius parensis*, new species

#### *Types*

*Holotype*.—♂, "Northern Tanganyika, Paré Mts., near Chome, 1900 m, 30.V.62." C.G.H. II.

#### *Distribution*

Northern Tanganyika: Paré Mts., at 1900 m.

#### *Preamble*

This species and *tricolor* Heinrich are the only ones in the *ulugurensis* group with red abdomen. These two species seem to be fairly closely related, but *parensis* differs from *tricolor* and from all other known species of the *ulugurensis* group by the lack of white (or yellow) anal pattern.

#### *Male*

Black, including most of femora; abdomen uniformly red, without white anal pattern; mesoscutum with a few restricted dull-reddish marks;

scutellum and postscutellum yellow; head uniformly black; flagellum orange, gradually shading into yellow, with black apex; length 8 mm.

*Flagellum*.—With very narrow bacilliform tyloids on segments (about) 7 to 22. Light orange: scape, pedicel, and apex (from 13th segment on) black; the orange gradually shading into slightly orange-tinged-yellow beyond the 5th segment.

*Head*.—Structure as described for the genus; sculpture as described for *tricolor*.

*Thorax*.—Structure as described for the genus; sculpture as described for *tricolor*, but propleura obliquely striate. Black; basal part of notauli, area before basal furrow of scutellum, and subalarum, dull red; the following yellow: collare, scutellum, postscutellum.

*Legs*.—Black; tibiae I and II orange, tarsi I and II brownish; femora I and II apically and basally orange-brownish; femora III dorsally and on interior side red.

*Wings*.—Nervulus interstitial, areolet pentagonal, close to quadrangular; radius slightly sinuate. Slightly yellowish-tinged.

*Abdomen*.—Constriction of postpetiole between spiracles and apex less pronounced than usually; postpetiole finely irregularly rugose; second and third tergites finely punctate and coriaceous. Uniformly red.

#### 10. *Afrectopius rungwecola*, new species

##### *Distribution*

Southern Tanganyika: Rungwe Crater at 2600 m (type locality) and Livingstone Mts., 30 mi. south of Njombe at 2400 m.

##### *Preamble*

This species and some others to follow agree in structure and sculpture with *ulugurensis* group and also share with it the white anal pattern. They differ chromatically by the lack of all white markings on head and thorax, including scutellum and postscutellum, which are usually red. In addition, these species have an unobtrusive sculptural character of their own: the steep apical slope of the scutellum is longitudinally (usually converging from both sides) striate.

##### *Female*

Vivid red; head, sterna, mesopleura, and metapleura black; trochanters black, coxae varying (probably geographically) from black to predominantly red; tergites 5-7 (Mt. Rungwe) or only 6 and 7 (Livingstone Mts.) with laterally abbreviated, apical white bands; tibiae and tarsi III more or less extensively infuscated; flagellum tricolored; length 9-10 mm.

*Flagellum*.—Bristle-shaped, extremely long and slender, with 36-37 segments, the first about 6 times as long as wide, all considerably longer than wide. Tricolored: the scape, segments 1, 2, and basal half of 3 orange-red, segments 5-10 or to base of 11 with nearly complete white annulus, the rest black.

*Head*.—Structure as described for the genus; clypeus and face, particularly its median part, densely rugose-punctate and coriaceous between punctures; frons finely coriaceous. Uniformly black.

*Thorax*.—Structure as described for the genus; anterior third of notauli indicated; mesoscutum very densely and moderately finely sculptured, coriaceous between punctures, subopaque; scutellum strongly raised above postscutellum, dorsally convex, and fairly densely rugose-punctate to almost smooth, carinate all round, apical slope with distinct longitudinal striation, converging toward postscutellum; horizontal part of propodeum irregularly rugose and somewhat shiny to densely rugose-punctate and subopaque, probably varying geographically; apices of areae dentiparae slightly projecting; carination of horizontal part obsolete, sometimes area superomedia indicated; longitudinal carinae on declivity more or less developed; metapleura and mesopleura very densely rugose-punctate including speculum, subopaque; propleura extensively transversely striate. Red; black are: mesopleura (except subalarum and vicinity), prepectus, prosternum, mesosternum, and sometimes patch on propleura; sometimes some restricted infuscations on mesoscutum.

*Legs*.—Red; tarsi II and III and apex of tibiae III blackish-infuscated; trochanters black; coxae varying geographically from almost entirely black to predominantly red.

*Wings*.—Nervulus interstitial; areolet pentagonal, strongly narrowed in front; radius scarcely sinuate.

*Abdomen*.—Postpetiole and base of second tergite finely and densely coriaceous-rugose; rest of second and the third tergite finely, irregularly punctured and coriaceous. Red; tergites 6 and 7, sometimes 5-7, with laterally abbreviated apical white bands.

### Male

Populations from Rungwe Crater. *Vivid red; mesopleura and metapleura usually partially red, rarely uniformly black; head and sterna entirely black, rarely facial orbits narrowly red; legs as in female; coxae III predominantly to entirely, coxae II usually partially red; flagellum tricolor; length 9-10 mm.*

*Flagellum*.—With 35-36 segments; very narrow bacilliform tyloids on segments 7 or 8 to 22 or 23. Scape and segments 1 to 4 or to 6 orange-red, segments 8 to 11 or 12 white, apex black.

### 10a. *Airectopius rungwecola rungwecola*, new subspecies

#### Types

*Holotype*.—♀, "S. Tanganyika, Rungwe Mts., 2600 m, 12.XI.62." C.G.H. II.

*Allotype*.—♂, same locality, 11.-15.XI.62. C.G.H. II.

*Paratypes*.—4♂♂, 1♀, same locality, 30.X.-15.XI.62. C.G.H. II.

#### Distribution

Southern Tanganyika: Rungwe massif, at 2600 m.

#### Female

*Fifth tergite with fairly conspicuous apical white mark; pedicel black; coxae II uniformly, coxae III extensively, or nearly entirely, black; the rest as described for the species.*

### Male

As described for the species.

#### 10b. *Airectopius rungwekola mdandoensis*, new subspecies

##### Types

Holotype.—♀, "S. Tanganyika, Mdando Forest, 30 mi. south of Njombe, 2400 m, 20.X.1962." C.G.H. II.

Paratype.—1 ♀, same data. C.G.H. II.

##### Distribution

Southern Tanganyika: Livingstone Mts., 30 mi. south of Njombe, at 2400 m.

##### Female

Fifth tergite without apical white mark; pedicel light ferruginous; coxae II and III extensively red; the rest as described for the species.

#### 11. *Airectopius infuscatus*, new species

##### Types

Holotype.—♀, "Tanganyika, Uluguru Mts., 1500-1800 m, 5.XII." C.G.H. II.

##### Distribution

Eastern Tanganyika: Uluguru Mts., 1500 m-1800 m.

##### Preamble

The type, the only known specimen of this form, is rather closely related to *rungwekola* Heinrich and may well replace the latter species geographically. Considering the great number of morphologically very monotonous species of this genus I prefer not to make a subspecific association at this time, particularly as the lack of specimens precludes a well-founded conclusion.

The type specimen differs from *rungwekola rungwekola* by more extensive black markings, as described in detail below, by somewhat denser and slightly coarser sculpture of the second and third tergite, by slightly less prominent apices of areae dentiparae and by obsolete area superomedia. The rest as in *rungwekola rungwekola*.

##### Female

Red; the following black: head, prosternum, prepectus, mesosternum, mesopleura, metapleura, horizontal part of propodeum (except longitudinal median red band), areae spiraculiferae, pronotal base, upper posterior part of propleura, a broad longitudinal band on each of the three lobes of mesoscutum, all trochanters and coxae uniformly, subalarum, tegulae, tarsi II and III; blackish-brown-infuscated are: the tarsi I, tip of femora III, tibiae II and III, and partially dorsal side of femora I and II; flagellum tricolored, with broad white annulus; length 10 mm.



*Flagellum*.—Bristle-shaped, extremely long and slender, with 37 segments, the first about 5.5 times as long as wide, all distinctly longer than wide. Scape and segments 1-2 ferruginous, apex of scape and pedicel black; segments 5 (apex) to 13 (base) with almost complete white annulus, the rest black.

## 12. *Airectopius melanisticus*, new species

### Types

*Holotype*.—♂, "Tanganyika, W. Usambara Mts., 2100 m, Magamba, 12.III.1962." C.G.H. II.

*Paratypes*.—4♂♂, same locality, 9-14.III.1962; 3♂♂, W. Usambara Mts., 1600 m, Lushoto, 17.II.-4.III.1962. C.G.H. II.

### Distribution

Northern Tanganyika: Western Usambara Mts., at altitudes from 1600 m to 2100 m.

### Preamble

The species is chromatically distinguished by the peculiar color of the abdomen, gradually changing from red on anterior 2-3 tergites to black with apical white markings on tergites 5-7, the fifth tergite with only a narrow apical white margin, usually abruptly triangularly widened in the middle, the sixth and seventh tergites with broad apical bands likewise greatly widened in the middle.

### Male

Black, including all coxae, trochanters, and femora; pronotum, meso-scutum, scutellum, postscutellum, and horizontal part of propodeum partially to entirely red; tergites 1 and 2 entirely, the third tergite at least partially red; usually the third tergite apically, the fourth predominantly, blackish-infuscated, tergites 5-7 black, except white pattern; flagellum tricolored; length 8-9 mm.

*Flagellum*.—With 35-36 segments; very narrow bacilliform tyloids on segments 8-22. Segments 1-7 orange, 8-11 white; scape, pedicel, and apical segments from the 12th on black.

*Head*.—Structure as described for the genus; face and clypeus densely punctured, coriaceous between punctures; frons finely coriaceous. Uniformly black.

*Thorax*.—Structure as described for the genus; anterior third of notauli slightly indicated; mesoscutum densely and finely punctured, coriaceous between punctures, subopaque; scutellum strongly raised above postscutellum, convex and shiny, carinate all round, with some short, irregular rugosity around the inner margin of the carina; declivity with vestiges of longitudinal rugosity; horizontal part of propodeum and declivity coarsely irregularly rugose, with fairly distinct carination; apices of areae dentiparae slightly projecting; lateral carinae of area superomedia more or less converging toward apex. Black; the following red: pronotum, meso-scutum, scutellum, postscutellum, usually horizontal part and declivity of propodeum including areae spiraculiferae; sometimes propodeum predominantly black with only anterior part of areae spiraculiferae and middle

of declivity and/or horizontal part red.

*Legs*.—Predominantly black, including coxae and trochanters; apices of femora I and the tibiae and tarsi I light brown; tibiae and tarsi II dark brown.

*Wings*.—Nervulus interstitial; areolet pentagonal, strongly narrowed in front; radius slightly sinuate.

*Abdomen*.—Tergites 1-3 red, the third sometimes apically blackish-infuscated; fourth tergite varying from red, or red with more or less extensively infuscated apical band, to entirely black; tergites 5-7 black with white pattern as described in preamble.

### 13. *Airectopius rungweensis*, new species

#### *Distribution*

Southern Tanganyika, Rungwe massif, at 2600 m and Livingstone Mts., 30 miles south of Njombe, at 2400 m.

#### *Preamble*

Areae dentiparae with short projections; lateral carinae of area superomedia often rather distinct; a particular sculptural character of the species is the sharp longitudinal striation on the apical slope of the scutellum. Chromatically similar to *melanisticus* Heinrich from northern Tanganyika, sharing with that species the red mesoscutum and scutellum. Differs from *melanisticus* by the shape of apical white bands on tergites 5-7, which are all broad and even, not widened medially, and furthermore by the black flagellum (except white annulus) and the entirely black abdomen (sometimes except the first segment); distribution of red and black on thorax variable, but in majority of specimens sterna and propodeum black, rarely thorax entirely red.

#### *Male*

Black, in majority of specimens only mesoscutum (predominantly or entirely) and scutellum, rarely almost entire thorax, red; first tergite sometimes red, tergites 5-7 with broad apical white bands, rarely also the fourth tergite medio-apically white; flagellum black with complete white annulus; length 9-10 mm.

*Flagellum*.—With 34 segments; very narrow bacilliform tyloids on segments 7 or 8 to 20 or 21. Black, including scape, with complete white annulus on segments 7 or 8 to 11 or 12.

*Head*.—Structure as described for the genus; clypeus and median part of face fairly coarsely rugose-punctate and coriaceous, somewhat shiny; frons finely coriaceous. Uniformly black.

*Thorax*.—Anterior third of notauli fairly well indicated; mesoscutum densely and finely punctured, coriaceous between punctures, slightly shiny; scutellum strongly raised above postscutellum, convex and finely coriaceous, usually with some irregular, fine rugosity, and laterally, sometimes also apically carinate; apical slope of scutellum always distinctly longitudinally striate; horizontal part of propodeum and declivity rather coarsely, irregularly rugose and more or less extensively carinate; sometimes area superomedia partially indicated, or its lateral carinae distinct;

apices of areae dentiparae with small but distinct projections; areae spiraculiferae transversely-rugose; mesopleura and metapleura densely and coarsely rugose-punctate. Black; in majority of specimens only mesoscutum and scutellum red, the lateral lobes of mesoscutum sometimes infuscated; in a few specimens thorax, including propodeum, red, only prosternum black and mesosternum partially infuscated; no white markings.

*Legs*.—Black; tibiae I and II and tarsi I brown, sometimes also femora I and II more or less extensively brownish; in specimen from Livingstone Mts. all femora predominantly red.

*Wings*.—Nervulus interstitial; areolet pentagonal, strongly narrowed in front; radius slightly sinuate. Clear.

*Abdomen*.—Structure as described for the genus; postpetiole finely irregularly rugose; second and third tergites finely punctate and coriaceous. Black, first tergite dark-reddish-tinged, sometimes red; sometimes tergites 1-3 indistinctly dull-reddish-tinged; tergites 5-7 with broad apical white bands, rarely also the fourth tergite medio-apically white.

### 13a. *Afrectopius rungweensis rungweensis*, new subspecies

#### *Types*

*Holotype*.—♂, "S. Tanganyika, Rungwe Mts., 2600 m, 11.-15.XI.62." C.G.H. II.

*Paratypes*.—8♂♂, same data. C.G.H. II.

#### *Distribution*

Southern Tanganyika, Rungwe massif, at 2600 m.

#### *Male*

*Femora black; in majority of specimens thorax black, except red mesoscutum and scutellum.*

### 13b. *Afrectopius rungweensis mdando*, new subspecies

#### *Types*

*Holotype*.—♂, "S. Tanganyika, Mdando Forest, 30 mi S. of Njombe, 2400 m, 20.X.1962." C.G.H. II.

#### *Distribution*

Livingstone Mts., Mdando Forest, 2400 m.

#### *Male*

*Femora predominantly red; thorax in type specimen uniformly red.*

### 14. *Afrectopius nigrithorax*, new species

#### *Types*

*Holotype*.—♂, "Tanganyika, Uluguru Mts., 1600 m, 17.XII." C.G.H. II.

#### *Distribution*

Eastern Tanganyika, Uluguru Mts., at 1600 m.

### Preamble

Chromatically differing from all other species by uniformly black head and thorax, both without white markings, combined with black abdomen (with broad apical white bands on tergites 5-7), and predominantly red femora; apical slope of scutellum striate.

### Male

Black; tergites 5-7 with broad apical white bands; all femora red, with infuscated longitudinal dorsal stripe; tibiae I and II and base of tibiae III brown; flagellum with white annulus; length 9 mm.

*Flagellum*.—With 36 segments; very narrow bacilliform tyloids on segments 8-22. Black, with white annulus on segments 6-12, segments 1-3 ventrally ferruginous, dorsally dark brown; scape black.

*Head*.—Structure as described for the genus; sculpture as described for *rungweensis* Heinrich. Uniformly black.

*Thorax*.—Structure as described for the genus; basal third of notauli indicated; mesoscutum densely and somewhat more coarsely punctured than in most of the other species, coriaceous between punctures; scutellum strongly raised above postscutellum, dorsally convex, and carinate all round, its apical slope distinctly and regularly longitudinally striate, the striae converging from both sides of the apex of the scutellum toward the postscutellum, the latter too longitudinally striate; propodeum densely rugose-punctate; carination obsolete; projections of areae dentiparae indistinct. Uniformly black.

*Legs*.—Red; black are: all coxae and trochanters, tarsi III, tibiae III (except brownish base), indistinct longitudinal bands on dorsal side of all femora, and tip of femora III; tarsi I and II infuscated.

*Wings*.—Nervulus interstitial; areolet pentagonal, strongly narrowed in front; radius slightly sinuate.

*Abdomen*.—Postpetiole rather coarsely, irregularly rugose; base of second tergite fairly coarsely rugose-punctate, rest of second tergite (except laterally) densely and fairly coarsely punctate, coriaceous between punctures; third tergite finely coriaceous, except about apical third finely punctured. Black; tergites 5-7 with broad apical white bands, apical margin of fourth tergite very narrowly whitish; apical margins of tergites 1-3 indistinctly reddish.

### 15. *Afrectopius empeyi*, new species

#### Types

*Holotype*.—♂, "Bushwood For Macoebo's Kloof, TVL., 5.9.65., H. N. Empey." Collection H. N. Empey, Johannesburg.

#### Distribution

South Africa: Transvaal.

### Preamble

Chromatically rather similar to *rungweensis* Heinrich, particularly to *rungweensis mdando* Heinrich (from southern Tanganyika), but different by lack of white flagellar annulus, by the entire lack of projections of areae

dentiparae, by much more distinctly impressed anterior third of notauli, and by wider, more distinct, and very oblique thyridia. Most probably a distinct species rather than a subspecies of *rungweensis*.

#### Male

Black; the following red: mesoscutum, scutellum, upper 2/3 of mesopleura, lower and posterior part of propleura, entire propodeum, first tergite, and base of the second tergite including the thyridia; tergites 5-7 with broad apical white bands; legs III and all coxae and trochanters black, except ferruginous mark on base of dorsal side of coxae III and a brownish stripe on exterior side of tibiae III beyond base; tibiae and tarsi I and II light brown, the tarsi II moderately infuscated; femora I and II blackish, dorsally brown; flagellum without annulus; length 10 mm.

Flagellum.—With 35 segments; without tyloids. Black, including scape; segment 1 (apex) to 12 ventrally pale ochreous.

Head.—Structure as described for the genus and for *rungweensis*. Uniformly black.

Thorax.—Anterior third of notauli more distinctly impressed than in *rungweensis* although not sharply incized; anterior part of median lobe and of lateral lobes considerably more convex than in *rungweensis*; mesoscutum finely and fairly densely punctured, on lateral lobes not quite as densely as in *rungweensis*, and less distinctly and densely coriaceous between punctures than in *rungweensis*, slightly more shiny; apex of scutellum not distinctly carinate, the apical slope longitudinally, irregularly rugose; horizontal part of propodeum very coarsely irregularly, mainly transversely rugose, without distinct carination; apices of areae dentiparae without projections; mesopleura and metapleura very coarsely and densely rugose-punctate. Color as described above; posterior half of edge formed by mesopleura and mesosternum with a longitudinal red band.

Legs.—Femora III distinctly slenderer than in *rungweensis*. Color as described above.

Wings.—Nervulus interstitial; areolet pentagonal. Clear.

Abdomen.—Postpetiole not constricted behind spiracles, almost parallel-sided, very finely coriaceous, not irregularly rugose as in *rungweensis*; second and third tergites finely coriaceous and somewhat irregularly punctate; thyridia comparatively long, very oblique, close to longitudinal. Color as described above.

#### 47. Genus *Hoploplatystylus* Schmiedeknecht

Fig. 135

*Hoploplatystylus* Schmiedeknecht, 1912, Tijdschr. voor. Entom., LIV, p. 46.

Type species.—*Hoploplatystylus smits-van-burgsti* Schmiedeknecht; monobasic.

#### Distribution

Tunisia.

#### Preamble

One species from Madagascar has been described by Heinrich, 1938, under the name of this genus. Its generic placement has been changed in

this paper (see genus *Hoplectopus* Heinrich). Thus the genus *Hoploplatystylus* has so far only been recorded from the type locality in Tunisia, which is outside the geographical limitations of this paper. It is included here, nevertheless, as it seems possible that the range of the genus may be more extensive than it appears at present.

In structure as well as in sculpture, this genus is quite different from all typical Platylabini, although the distinctly widened petiole seems to indicate a relationship to that tribe.

#### *Morphological characters*

*Flagellum*.—Of females bristle-shaped, slender, of moderate length, ventrally flattened beyond middle, but not at all widened, strongly attenuated toward apex; of males not nodose and without tyloids.

*Head*.—Temple profile behind eyes moderately narrowed, slightly curved; cheek profile slightly narrowed toward mandible base, cheeks comparatively wide in lateral view; clypeus only slightly convex, with straight apical border; mandibles rather stout, the apical tooth scarcely longer than the subapical; entire head uniformly very coarsely and rather densely punctured.

*Thorax*.—Basal third of notauli and sternauli fairly distinct; scutellum moderately raised above postscutellum, convex, with rounded apical slope, not at all carinate; mesoscutum and scutellum evenly, very densely and coarsely punctured; propodeum (fig. 135) short, declivity much longer than horizontal part medially; basal furrow pronounced; spiracles distinctly oval, fairly large; area superomedia raised above level of horizontal part, somewhat wider than long, coarsely longitudinally rugose; areae dentiparae with very pronounced, upward-curved apophyses; costulae, carinae dentiparae interiores, and longitudinal carinae on declivity lacking; pleura, sterna, and propodeum very densely and very coarsely punctured.

*Legs*.—Fairly long and slender.

*Wings*.—Nervulus postfurcal; areolet quadrangular; radius straight, slightly curved at apex.

*Abdomen*.—Petiole narrow at base, gradually widening from base into postpetiole, dorsally flat, distinctly wider than high; postpetiole (fig. 135) without defined median field, very coarsely and densely punctured, with some longitudinal rugosity in the middle at base; gastrocoeli and thyridia wanting; tergites 2 and 3 densely moderately strongly punctate, the fourth tergite finely; abdomen oval, of females amblypygous.

#### 1. *Hoploplatystylus smits-van-burgsti* Schmiedeknecht

*Hoploplatystylus* Smits-van-burgsti Schmiedeknecht, 1912, Tijdschr. voor Entom., LIV, p. 46, ♀♂.

#### *Types*

*Lectotype*.—♀, "Smits v. Burgst, Omgoy: Tunis, 3/4, 1911". (Present designation); in collection of Landbouwhogeschool, Wageningen, Holland.

#### *Female*

*Head and thorax uniformly black; tergites 2, 3, and base of 4 red, first segment black, apex of fourth and the following tergites blackish-*

infuscated; flagellum black without annulus; coxae, trochanters, and femora black, tips of all femora yellowish; all tarsi, apices of tibiae II and III, and the apex of tibiae I exteriorly pale brownish; basal parts of tibiae II and III and interior side of tibiae I yellowish; length 9 mm.

*Flagellum*.—Structure as described for the genus; with 42 segments, the first about 2.5 times as long as wide, the 14th in lateral view approximately square, seen from the flat side the widest scarcely wider than long. Black, including scape; segments 1-12 apically narrowly brownish.

#### Male

Tergites 2-4 and base of fifth tergite red; all femora dorso-apically more extensively yellow than in female; all tibiae entirely yellow, the tarsi orange-tinged-yellow; flagellum uniformly black; the rest as in female.

### 48. Genus *Neeurylabia*, new genus

*Type species*.—*Amblyteles spilopterus* Morley; monobasic.

#### Distribution

Kenya: Nandi Plateau and Mt. Elgon.

#### Preamble

The type species combines a number of striking characters. It shares the distinctly widened and flattened petiole of the *Platylabini* and, for this reason, is here placed in this tribe; the other structural characters, particularly the shape of the clypeus, make the relationship to the *Platylabini* seem questionable.

#### Morphological characters

*Flagellum*.—Of female (specimen from Mt. Elgon) bristle-shaped, slender, ventrally flattened beyond middle, but not widened; of males with cylindric segments, not at all nodose, with long row of unusually long tyloids.

*Head*.—Cheeks and temples swollen; temple profile at first distinctly widened behind eyes, then strongly curved; clypeus broad, with straight apical border, in female apically and laterally a trifle curved upward (scarcely in male), thus slightly concave rather than convex at apex; mandibles normal, fairly robust.

*Thorax*.—Mesoscutum about as long as wide, convex, strongly punctured; notauli basally indicated; scutellum rather short, strongly raised above postscutellum, strongly convex, densely and coarsely punctured, laterally carinate; propodeum short, gradually and steeply sloping downward almost from its base, very densely rugose-punctate, opaque; carination completely lacking, except carinae metapleurales; mesopleura and metapleura not quite as densely punctured as the rest, shiny between punctures; speculum obsolete.

*Legs*.—Femora and tarsi unusually stout.

*Wings*.—Areolet irregularly quadrangular; clear, the apices of forewings deeply infuscated.

**Abdomen.**—Of females amblypygous, oval; petiole gradually widening into postpetiole, both completely flat dorsally, the petiole about three times as wide as high in the middle, the postpetiole nearly smooth and shiny; gastrocoeli and thyridia obsolete; second and third tergites finely and fairly densely punctured; hypopygium of males apically broadly truncate, its apical margin very slightly emarginate in the middle.

**1. *Neeurylabia spilopectera* (Morley), new combination**

*Amblyteles spilopecterus* Morley, 1919. Proc. Zool. Soc. London. p. 158, ♀.

**Types**

**Holotype.**—♀, "Nandi Plateau, Some Forest, 5700-6200 ft, May 30-June 4, 1911. S.A. Neave." (Flagellum broken) B.M. No. 3b-325.

**Allotype.**—♂, same locality. B.M.

**Distribution**

Kenya: Nandi Plateau (type locality) and Mt. Elgon (♂, B.M.), at altitudes between 5100 and 6200 ft.

**Female**

**Head** uniformly ferruginous; **thorax** extensively black, including the median lobe of mesoscutum and base of scutellum (type), or mesoscutum and scutellum uniformly pale ferruginous (specimen from Mt. Elgon); pale ferruginous also are: collare, tegulae, subalarum, and pronotal ridge; entire abdomen blackish (type), or tergites 1-3 ferruginous (specimen from Mt. Elgon); legs orange, including femora III (specimen from Mt. Elgon) or femora III black (type); flagellum orange, with white annulus and blackish apex (specimen from Mt. Elgon); length 12-14 mm.

**Flagellum.**—(Specimen from Mt. Elgon); structure as described for the genus; with 45 segments, the first about 6 times as long as wide, the widest, seen from the flat side, square. Orange, with white annulus on segments 10 (apex) to 12, blackish beyond annulus.

**Head, thorax, legs, wings, and abdomen.**—Structure as described for the genus. Color as described above.

**Male**

Corresponding in color to the female; in the allotype entire mesoscutum infuscated, abdomen entirely blackish, and femora III predominantly black; in specimen from Mt. Elgon mesoscutum uniformly, abdomen laterally and basally, femora III entirely, pale ferruginous (close to orange).

**Flagellum.**—(Allotype); with 47 segments; very long tyloids on segments 10-31, the longest (from about the 13th segment on) almost reaching bases and apices of segments. Orange, with white annulus on segments 13-16, apex infuscated.

**Remark**

The differences in color between the specimens from Nandi Plateau and from Mt. Elgon suggest a subspecific differentiation, the more so as



they are evident in females and males likewise; as only one specimen of each sex from each locality is known so far, this seems to be too narrow a base for a sound subspecific diagnosis.

#### 49. Genus *Spanophatnus* Cameron

Figs. 132, 136

*Spanophatnus* Cameron, 1905, Rec. Albany Mus., Grahamstown, I. pp. 230-231.

*Anisobas* Morley, 1926, Ann. S. Afr. Mus., p. 443.

Type species.—*Spanophatnus ruficeps* Cameron; monobasic.

#### Distribution

South Africa.

#### Preamble

Although Cameron quite correctly indicated the taxonomic position of this genus as "nearest to *Platylabus*", Morley synonymized it, loc.cit. 1926, with *Anisobas* Wesmael with the strange explanation "an examination of the type, whose tarsal claws are not pectinate, establishes the synonymy of these genera ..."

*Spanophatnus* is indeed a true platylabine and within the tribe more closely related to *Pristiceros* Gravenhorst than to *Platylabus* Wesmael, sharing with *Pristiceros* the rather small and shallow gastrocoeli and the serrate flagellum of males. It shows also certain similarities with *Neeurylabia* Heinrich. A special characteristic of *Spanophatnus* is the very coarse and densely rugose-punctate sculpture of the entire body, including the strongly sclerotized tergites 2-4. The unusually coarse sculpture of the anterior tergites distinguishes *Spanophatnus* most strikingly from *Pristiceros* and also from *Neeurylabia*. An additional difference from the two genera is provided by the propodeum, with obsolete area superomedia and costulae in contrast to *Pristiceros*, but with rather prominent posterior transverse carina and indicated lateral carinae of the horizontal part in contrast to *Neeurylabia*. Also different from *Neeurylabia* is the distinctly convex clypeus (as typical for the tribe).

#### Morphological characters

*Flagellum*.—(Fig. 132); based on guillarmodi, new species; of males without tyloids; distinctly serrate, very similar in structure to the type species of *Pristiceros*, most visible in lateral view and with light reflected from a white surface beneath the object.

*Head*.—Temples and cheeks fairly broad; temple profile behind eyes moderately narrowed, with curved outline; carina genalis and carina oralis meeting before base of mandibles, abscissula about 2/3 as long as width of mandible base and distinctly lamelliform, though only moderately high; cheeks restricted toward carinal junction, forming between the two carinae a slight pocket; mandibles moderately long and moderately slender, normal, with the subapical tooth shorter than the apical; median field of face well-defined and separated from the clypeus, the latter moderately convex; uniformly coarsely and densely rugose-punctate.

*Thorax*.—Mesoscutum strongly convex; notauli faintly indicated at base; scutellum strongly raised above postscutellum, short, the dorsal

surface ascending from the deep basal furrow toward apex, wider than long and laterally carinate nearly to the apex, the apical slope steep and long, rounded; mesoscutum and scutellum coarsely and densely punctured; propodeum (fig. 136) divided by the rather distinct posterior transverse carina into a shorter horizontal part and longer declivity, both very coarsely irregularly reticulate-rugose, the horizontal part without distinct areolation; spiracles elongate, slit-shaped or oval; mesopleura and metapleura densely and coarsely rugose-punctate; no distinct speculum.

*Legs*.—Slender, moderately long.

*Wings*.—Nervulus interstitial; areolet quadrangular or almost so; radius almost straight.

*Abdomen*.—Petiole medially more than twice as wide as high, gradually widening into postpetiole (fig. 136), which is wider than long, without distinct median field and irregularly longitudinally rugose in the middle or coarsely punctate; gastrocoeli shallow and small, the space between them considerably wider than one of them; thyridia fairly distinct; tergites 2-4 strongly sclerotized, coarsely and densely rugose-punctate; hypopygium short, plicate, apically truncate.

### Key to the species of *Spanophatnus* Cameron Females and Males

1. Only tergites 1-2 with apical white bands; ♀♀. (Head and thorax black, scutellum predominantly white; length 6 mm.) ..... 3. *bicinctorius* (Thunberg)  
Southern Cape Province
- Either tergites 5-7 or all tergites with apical white bands; ♂♂. (Head and thorax partially ferruginous-red; scutellum white or ferruginous; length 9-13 mm.) ..... 2
2. All tergites with apical white bands; propodeum black except ferruginous areae metapleurales; scutellum white; postpetiole irregularly rugose. (Length 11 mm.) ..... 2. *guillarmodi*, new species  
Southern Cape Province
- Only tergites 4-7 with apical white bands; propodeum ferruginous, basally black; scutellum not white; postpetiole coarsely punctate. (Length 7-8 mm.) ..... 1. *ruficeps* Cameron  
Eastern Cape Province

### 1. *Spanophatnus ruficeps* Cameron

*Spanophatnus ruficeps* Cameron, 1905, Rec. Albany Mus. Grahamstown, I, p. 231, ♂.

*Anisobas ruficeps* Morley, 1926, Ann. S. Afr. Mus., p. 443, ♂.

### Types

*Holotype*.—♂, with handwritten label containing the name and the word "type", a second label "207", and a third "Albany Museum, Grahamstown." Flagella missing. S.A.M.

### Distribution

Eastern Cape Province: Grahamstown (type locality according to original description).

### Male

Head and thorax ferruginous-red, with black markings, but without white pattern; abdomen black, tergites 4-7 with broad apical white bands; legs predominantly ferruginous-red; flagellum black; length 7-8 mm.

*Flagellum*.—Structure probably as in the following species. According to original description black, scape ferruginous.

*Head*.—Structure and sculpture as described for the genus. Ferruginous-red; the following black: frons (except broadly red frontal orbits), ocellar region, and lower part of occipital region.

*Thorax*.—Structure and sculpture as described for the genus. Ferruginous-red; the following black: central lobe of mesoscutum, lower part of pronotum, patch below subalarum, patch in upper posterior corner of mesopleura, prosternum and mesosternum predominantly, and basal furrow of propodeum.

*Legs*.—Ferruginous-red; the following black: trochanters predominantly, coxae ventrally predominantly; apex of femora III and the tibiae III toward apex blackish-infusated.

*Wings*.—As described for the genus.

*Abdomen*.—Structure as described for the genus; postpetiole coarsely and densely punctured throughout. Black, tergites 4-7 with apical white bands.

## 2. *Spanophatnus guillarmodi*, new species

Figs. 132, 136

### *Types*

*Holotype*.—♂, "Cape Province, Ladismith, 19. Sept. 1948, C. J. Guillarmod." C.G.H. II.

*Paratype*.—1♂, same data. C.G.H. II.

### *Distribution*

Southern Cape Province.

### *Preamble*

This form differs from *ruficeps* Cameron by white scutellum, apical white bands also on tergites 1-3, by black propodeum (except red areae metapleurales), and by the sculpture of the postpetiole which is not strongly punctured throughout, but irregularly longitudinally rugose; it is mainly this difference in sculpture from the type of *ruficeps* which has caused me to treat this form as a distinct species rather than a subspecies of *ruficeps*.

### *Male*

*Head and thorax* ferruginous-red, with black markings, scutellum white; abdomen black with metallic-blue tinge, all tergites with broad apical white bands; legs predominantly ferruginous; flagellum black; length 11 mm.

*Flagellum*.—(Fig. 132); with 41-42 segments, distinctly compressed and thus, in dorsal view, narrower than in lateral view; in lateral view serrate, with deep, though narrow incisions between segments. Black, scape ventrally dull ferruginous.

*Head*.—Structure as described for the genus. Ferruginous-red; the following black: frons broadly, ocellar region, and occipital region, all except broadly red orbits; sometimes transverse black band between face and clypeus.

*Thorax*.—(Fig. 136); structure and sculpture as described for the genus. Ferruginous-red; scutellum white; the following black: median lobe of meso-scutum medially, or all three lobes predominantly, propodeum (except areae metapleurales), prosternum, and mesosternum; propleura and mesopleura varying from almost entirely ferruginous to predominantly black.

*Legs*.—Ferruginous-red; the following black: all trochanters and trochantelli, all coxae partially to predominantly; all tibiae and tarsi dorsally brown-to blackish-brown-infuscated: tibiae I and II ventrally yellow; femora I and II sometimes brownish infuscated.

*Wings*.—As described for the genus.

*Abdomen*.—Structure as described for the genus; postpetiole irregularly, longitudinally rugose on the median part (fig. 136); tergites 2-4 coarsely and densely rugose-punctate, strongly sclerotized. Black, in strong light showing metallic-blue tinge; the following white: wide apical bands on all tergites, which on tergites 1-2 or 1-3 are continuous from side to side, and on the second tergite laterally somewhat widened, on tergites 3 or 4 to 7 laterally abbreviated and medially wider than on the anterior tergites.

### 3. *Spanophatnus bicinctorius* (Thunberg), new combination

*Ichneumon bicinctorius* Thunberg, 1822, Mém. Acad. Sci. St. Pétersbourg, VIII, p. 278, ♀.  
*Ichneumon bicinctorius* Thunberg, 1824, Mém. Acad. Sci. St. Pétersbourg, IX, p. 357, ♀.  
*Platylabus bicinctorius* Roman, 1912, Zool. Bidr. Uppsala, I, pp. 235-236; redescription; pl. VI, fig. 1.

#### *Types*

*Holotype*.—♀, without locality label. Collection of the Zoological Institute, University of Uppsala, Sweden; antennae lacking.

#### *Distribution*

Southern Cape Province.

#### *Preamble*

The type shares with *Afrectopius* Heinrich the lack of areolation on the horizontal part of propodeum, but differs from all the numerous species of that genus by very strong and dense punctation of the entire body, including postpetiole, by oval spiracles of the propodeum, and by more distinct gastrocoeli. The species thus fits well into the genus *Spanophatnus* Cameron.

#### *Female*

Black; white are: subalarum, scutellum predominantly, and apical bands on tergites 1-2; legs red, tarsi and the apices of tibiae and femora II and III infuscated; flagellum according to description black; length 6 mm.

*Head*.—Clypeus only very slightly convex; strongly and fairly densely punctured. Black.

*Thorax*.—Structure as described for the tribe; strongly and densely punctured; scutellum laterally carinate only to shortly beyond middle; spiracles of propodeum oval; horizontal part of propodeum without carination, coarsely and densely rugose-punctate; apical carina of horizontal

part fairly distinct, carinae metapleurales distinct; subalarum swollen: lower anterior corner of metapleura. in lateral view, angularly projecting, the projection best seen when the coxae II are bent away from the propodeum (see Roman, loc. cit., pl. VI. fig. 1.). Black; the following white: subalarum broadly and scutellum predominantly.

*Legs.*—Femora and tibiae red: apices of femora and tibiae II and III, and all tarsi blackish.

*Wings.*—Ramellus strongly developed.

*Abdomen.*—Petiole very broad; postpetiole strongly punctured; gastrocoeli approximately triangular, only slightly impressed, each much narrower than space between. Black; apical white bands on tergites 1 and 2, the one on the second tergite almost interrupted medially.

#### X. Tribe *Eurylabini* Heinrich

*Eurylabini* Heinrich, 1934, Mitt. Zool. Mus. Berlin, pp. 64, 66, 132.

*Type genus.*—*Eurylabus* Wesmael.

##### *Distribution*

Palearctic, Oriental, and Ethiopian regions; completely lacking in Nearctic region.

##### *Preamble*

In 1934 (loc. cit., p. 132) I divided the tribe into two parts: the group *Eurylabus* Wesmael and the group *Goedartia* Boie, pointing out that the two groups were perhaps differentiated enough to be considered two distinct tribes. Recently Townes (1961, Cat. and Recl. Indo-Austr. Ich.) has dissolved the tribe *Eurylabini*, lumping the group *Eurylabus* with the *Platylabini* and basing a new tribe, *Goedartini* Townes, on the group *Goedartia*. I fully agree with the separation of the *Goedartia* group from the tribe *Eurylabini*, but I see no improvement in the reunion of the *Eurylabini* and *Platylabini*, two groups so different in biology, zoogeography, and morphology. The only common character of the two tribes, the widened petiole, may be a convergency, but even if we assume that it indicates true relationship, the discrepancy of all other characters (structural and biological) would seem to be sufficient to call for tribal separation.

##### *Morphological characters*

*Flagellum.*—Of females bristle-shaped, very slender, ventrally flattened beyond middle but not widened, extremely attenuated toward apex; of males not at all nodose, without tyloids.

*Head.*—Generally of normal structure; cheeks and temples tend to be swollen but are narrowed in the single known African species; clypeus not convex (as it is in majority of the *Platylabini*), with more or less oblique sides and straight apical border; mandibles normal, rather stout, the upper tooth not much longer than the lower.

*Thorax.*—Mesoscutum (in contrast to the *Platylabini*) distinctly to considerably longer than wide, moderately convex; notauli varying from scarcely indicated to rather distinct; scutellum strongly to very strongly convex, not carinate laterally; structure of propodeum generally nor-

mal; area basalis always strongly depressed; areae dentiparae tending to form projections, or short, blunt apophyses; carination complete, or partially obsolete by coarse rugosity; horizontal part of propodeum usually shorter than declivity; spiracles long, slit-shaped; upper anterior part of mesopleura distinctly swollen.

*Legs*.—Moderately long and slender.

*Wings*.—Nervulus interstitial or postfurcal; areolet pentagonal or quadrangular; radius more or less distinctly sinuate; clear.

*Abdomen*.—Of females amblypygous, usually somewhat elongate and fairly narrow; petiole dorsally flat, wider than high, gradually widening into postpetiole, the latter flat, without distinct median field, the spiracles, in the genus *Eurylabus*, closer to each other than to the apex of the postpetiole; gastrocoeli in *Eurylabus* small but fairly distinct, thyridia obsolete; ovipositor unusually thin, usually curved downward.

#### *Chromatic characters*

The majority of known species are dark-colored, with orange or red legs and black abdomen, unadorned by white markings, sometimes with restricted white pattern on head and thorax. This applies also to the only known African species, and to a number of still-undescribed species from the high mountains of the Oriental region

### 50. Genus *Eurylabus* Wesmael

*Eurylabus* Wesmael, 1844, Nouv. Mem. Acad. Sci. Bruxelles, XVIII, pp. 150-151.

*Type species*.—*Eurylabus torvus* Wesmael; designated by Ashmead 1900.

#### *Distribution*

Three species in the Palaearctic region, one in the Ethiopian, and at least four undescribed species in the Oriental region.

#### *Hosts*

Notodontidae and Lithosiidae have been recorded as hosts of the European species.

#### *Morphological characters*

As described for the tribe.

### 1. *Eurylabus cyanocroceus* Morley

*Eurylabus cyanocroceus* Morley, 1916, Ann. S. Afr. Mus., XV, p. 368, ♀.

#### *Types*

*Holotype*.—♀, "Giftsberg, Rhynsdorp, Cape Colony, September 1911." S.A.M.

#### *Distribution*

Southern Cape Province.

#### *Preamble*

Differs from all European and Oriental species by narrower temples and cheeks, and by the dense and very coarse puncturation of entire head and thorax.

### Female

Black, with metallic-blue tinge, particularly on abdomen; scutellum orange-tinged-yellow; legs, except black coxae and trochanters, orange-yellow; flagellum orange-yellow, becoming yellowish-white toward middle, apically black; length 13-15 mm.

*Flagellum*.—Structure as described for the tribe; with 47 segments, the first about three times as long as wide, the 17th approximately square in lateral view, none distinctly wider than long. Pale orange, becoming yellowish-white on dorsal side from about the 8th segment to the 14th, the rest black, including scape and pedicel.

*Head*.—Temple profile distinctly narrowed behind eyes, almost straight; cheeks not swollen; median field of face not separated from lateral fields, scarcely convex; malar space approximately twice as long as width of mandible base; uniformly coarsely and densely punctured, smooth between punctures, only on malar space coriaceous between punctures. Uniformly black.

*Thorax*.—Structure as described for the tribe; notauli indicated at base; scutellum very strongly convex, close to semiglobose, smooth with sparse, coarse punctures; rest of mesothorax densely and very coarsely punctured; propodeum very coarsely rugose-punctate, the horizontal part medially nearly as long as declivity; most of carination lacking or indistinct, the posterior transverse carinae of horizontal part distinct; upper anterior part of mesopleura rather strongly swollen. Black, scutellum yellow.

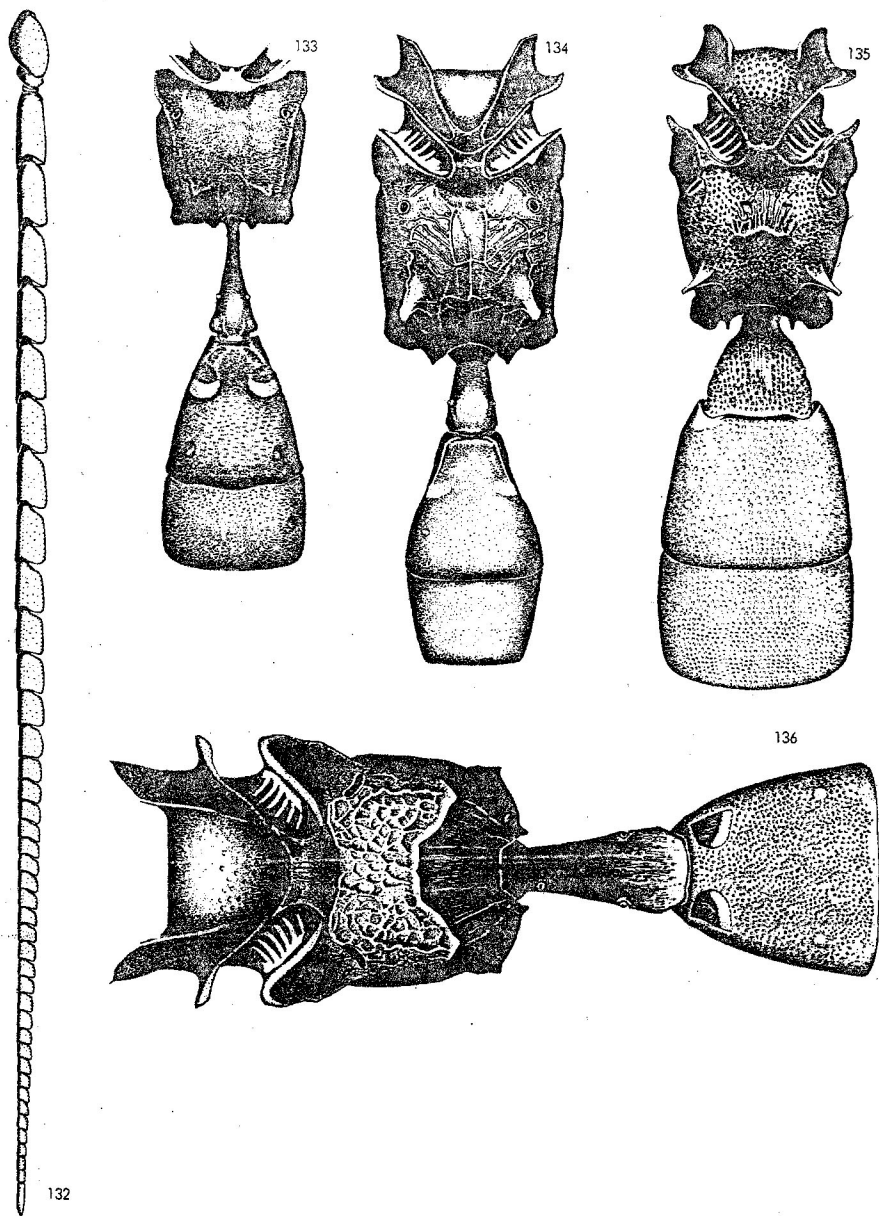
*Legs*.—Light orange, including trochantelli; trochanters and coxae black.

*Wings*.—Nervulus postfurcal; areolet distinctly pentagonal, though narrowed in front; radius scarcely sinuate.

*Abdomen*.—Structure as described for the tribe; petiole considerably thinner in lateral view than in all Palaearctic species and also narrower in dorsal view; postpetiole finely coriaceous; gastrocoeli (in contrast to the Palaearctic species) distinctly longer than wide, the rudimentary thyridia thus somewhat remote from base of second tergite; tergites 2-4 densely and finely punctured; last tergites slightly compressed. Black, with metallic-blue tinge.

### Male

Two specimens in S.A.M.; in addition to the scutellum also the post-scutellum yellow; apical transverse carina of horizontal part of propodeum also lacking; otherwise as female, including color of flagellum.



## XX.

Figs. 132-136. 132, *Spanophatnus guillarmodi* Heinrich, ♂, antenna; propodeum and anterior tergites: 133, *Afrectopius usambaricus* Heinrich, ♀; 134, *Hoplectopius seyrigi* (Heinrich), ♀; 135, *Hoploplatystylus smits-van-burgsti* Schmiedeknecht, ♀; 136, *Spanophatnus guillarmodi*, ♂.



### XI. Tribe *Acanthojoppini* Heinrich

*Acanthojoppini* Heinrich, 1934. Mitt. Zool. Mus. Berlin. XX, pp. 65 and 67.

Type genus.—*Eccoptosage* Kriechbaumer (syn. *Acanthojoppa* Cameron)

#### *Distribution*

The three large tropical areas of the world: Oriental, Ethiopian, and Neotropical regions. Only one small genus, assumed to belong to this tribe, has Holarctic distribution (*Pseudoplatylabus* Smits van Burgst).

#### *Preamble*

The tribe is closely related to the following one, the Ichneumonini, particularly to the subtribe Aethioplitina. The peculiar structure of the clypeus (fig. 138) combined with the specialized shape of mandibles (see description below) are the two basic distinctive characters. Within the African fauna the Acanthojoppini are linked with the Ichneumonini (subtribe Aethioplitina) by the new genus *Hemiphaisura*, which has the punctured, apically straight clypeus of the Aethioplitina (fig. 137), while the structure of the mandibles, all the rest of the morphology, and also the chromatic characters clearly indicate the closest relationship to *Phaisura* Cameron. *Hemiphaisura* has therefore been placed in this tribe.

#### *Morphological characters*

*Flagellum*.—Of females bristle-shaped, long and slender, ventrally flattened beyond middle, sometimes distinctly, sometimes not at all widened, always with long and very strongly attenuated apical portion and with greatly elongate basal segments; of males sometimes with a short row of small tyloids, sometimes without tyloids, toward apex rather distinctly nodose and with transverse bristle-ridges on ventral side.

*Head*.—Temples and occiput steeply declivous behind eyes and ocelli, but not quite vertically as in most of the Aethioplitina; outline of cheeks in front view usually straight and fairly strongly converging (toward mandible base); cheeks fairly wide in lateral view; carina genalis and carina oralis normal, without specialization; mandibles of a peculiar, very characteristic structure: curved, with long, sharply pointed apical tooth, appearing sickle-shaped, but also bearing a distinct, though short, sub-apical tooth, bent out of normal horizontal plane with apical tooth and situated nearly in vertical plane with it; clypeus (fig. 138) usually basally punctured and slightly convex, polished and more or less distinctly concave toward apex, the apex thinned leaf-like and usually either broadly curved or medially projecting, rarely nearly straight. In *Hemiphaisura* the entire clypeus (fig. 137) punctured, its apex nearly straight and normal, but slightly depressed and also thinned medially. In males, lower temples and cheeks often wider than in females, sometimes distinctly to conspicuously swollen.

*Thorax*.—Mesoscutum slightly to much longer than medially wide, strongly convex, densely punctured, usually opaque or almost so; basal part of notauli varying from very sharply impressed to obsolete; scutellum varying from moderately to very strongly raised above postscutellum, laterally always with high carinae, dorsally more or less strongly convex; propodeum of the clearly broken type, the declivity slightly shor-

ter, equal to, or slightly longer than horizontal part, the latter flat; propodeum densely rugose-punctate, opaque, with complete, incomplete, or sometimes mostly lacking carination; areae dentiparae tending to develop apophyses of various length, often less projecting in males than in females.

*Legs*.—Long and slender; claws not pectinate.

*Wings*.—Nervulus usually interstitial, sometimes slightly postfurcal; areolet with intercubiti strongly converging in front, but usually not quite coalescent; radius straight, sometimes very slightly curved toward the outer end.

*Abdomen*.—Of females narrow, elongate, sharply pointed at apex, oxy-pygous, with distinctly projecting ovipositor; first segment long, slender, gradually curved, petiole gradually widening into postpetiole, which is little wider than the petiole; gastrocoeli obsolete, thyridia usually small and narrow, sometimes very wide, with the space between narrower than one of them, always distinctly to very far removed from base of second tergite; sculpture of postpetiole usually more or less extensively smooth, tergites 2 to 3 or 2 to 4 finely and densely sculptured, punctate or rugose, often opaque; hypopygium of males short, broadly and bluntly triangular.

### *Chromatic characters*

Basic color in majority of species orange or pale ferruginous, either uniformly, or (often) with head and apical tergites more or less extensively black, with or without white markings. Only in two Madagascan species basic color of entire abdomen black, with rich white bandings. Flagella in all known Ethiopian species with white annulus in both sexes. Wings usually clear, in one species deeply infuscated.

### **Key to the genera of the *Acanthojoppini* Heinrich<sup>1)</sup>**

1. Thyridia very large, transverse, the space between them distinctly narrower than one of them. .... 2  
     Thyridia small, narrow, inconspicuous. .... 4
2. Notauli lacking; area posteromedia unusually concave; carinae metapleurales lacking or very indistinct; sculpture of scutellum extremely coarse, densely reticulate-rugose; clypeus coarsely punctured throughout. .... 55. *Pseudoplatylabops*, new genus  
     South Africa  
     Anterior third (or more) of notauli pronounced; area posteromedia normal, not concave; carinae metapleurales distinct and complete; sculpture of scutellum fine to moderately coarse, not reticulate-rugose; clypeus, or at least its apical part, smooth and shiny. .... 3
3. Temples backward protruding (fig. 250); carina genalis at temples upward produced into a conspicuous, projecting spine (fig. 249); upper edge of face medially projecting and forming a small horizontal shelf; flagellum of females extremely thin, hair-like; horizontal part of propodeum smooth and shiny. .... 54a. *Spinallonotus*, new genus  
     Uganda  
     Temples normal; carina genalis not projecting at temples; upper edge of face not projecting; flagellum of females bristle-shaped, but normal, not extraordinary thin; horizontal part of propodeum with distinct sculpture. .... 54. *Allonotus* Cameron  
     Madagascar
4. Clypeus punctate throughout, of nearly normal structure (fig. 137), only median part of apex somewhat depressed and (more distinctly in females than in

<sup>1)</sup> See also Addenda, p. 472, *Phaisurellops*, new genus.

males) with leaf-like margin. (Orange species with white-marked black apical tergites and head.) ..... 52. *Hemiphaisura*, new genus

Eastern Africa and Madagascar

Clypeus with at least its apical part smooth and shiny (fig. 138), usually the thinned, leaf-like apical part projecting medially, or in a continuous curve, and somewhat bent upward, the base convex. .... 4

5. Frons evenly convex nearly down to antennal sockets, antennal cavities strongly reduced; carination of propodeum distinct and complete, including costulae. (Small species, 7-10 mm long.) ..... 53. *Phaisurella* Heinrich

Madagascar

Frons normal, slightly concave, antennal cavities large and deep, reaching up to far above middle of frons; carination of propodeum indistinct and incomplete, costulae lacking. (Larger species, 11-16 mm long.)

..... 51. *Phaisura* Cameron

Most of Africa south of the Sahara

### 51. Genus *Phaisura* Cameron

Figs. 138, 139

*Phaisura* Cameron, 1906, Ann. S. Afr. Mus., V. pp. 170-171.

*Type species.*—*Phaisura nigriceps* Cameron; monobasic. (Synonym of *Ichneumon fumatipennis* Tosquinet, 1896.)

#### Distribution

Proably most of Africa south of the Sahara. So far recorded from Kenya south to Cape Town and west to Angola.

#### Preamble

A genus fairly closely related to the Oriental type genus of the tribe, *Eccoptosage* Kriechbaumer (syn. *Acanthojoppa* Cameron), from which it differs by the lack of apophyses and the indistinctness of propodeal carina-

tion. Within the Ethiopian fauna some species of the genus *Aethioplites* Heinrich display a close resemblance in coloration and structure to some species of this genus, but *Phaisura* can be distinguished at once by the clypeus (fig. 138) which is thinned, polished, and more or less distinctly depressed (concave) in its apical half, the apical margin not truncate but more or less distinctly projecting in a broad curve. In addition, the *Phaisura* species usually have wider cheeks and temples than the *Aethioplites* species, their temples in some cases being even rather strongly swollen.

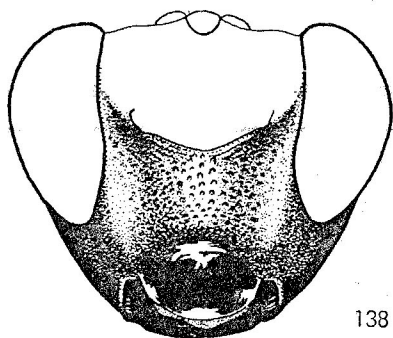


Fig. 138 *Phaisura fumatipennis* (Tosquinet), ♀

species, their temples in some cases being even rather strongly swollen.

#### Morphological characters

*Flagellum.*—Of females bristle-shaped, long and slender, ventrally flattened beyond middle but not, or only slightly, widened, long and sharply attenuated at apex; of males with a row of distinct elongate-oval or bacilliform tyloids.

**Head.**—Distinctly sexually dimorphic; in females occiput and temples declivous behind ocelli and eyes: lower temples and cheeks moderately wide and not, or scarcely, swollen; temple profile not, or scarcely, curved; in males lower temples and cheeks wider than in females, distinctly to conspicuously swollen; in both sexes carina genalis and carina oralis normal, not lamelliform, the former making near apex a turn toward hind corner of mandibles, meeting carina oralis at an acute angle at a distance equal to width of mandible base, or less, from the latter; in one species apical end of carina genalis obsolete; clypeus (fig. 138) usually basally slightly convex and punctured, polished toward apex, the apical part more or less distinctly concave, the apex thinned and projecting in a blunt curve; mandibles curved, appearing sickle-shaped, with the lower tooth bent out of normal horizontal plane with apical tooth and situated nearly in vertical plane with it.

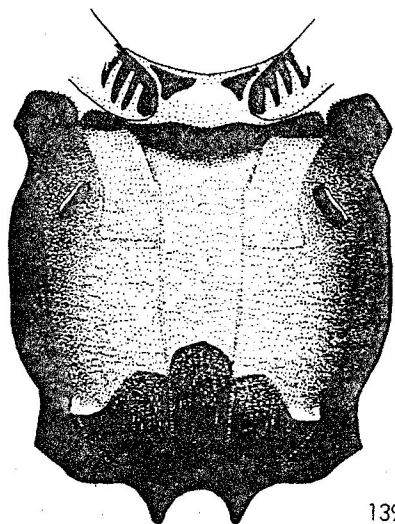
**Thorax.**—Mesoscutum longer than medially wide, convex, densely punctured, opaque; basal part of notauli distinct; scutellum strongly raised above postscutellum, laterally and at apex perpendicularly declivous, apically usually slightly truncate, with sharp to lamelliform lateral carinae, sometimes also with a low apical carina;

propodeum (fig. 139) with distinct basal furrow, of the clearly broken type, the horizontal part approximately as long as the declivity, not, or scarcely, slanting; carination of fore horizontal part obsolete or indistinct; areae dentiparae without real apophyses, their apices, however, projecting in the shape of a short, rounded carina.

**Legs.**—Long and slender; coxae III of females without scopa.

**Wings.**—Nervulus usually interstitial, sometimes slightly postfurcal; areolet quadrangular or almost so; radius straight. Clear, strongly infuscated only in the type species.

**Abdomen.**—Fairly slender; of females oxypygous, with projecting ovipositor; petiole long and slender, gradually widening into the narrow postpetiole, the latter with slightly indicated median field, smooth, or almost so, shiny, the lateral fields sometimes sparsely punctured, the median field sometimes very finely coriaceous-rugose; gastrocoeli obsolete; thyridia distinct, though narrow, rather far removed from base of second tergite; second and third, sometimes also fourth tergite, very densely punctured and opaque; hypopygium of males apically projecting in an obtuse angle, not sharply pointed.



139

Fig. 139 *Phaisura fumatipennis*  
(Tosquinet), ♀

*Chromatic pattern*

Basic color orange or dull yellowish, in one group of species without, in another with black and white markings on head and apex of abdomen: in type species head almost entirely black, and wings strongly infuscated; sexual dimorphism slight.

**Key to the species of *Phaisura* Cameron  
Females and Males**

1. Abdomen uniformly orange or pale ochreous, without black or white marks. (Speculum polished; thorax, head, and legs without black markings, except sometimes ocellar region.) ..... 2  
     Abdomen apically black, with or without white marks. (Speculum usually punctured like the rest of mesopleura, sometimes smooth.) ..... 3
2. Apical part of carina genalis obsolete, hence not meeting carina oralis. (Carination of propodeum almost entirely obsolete; apices of areae dentiparae scarcely projecting; nervulus postfurcal; frontal orbits not broadly and clearly whitish-yellow; length 11-15 mm.) ..... 5. *unicolor* (Morley), ♂  
     Uganda, N. W. Angola  
     Carina genalis complete, meeting carina oralis at an acute angle short distance from mandible base. (Carination of propodeum partially fairly distinct; apices of areae dentiparae slightly projecting; nervulus interstitial, frontal and vertical orbits broadly and clearly whitish-yellow; length 12-15 mm.) ..... 6. *simplicicolor*, new species, ♂  
     E. Tanganyika, N. E. Angola
3. Wings evenly and strongly infuscated; apical tergites black, without white marks. (Head predominantly or entirely black; length 11-14 mm.) ..... 1. *fumatipennis* (Tosquinet), ♀ ♂  
     Cape Province
4. Wings not infuscated; apical tergites black, with white pattern. .... 4  
     ♀♀. .... 5  
     ♂♂. .... 6
5. Head uniformly red; femora III apically not black; scutellum orange, without black lateral marks. (Speculum polished; widest flagellar segment about twice as wide as long; length 13 mm.) ..... 4. *erythrocephala*, new species, ♀  
     Central African Republic  
     Head predominantly black, with large white patches on frontal orbits and smaller rounded white marks on temples orbits; femora III apically black. (Speculum punctate; lateral slopes and lateral carinae of scutellum black; clypeus more or less extensively red; length 12-15 mm.) ..... 2. *effigies*, new species, ♀  
     Kenya, Tanganyika, N. W. Angola
6. Cheeks and temples moderately wide; cheek profile distinctly narrowed toward mandible base; temple profile moderately curved; lateral declivities and carinae of scutellum usually black. (Length 11-16 mm.) ..... 2. *effigies*, new species, ♂  
     Kenya, Tanganyika  
     Cheeks and temples strongly buccate; cheek profile scarcely narrowed toward mandible base; temple profile strongly bulging; scutellum, except in rare mutants, yellow, without black sides. (Length 12-15 mm.) ..... 3. *robusticeps*, new species, ♂  
     Eastern Cape Province

# 1. *Phaisura fumatipennis* (Tosquinet), new combination

Figs. 138, 139 (see genus)

*Ichneumon fumatipennis* Tosquinet, 1896, Mém. Soc. Ent. Belg., V, pp. 35-37, ♂.

*Barichneumon fumatipennis* Berthoumieu, 1904, Gen. Ins. XVIII, p. 41, ♂.

*Phaisura nigriceps* Cameron, 1906, Ann. S. Afr. Mus. V, pp. 170-171, ♂: new synonymy.

*Phaisura nigriceps* Morley, 1917, Ann. S. Afr. Mus. XVII, p. 201, ♂; (associates the genus with the "Platyurini").

## Types

*Holotype*.—*Ichneumon fumatipennis* Tosquinet, ♂, "Capland, Drège".  
Z.M.H.U. No. 9662.

*Lectotype*.—*Phaisura nigriceps* Cameron, ♂, "Cape". S.A.M. (Designated by G. Heinrich, 1963, from two identical males from the same locality, both labeled "type" by Cameron.)

*Neallotype*.—♀, "South Africa, Cape Town, 1-4.IV.63." C.G.H. II.

## Distribution

Cape Province: south to Cape Town, north to Grahamstown (C.G.H. II.).

## Preamble

The only species with strongly infuscated wings and almost entirely black head.

## Female

Orange, including legs; head and tergites 5-7 black; wings uniformly and deeply infuscated; flagellum orange, with dorsal white annulus, apex and scape black; length 11 mm.

*Flagellum*.—With 40 segments, the first more than 4 times as long as wide, the 13th square, the widest about 1.3 times as wide as long. Orange, with dorsal yellowish-white annulus on segments 8 (apex) to 13; apex and scape black.

*Head*.—Structure as described for the genus; cheeks in lateral view fairly wide and moderately swollen; temple profile fairly strongly narrowed behind eyes and scarcely curved; malar space about 1.5 times as long as width of mandible base; clypeus (fig. 138) basally slightly convex, with shallow apico-median depression, apically broadly rounded, the projecting part of apical border slightly curved upward; face rather strongly and densely punctured, clypeus smooth. Uniformly black; mandibles pale ferruginous except teeth.

*Thorax*.—Structure as described for genus; scutellum moderately strongly raised above postscutellum; mesoscutum and dorsal surface of scutellum densely and strongly rugose-punctate, subopaque; propodeum coarsely reticulate-rugose, carination subobsolete; an elongate, rectangular area superomedia indicated; short and blunt apical projections of areae dentiparae; carinae dentiparae interiores and carinae metapleurales distinct. Uniformly orange.

*Legs*.—Uniformly orange.

*Wings*.—Nervulus interstitial; areolet pentagonal, though strongly narrowed in front. Deeply infuscated.

*Abdomen*.—Structure as described for the genus. Color as described above.

### Male

Color exactly as in female; length 12-14 mm.

*Flagellum*.—With 41-42 segments: very distinct, fairly narrow elongate-oval tyloids on segments 7 or 8 to 14 or 15. Orange, with dorsal white annulus on segments 14 or 15 to 20 or 21; apex and scape black.

*Head*.—Cheeks and lower temples more swollen than in female, therefore temple profile not narrowed and strongly curved.

The rest as in female.

## 2. *Phaisura effigies*, new species

*Phaisura nigriceps* Heinrich (nec Szépligeti), 1935, Mission Scient. de l'Omo, III, Zoologie, pp. 233-234. (Kenya: Nairobi), ♀♂.

### Types

*Holotype*.—♀, "Tanganyika, Dabaga, 2100 m, 30 mi. S.S.E. of Iringa, 26. September 1962". C.G.H. II.

*Allotype*.—♂, same data. C.G.H. II.

*Paratypes*.—3 ♀♀ from type locality; 2 ♀♀, southern Tanganyika, Mbeya; 1 ♀, 10 ♂♂, southern Tanganyika, Rungwe Mts., 2600 m; 2 ♀♀, southern Tanganyika, Mdando Forest, 30 m. south of Njombe, 2400 m; 1 ♀, northern Tanganyika, Mt. Meru, 1800 m; 3 ♂♂, northern Tanganyika, Eastern Usambara Mts., 2100 m; 1 ♀, N.W. Angola, Duque de Braganza. All C.G.H. II.

### Distribution

Northern and southern Tanganyika; Northwest Angola. (C.G.H. II); Kenya: Nairobi (C.G.H. I.); Southern Rhodesia: Vumba Mts. (N.M.B.).

### Preamble

Chromatically similar to *Hemiphaisura fortunatus* (Tosquinet) and to the South African *Hemiphaisura thyridiens* (Morley), but easily distinguished from both by the structure of the clypeus. Males are extremely similar to the South African *Phaisura robusticeps*, new species (known only in males), differing only in the distinctly less swollen cheeks and the less widened temple profile.

### Female

Orange, tergites 5-7 black, the fifth often laterally, exceptionally predominantly, ferruginous; sixth and seventh tergites with large white anal marks; apex of femora III broadly black, apex of tibiae III more or less extensively blackish-infuscated, at least laterally; head black, with one large triangular white patch on upper frontal orbits and a second, smaller, rounded one on temple orbits; clypeus entirely or apically, exceptionally also cheeks partially, ferruginous; scutellum dorsally and apically white, its lateral declivities and carinae entirely or extensively black; apex of mesoscutum adjacent to scutellum with black mark of varying size; flagel-

lum black, with dorsal white annulus, at base at least ventrally ferruginous; length 12-15 mm.

*Flagellum*.—Structure as described for genus; with 42-44, exceptionally (Mt. Rungwe) only 39 segments, the first nearly 5 times as long as wide, none clearly square in lateral view, the widest a trifle wider than long. Black, basal 2 or 3 segments dull ferruginous, ventral side of flagellum usually more extensively ferruginous-tinged; dorsal white annulus on segments 6 or 7 to 14 or 15; exceptionally only to 13; scape black.

*Head*.—Structure as described for genus; temple profile only very slightly curved; malar space about 1.3 times as long as width of mandible base. Black; clypeus ferruginous-red to variable extent, usually entirely, sometimes apically only, exceptionally clypeus entirely black; sometimes cheeks more or less extensively ferruginous; the following white: labrum, a large triangular mark on frontal orbits reaching up to the summit of vertex, and a smaller, rounded mark on temple orbits.

*Thorax*.—Structure as described for genus; lateral carinae of scutellum lamelliform, no apical carina; horizontal part of propodeum almost as long as declivity, slightly slanting, coarsely, irregularly rugose; carination subobsolete; carinae dentiparae interiores fairly distinct, but without apical projection. Orange, collare and scutella white; lateral declivities of scutellum and lateral carinae predominantly to entirely black; black mark on apex of mesoscutum, adjacent to scutellum.

*Legs*.—Orange; apices of femora III more or less broadly black, apices of tibiae III more or less extensively blackish-infuscated, at least laterally; tarsi III slightly brownish-infuscated.

*Wings*.—Nervulus interstitial or slightly postfurcal; areolet quadrangular.

*Abdomen*.—Rather slender; structure as described for genus; second tergite fully 1.5 times as long as apically wide. Orange; tergites 6 and 7 black, with large white anal marks, the fifth tergite varying from ferruginous with black apical margin (rarely) to (usually) predominantly black, laterally at base more or less extensively ferruginous, or to (rarely) entirely black.

### Male

As female, but entire clypeus and face and the cheeks up to temple region yellow; broadly yellow are also the frontal orbits up to summit of vertex, the yellow color below ocellar region projecting somewhat triangularly toward middle of frons; tergites 6 and 7 or 5 to 7 black, the seventh always with large white apical mark, sometimes also the sixth with more restricted white apical marking; apex of tibiae III and the tarsi III blackish-infuscated; as in female, lateral declivities and carinae of scutellum black and apex of mesoscutum adjacent to scutellum black-marked; the mesoscutum shows a melanistic tendency; there are sometimes infuscated bands projecting from the black mark mentioned between the median and lateral lobes, and sometimes the entire mesoscutum may be infuscated; flagellum dorsally black with complete white annulus; length 11-16 mm.

*Flagellum*.—With 38-42 segments; narrow bacilliform tyloids on segments 8 or 9 to 14 or 16. Black, with complete white annulus on segments 12 or 13 or 14 to 21 or 22 or 24, ventrally more or less distinctly dull



brownish. basal segments sometimes ventrally luteous; scape black, ventrally yellowish.

### Variability

On Mt. Meru, as well as in the Livingstone Mts. occur populations of males lacking the black around the scutellum so characteristic of this species; as the temples and cheeks of these males seem to be a trifle more swollen than in the allotype and in typical males from other localities in Tanganyika (but not as strongly as in the new South African species *robusticeps*), I am unable to decide whether they represent geographical varieties of one or the other species, the less so as I can not find any differences between the holotype and the females collected at the same localities as the males under discussion. I am inclined to believe that in this species the head structure of males tends to vary geographically. The South African species *robusticeps* may perhaps represent a vicariant which has reached a particularly high degree of development of this tendency.

### 3. *Phaisura robusticeps*, new species

#### Types

*Holotype*.—♂, "South Africa, King Williamstown, Peeree Forest, 8.III.63." C.G.H. II.

*Paratypes*.—8♂♂, same locality and date; 1♂, South Africa, Grahamstown 28.II.-14.III.63; 3♂♂, Storms River, Cape Province, III.1963; 1♂, Port St. Johns, Cape Province, II.1963. All C.G.H. II.

#### Distribution

Eastern Cape Province.

#### Preamble

This form, the female of which is unfortunately not known yet, is chromatically almost identical with *effigies* Heinrich. It differs, as far as color is concerned, only by the lack of black on sides of scutellum, but in rare mutants (two specimens out of 14) the lateral declivities and carinae of scutellum are black, and such specimens are chromatically indistinguishable from *effigies*. All specimens from Cape Province, however, differ from *effigies* males by distinctly more swollen cheeks and more bulging temple profile; hence, they do represent a distinct form, whether its status be considered specific or subspecific. As structural differences, such as are present in this case, are usually assumed to indicate a differentiation of specific degree, I am treating this form as a distinct species. See also "variability", concluding the treatment of *effigies*.

#### Male

Yellow, thorax dorsally, abdomen and legs III orange-tinged; the following black: dorsal markings on head, a mark on apex of mesoscutum adjacent to scutellum, tergites 5 to 7, apices of femora and of tibiae III; tarsi III more or less extensively blackish-or brownish-infuscated; seventh tergite with white mark, often also the sixth, exceptionally the fifth with

reduced white pattern; flagellum black with complete white annulus, basal part ventrally light brown or luteous; length 12 to 15 mm.

*Flagellum*.—With 37-42 segments; bacilliiform tyloids on segments 8-15. Black, with complete white annulus on segments 12 to 21 or 23; segments before annulus ventrally pale yellowish-brown, basal segments usually dorsally indistinctly brownish; scape ventrally yellow.

*Head*.—Temple profile behind eyes widened rather than narrowed, conspicuously bulging; cheek profile scarcely narrowed toward mandible base, cheeks, in lateral view, wide and rather strongly swollen. Yellow, including entire cheeks up to temple region and sides of frons up to summit of vertex, thus leaving only a narrow black band reaching the eye margin at temples; black are: occipital region, ocellar region, antennal cavities, and a narrow longitudinal median band on frons; in rare mutants the yellow frontal orbits do not reach onto the vertex.

*Thorax*.—Structure as in *effigies*. Yellow; mesoscutum light-orange-tinged, with medio-apical black mark adjacent to scutellum; in rare mutants sides of scutellum also black (see preamble).

*Legs*.—As described above.

*Wings*.—Nervulus moderately postfurcal; areolet almost quadrangular; clear.

*Abdomen*.—Structure as described for genus. Color as described above.

#### 4. *Phaisura erythrocephala*, new species

##### *Types*

*Holotype*.—♀, "Uamgebiet, Bosum, 11.-20.V.14., Tessman S." Z.M.H.U. (One flagellum and apex of the other lacking).

##### *Distribution*

Central African Republic (Eastern Cameroons): Bosum at the river Uam (or Ouham), 16° 12' east long., 6° 20' north lat.

##### *Preamble*

Structurally, and also in chromatic pattern related to *effigies* Heinrich. Differing by uniformly red head and scutellum, without white or black and in addition by lack of black on femora III and by more widened flagellum.

##### *Female*

Orange, tergites 5-7 black, the sixth and seventh with large white apical marks; femora and tibiae III without black markings, tarsi III blackish-infuscated; head uniformly red, without black or white marks; flagellum with large dorsal white annulus, ferruginous almost to annulus, black beyond it; length 13 mm.

*Flagellum*.—First segment nearly five times as long as wide, the 14th square, the widest, in contrast to *effigies*, twice as wide as long. Scape and segments 1-5 orange, 7-16 (base) dorsally white, apex black.

*Head*.—Structure as in *effigies*: temple profile likewise nearly straight, cheek profile distinctly narrowed toward mandible base, straight; malar space fully 1.3 times as long as width of mandible base; clypeus medio-apically produced and curled upward. Uniformly red.

*Thorax*.—Structure as described for the genus; lateral carinae of scutellum only moderately elevated, not lamelliform as in *effigies*, no apical carina; horizontal part of propodeum somewhat longer than declivity; carination more complete and distinct than in *effigies*, particularly areae supermedia and basalis; apices of areae dentiparae distinctly bluntly projecting; mesopleura coarsely and densely rugose-punctate, opaque, in contrast to *effigies*, speculum rather large and polished. Uniformly orange; collare indistinctly yellowish-tinged.

*Legs*.—Uniformly orange; tarsi III infuscated.

*Wings*.—Forewings lacking in type specimen.

*Abdomen*.—Slender; second tergite more than 1.5 times as long as apically wide; postpetiole nearly smooth, with some very fine, irregular rugosity; tergites 2-4 (the fourth except apically) densely rugose-punctate, subopaque. Orange, tergites 5-7 black, the sixth and seventh with large white marks.

### 5. *Phaisura unicolor* (Morley), new combination

*Ischnojoppa luteator* var. *unicolor* Morley, 1919, Proc. Zool. Soc. London, p. 128, ♂.

#### *Types*

*Holotype*.—♂, "Kampala, Durro Forest, Uganda." B.M., No. 3b-78.

#### *Distribution*

Uganda (type locality); Northwest Angola, near Quiculungo (C.G.H. II.).

#### *Preamble*

This species, and the following, *simplicicolor*, new species, resemble each other strongly by their uniformly pale orange (partially yellow) color, without black markings. They can easily be distinguished by the structure of the carina genalis, which in *unicolor* tapers out apically into obsolescence, whereas in *simplicicolor* it stays distinct to the very apex, where it meets the carina oralis.

#### *Male*

Pale orange; head, except dorsally, sterna and pleura extensively yellow; flagellum black, with complete white annulus, basally partially ferruginous; length 11-15 mm.

*Flagellum*.—With 39-41 segments; elongate, narrow-oval tyloids on segments 9-16 or (usually) 17, the last one minute. Black, with complete white annulus on segments 12 or 13 to 19 (specimens from Uganda) or 21 or 22 (specimens from Angola); basal one or two segments entirely, and most segments before annulus ventrally, dull ferruginous; scape orange, ventrally yellow.

*Head*.—Structure similar to *robusticeps* Heinrich: temple profile behind eyes widened rather than narrowed, strongly bulging; cheeks wide and strongly swollen in lateral view, cheek profile only slightly narrowed toward mandibles, with curved outline; clypeus flat, smooth, inconspi-

cously produced medio-apically; mandibles as described for the genus; carina genalis not reaching carina oralis, apically obsolete. Dorsally orange yellow are: mandibles except teeth, clypeus, face, cheeks and, less distinctly, frontal orbits.

*Thorax*.—Structure generally as described for the genus; scutellum strongly raised above postscutellum, narrowed toward apex, laterally with high carinae, apically not carinate; carination of propodeum almost obsolete, even carina metapleuralis rather indistinct; apices of areae dentiparae scarcely prominent; mesopleura with smooth speculum. Pale orange; sterna and most of pleura yellowish.

*Legs*.—Orange; anterior coxae and trochanters yellowish-tinged.

*Wings*.—Nervulus postfurcal; areolet almost quadrangular; clear.

*Abdomen*.—Structure as described for the genus. Uniformly dull orange.

### 6. *Phaisura simplicicolor*, new species

#### *Types*

*Holotype*.—♂, "Morogoro, Tanganyika, 16.XII.1961, G. H. Heinrich." C.G.H. II.

*Paratypes*.—2♂♂, same locality, January 1962; 3♂♂, Angola, Cacolo, 1300 m, 23.XII.1957-21.I.1958". All C.G.H. II.

*Allotype*.—(tentative) ♀, Northeastern Angola, Cacolo, 1300 m, 23. Dec. 1957-27. Jan. 58. C.G.H. II.

#### *Distribution*

Tanganyika: Morogoro and Dar es Salaam; northeastern Angola: Cacolo.

#### *Preamble*

Very similar to *unicolor* Morley; distinguished mainly by the complete carina genalis; additionally differing from *unicolor* by the interstitial nervulus, the apically fairly distinctly carinate scutellum, the more distinct carination of the propodeum and the slightly prominent apices of areae dentiparae.

#### *Male*

Pale orange; head, except dorsally, yellowish-white, including frontal and vertical orbits; sterna, mesopleura, coxae and trochanters I and II pale yellow; flagellum black, with complete white annulus, basally partially ferruginous; tarsi III sometimes apically or entirely, tibiae III apically on interior side more or less intensely infuscated; length 12-15 mm.

*Flagellum*.—With 40-43 segments; elongate, narrow-oval tyloids on segments 10 or 11 to 13 or 14. Black, with complete white annulus on segments 13 or 14 to 24 (Tanganyika) or 26 (Angola); basal one or two segments dull ferruginous; ventral side of flagellum more extensively ferruginous or brownish; scape orange, ventrally yellowish.

*Head*.—Structure as described for the genus; temple profile behind eyes not quite as wide as in *unicolor*, strongly curved; cheeks, in lateral view, less wide and less swollen than in *unicolor*, cheek profile distinctly, though not strongly, narrowed toward mandible base; clypeus flat, smooth,

not produced medio-apically; mandibles as described for the genus; carina genalis complete, meeting carina oralis at an acute angle at a distance from the mandible base of less than its width; malar space almost as long as width of mandible base. Orange, yellowish-white are: mandibles except teeth, face, clypeus, cheeks, orbits around eyes (broadly and distinctly on frons and vertex, very narrowly on temples).

*Thorax*.—Generally as described for the genus; scutellum strongly raised above postscutellum, with high lateral carinae and with a low carina surrounding apex; propodeum with partially fairly well recognizable carination, particularly carinae metapleurales, area posteromedia, carinae dentiparae interiores, and base of area superomedia more or less distinct; apices of areae dentiparae with fairly distinctly projecting carinae. Orange; sterna and most of the pleura yellowish.

*Legs*.—Orange; coxae and trochanters I and II pale yellowish; tibiae III apically on interior side blackish-infuscated; tarsi III usually apically, sometimes uniformly infuscated.

*Wings*.—Nervulus interstitial; areolet clearly quadrangular.

*Abdomen*.—Structure as described for the genus; postpetiole smooth; second and third tergites rather finely and moderately densely punctured; fairly densely pilose, somewhat shiny. Uniformly dull orange.

#### *Preamble to female*

The female from northeastern Angola, matches the above-described males in color and structure so perfectly that I would not hesitate to associate these two sexes, if the propodeal apophyses were not so strikingly different. In the males, described above, the apices of areae dentiparae bear a scarcely prominent elevation only, whereas the female under discussion is armed with very strong, long and upward-curved apophyses, a character not only lacking in the males described above, but also in all other females treated in this genus. Within the tribe Acanthojoppini Heinrich the apophyses are sometimes shorter in males than in females, but I have never seen a sexual dimorphism of such degree, and I cannot assume that it exists in this particular case unless further evidence for the correct association of the sexes be found. If it should be proven in the future that these two sexes indeed belong together, as I intuitively believe, then the diagnosis of this genus will have to be amended accordingly, unless it should seem preferable to erect a new genus for this species, considering its extraordinary sexual dimorphism.

#### *Female*

*Uniformly pale ochreous; face, clypeus, cheeks, frontal and vertical orbits broadly, temple orbits narrowly yellowish-white; ocellar triangle black; flagellum black, with dorsal white annulus, basally ferruginous; length 14 mm.*

*Flagellum*.—Tips broken. First segment more than 5 times as long as wide, the 16th closest to square, the widest 1.5 times as wide as long. Black, with dorsal white annulus on segments 6 (apex) to 16 (base), the first segment entirely, segments 2-4 ventrally ferruginous; scape orange.

52. Genus *Hemiphaisura*, new genus

Fig. 137

*Type species*.—*Chasmodes fortunatus* Tosquinet*Distribution*

Eastern Africa from Ethiopia south to Natal; also Madagascar.

*Preamble*

In general structure, as well as in chromatic characters, closely related to *Phaisura* Cameron, but distinguished by the structure of clypeus, (fig. 137) which is not smooth and shiny, and medio-apically neither produced nor bent upward but rather densely punctured throughout, with straight apical border. In this regard the genus approaches *Aethioplites* Heinrich and the neighboring groups, but this is a superficial similarity only, and in close examination it can be seen that even the clypeus suggests a relationship to *Phaisura*, as it is medio-apically somewhat depressed and the median part of its apical border is rather thin. The mandibles are sturdier than in *Aethioplites* and the related forms, particularly the apical tooth is relatively longer and more curved toward a sickle-shaped appearance, the broad sub-apical tooth being bent further out of line with the apical tooth. In all other essential characters this genus agrees with *Phaisura* rather than with *Aethioplites*. This refers in particular to the structure of head, scutellum, propodeum, wings, and abdomen.

I am also transferring *Aethioplites gracilis* Heinrich, described from Madagascar, to the genus *Hemiphaisura*, although in this species the apices of areae dentiparae are somewhat more projecting (forming short and blunt apophyses) than in the type species of *Hemiphaisura*.

*Morphological characters*

*Flagellum*.—Of females long and slender, bristle-shaped, ventrally flattened beyond middle but not, or slightly, widened, very long and sharply attenuated toward apex; of males with a row of distinct, elongate-oval or bacilliform tyloids, slightly nodose, with subapical bristle-ridges on ventral side.

*Head*.—Structure and structural sexual dimorphism as described for the genus *Phaisura*, except for the following differences: clypeus (as is the entire face) densely and rather strongly punctured throughout, apically straight, laterally a trifle raised, the lateral corners not sharp but slightly rounded, the medio-apical part somewhat depressed and thin; structure of mandibles corresponding to that of *Phaisura*, but not quite as strong-

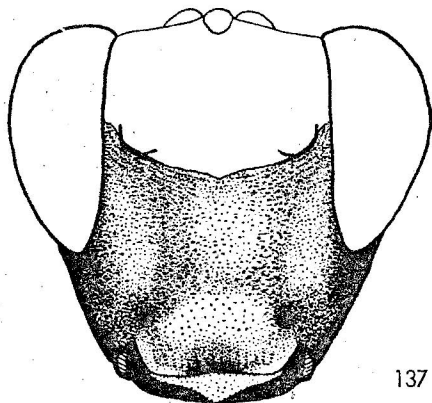


Fig. 137  
*Hemiphaisura fortunata* (Tosquinet), ♀

ly specialized, as the subapical tooth is not in vertical plane with the apical tooth and thus almost hidden behind it but clearly visible, although far below plane of apical tooth; the latter considerably longer than subapical tooth, curved and sharply pointed.

**Thorax.**—Structure as described for the genus *Phaisura*, except as follows: basal part of notauli indicated in type species, subobsolete in the other species; apices of areae dentiparae in one species (Madagascar) with short, blunt apophyses, in the other species as described for *Phaisura*.

**Legs, wings, and abdomen** as described for the genus *Phaisura*.

#### Chromatic pattern

Ferruginous or orange, with black and white on head and on apex of abdomen. In type species also scutella and collare whitish.

### Key to the species and subspecies of *Hemiphaisura* Heinrich

#### Females

1. Femora III apically broadly black; only the seventh tergite with conspicuous white mark; outer and temple orbits without white marks. (Widest flagellar segment about twice as wide as long; abdomen very slender; length 13-14 mm.) ..... 2. *thyridiens* (Morley) 2
- Femora III apically not black; at least sixth and seventh tergites with conspicuous white pattern; temple orbits, or outer orbits, with white marks. 4
2. Large white patch on upper frontal orbits, which narrows abruptly at upper border of antennal cavities into a narrow stripe on lower frontal orbits. .... 2b. *thyridiens mbeyana*, new subspecies  
Southwest Tanganyika
- Frontal orbits without white patch, either black as the rest of head, or narrowly ferruginous, at the most their upper part narrowly yellowish-white. .... 3
3. Tergites 5-7 black, the seventh with large apical white mark; frontal orbits usually ferruginous, their upper part often narrowly yellowish-white. .... 2a. *thyridiens thyridiens* (Morley)  
Transvaal; Cape Province
- Tergites 5-7 uniformly black, without white mark; head usually uniformly black, rarely frontal orbits also ferruginous. .... 2c. *thyridiens ugandana*, new subspecies  
Uganda
4. Propodeum without apophyses; tergites 6 and 7 with large white apical marks; flagellum not at all widened; larger species 15-16 mm. long. (Rounded white mark on temple orbits; face and clypeus without white.) ..... 1. *fortunata* (Tosquinet)  
Ethiopia to Natal
- Propodeum with short, blunt apophyses; tergites 5-7 with conspicuous, white apical bands; widest flagellar segment 1.5 times as wide as long; smaller species, 12-13 mm long. (Longish white mark on outer orbits; face and clypeus laterally more or less extensively white.) ..... 3. *gracilis* (Heinrich)  
Madagascar

#### b. Males

1. Femora III apically black. .... 2. *thyridiens* (Morley)  
Uganda Tanganyika to Cape Province
- Femora III apically not black. .... 2
2. Propodeum with distinct, though short and blunt apophyses; tyloids very small and unobtrusive; cheeks, from level with lower end of eyes to mandible base, entirely black; face and clypeus white, usually with longitudinal, median black line. (Length 12-13 mm.) ..... 3. *gracilis* (Heinrich)  
Madagascar

Propodeum without apophyses; tyloids very distinct, elongate-oval, the longest almost reaching from bases to apices of segments; cheeks entirely yellow, except sometimes a longitudinal black band on malar space; face and clypeus uniformly yellow. (Length 15-16 mm.) ..... 1. *fortunata* (Tosquinet)  
Ethiopia to Natal

### 1. *Hemiphaisuta fortunata* (Tosquinet), new combination

Fig. 137

*Chasmodes fortunatus* Tosquinet, 1896, Mém. Soc. Ent. Belg. V, p. 3, ♂.

*Ctenochares flavipennis* Szépligeti, 1907, Bull. Nat. Hist. Nat. Paris. XIII, p. 138, ♀; new synonymy.

*Hoplojoppa nigriceps* Szépligeti, 1910, Sjöst. Kilim.-Meru Exped. VIII, p. 55, ♀♂; new synonymy.

*Ctenochares gracilentor* Morley, 1919, Proc. Zool. Soc. London, p. 127, ♂; new synonymy.

#### Types

**Holotypes.**—*Chasmodes fortunatus* Tosquinet, ♂, "Scioa, Dinka — Ragazzi leg. 1887". M.C.H.N.; *Ctenochares flavipennis* Szépligeti, ♀, "Nairobi, Maurice de Rothchild". M.N.H.N.; *Ctenochares gracilentor* Morley, ♂, "Natal, Howick, I. P. Cregoe". B.M. No. 3b-149.

**Lectotype.**—*Hoplojoppa nigriceps* Szépligeti, ♀, "Sjöstedt 1905, Meru Nieder., 25. November". N.H.R. Designated by Heinrich 1964.

#### Distribution

Eastern Africa from Ethiopia south to Natal.

#### Preamble

Chromatically and in general appearance rather similar to *Phaisura effigies* Heinrich, and also to the following species of this genus, *thyridiens* Morley. At once distinguishable from both by uniformly orange-ferruginous femora III which are never apically infuscated or black.

#### Female

Orange-ferruginous, head usually black, sometimes partially to predominantly ferruginous, always with upper frontal and vertical orbits broadly white up to occipital declivity and with a rounded white mark on temple orbits; tergites 5-7 black, 6 and 7 with large white apical marks; apices of tibiae III interiorly and the tarsi III infuscated; flagellum black, with dorsal white annulus, basally more or less extensively ferruginous or orange; length 15-16 mm.

**Flagellum.**—With 44-45 segments, the first about 5 times as long as wide, the 17th nearly square, none wider than long. Black, with dorsal white annulus on segments 7 (apex) or 8 to 13 or 14; the basal 3-5 segments entirely, 5 or 6 or 7 ventrally, ferruginous.

**Head.**—Structure as described for genus; malar space not quite twice as long as width of mandible base; densely rugose-punctate throughout, including entire clypeus, only cheeks somewhat more finely and sparsely punctured; frons with longitudinal median furrow below lower ocellus. Black; middle of face, clypeus and apex of cheeks often more or less distinctly reddish-tinged, sometimes face, clypeus, and cheeks entirely



dark red: the following always white: upper frontal and vertical orbits broadly up to occipital declivity (this white band narrowed abruptly on lower frontal orbits and tapering downward toward level of antennal sockets) and round mark on temple orbits.

*Thorax*.—As described for the genus *Phaisura*; anterior part of notauli slightly indicated, but not sharply impressed; scutellum dorsally strongly convex, coarsely rugose-punctate, with high lateral carinae, apically not carinate; horizontal part of propodeum densely and coarsely reticulate-rugose, carination entirely obsolete; apices of areae dentiparae scarcely prominent. Uniformly orange, prepectus, mesosternum, and scutella pale yellowish, collare whitish.

*Legs*.—Uniformly orange, only tarsi III and apex of tibiae III on interior side more or less intensely infuscated.

*Wings*.—Nervulus slightly postfurcal; areolet quadrangular.

*Abdomen*.—As described for the genus *Phaisura*; postpetiole medially very finely, irregularly rugose, laterally and basally strongly punctured; thyridia very narrow, about twice as wide as long. Orange; tergites 5-7, rarely also apex of fourth tergite black, the sixth and seventh with large white marks.

### Male

*Face, clypeus, cheeks up to temple region, frontal and vertical orbits broadly, and mandibles except teeth, yellowish-white; otherwise like female; length 14-15 mm.*

*Flagellum*.—Apices in all known specimens broken. With distinct tyloids on segments 6-19, the longest elongate-oval, reaching almost from bases to apices of segments, the first and last very small and narrow. Black, with complete white annulus on segments 13 or 14 to 20 or 21, basally narrowly, ventrally extensively orange; scape orange, ventrally yellowish-white.

*Head*.—Temples less steeply declivous than in female, upper cheeks more swollen, temple profile therefore more rounded and bulging than in female. Color as described above; malar space sometimes with longitudinal black band.

## 2. *Hemiphaisura thyridiens* (Morley)

### Distribution

Transvaal (type locality); Cape Province: Algoa Bay (C.G.H. II); southern Tanganyika: Mbeya (C.G.H. II.).

### Preamble

Similar to *fortunata* Tosquinet, but distinctly slenderer and somewhat smaller, femora III apically broadly black, only seventh tergite with large white mark, no white mark on temple orbits, and the flagellum of females distinctly widened beyond middle.

### Female

Orange-ferruginous; head black, in one subspecies with conspicuously white-marked frontal orbits; tergites 5-7 black, the seventh with large white mark, lacking in one subspecies; apices of femora and of tibiae III

broadly black, tarsi III brownish-infuscated; flagellum orange, including scape, with dorsal white annulus, black beyond annulus; length 10-14 mm.

*Flagellum*.—With 40-41 segments, the first about 5 times as long as wide, the 14th approximately square, the widest nearly twice as wide as long. Orange, with dorsal white annulus on segments 7 or 8 to 13 or 14, black beyond annulus, the last segments before annulus usually dorsally infuscated; scape orange.

*Head*.—Structure as described for the genus; malar space about 1.5 times as long as width of mandible base; densely and coarsely rugose-punctate including clypeus, lower cheeks more finely and more sparsely punctate; median frontal furrow on upper frons. Black, upper frontal orbits with conspicuous white patch which narrows abruptly at upper border of antennal cavities into a white line on lower frontal orbits, or with a narrow, yellowish line only, which shades into ferruginous on lower, frontal orbits, sometimes head uniformly black; sometimes clypeus, or clypeus and face slightly reddish-tinged.

*Thorax*.—As described for the genus *Phaisura*; notauli subobsolete; scutellum dorsally strongly convex and coarsely and densely rugose-punctate, laterally with high carinae, apically with none; horizontal part of propodeum very coarsely reticulate-rugose, without carination, medially about as long as declivity or slightly longer; apices of areae dentiparae scarcely projecting. Orange; sterna slightly yellowish-tinged, collare whitish.

*Legs*.—Orange; coxae I and II ventrally paler; apices of femora III and tibiae III extensively black or blackish, tarsi III brownish.

*Wings*.—Nervulus postfurcal; areolet pentagonal, close to quadrangular. Clear.

*Abdomen*.—Strongly narrowed, the second tergite usually more than twice as long as apically wide; the postpetiole scarcely wider than the petiole, its median field well indicated, smooth, the lateral fields punctate; thyridia far removed from base of second tergite, distinct, about twice as wide as long. Orange-ferruginous; tergites 5-7 black, the seventh with large white mark; the sixth medio-apically often with a very narrowly whitish margin or small white dot; in one subspecies apical tergites uniformly black.

**2a. *Hemiphaisura thyridiens thyridiens* (Morley), new combination**

*Ctenochares thyridiens* Morley, 1916, Ann. S. Afr. Mus. XV, p. 371, ♀.

**Types**

*Holotype*.—♀, "Barberton, Transvaal, April 1911." S.A.M.

**Distribution**

Transvaal (type locality); Cape Province: Algoa Bay (C.G.H. II.).

**Female**

Frontal orbits narrowly ferruginous, usually shading into yellowish-white on upper frontal orbits; (type and 5 other specimens examined).

**2b. *Hemiphaisura thyridiens mbeyana*, new subspecies****Types**

*Holotype*.—♀, "S. W. Tanganyika, Mbeya, 17.XI.62." C.G.H. II.

*Paratype*.—1 ♀, same data. C.G.H. II.

**Distribution**

Southwest Tanganyika: Mbeya (type locality).

**Female**

Upper frontal orbits with large white patch which narrows abruptly at upper border of antennal cavities into a narrow white line on lower frontal orbits.

**2c. *Hemiphaisura thyridiens ugandana*, new subspecies****Types**

*Holotype*.—♀, "Kampala, Uganda, Dec. 1964, Denis F. Owen." Collection H. Townes.

*Allotype*.—♂, same data. Collection H. Townes.

*Paratypes*.—2 ♀♀, 4 ♂♂, same locality. Collection H. Townes; 3 ♀♀, 3 ♂♂, same locality. C.G.H. II.

**Female**

Head as in the South African subspecies: without large white mark on frontal orbits, usually uniformly black, sometimes with frontal orbits, exceptionally also with clypeus ferruginous-red; tergites 5-7 uniformly black, without apical white mark on the seventh; otherwise as *thyridiens thyridiens* Morley; length 10-13 mm.

**Male**

Face and clypeus uniformly white, as are also frontal orbits and, more or less extensively, the outer orbits; often white on outer orbits extended over nearly entire surface of cheeks up to temple region, sometimes reduced to a short line; tergites 5-7 usually uniformly black as in female, often, however, seventh tergite with apical white mark of varying size; flagellum with broad white annulus.

*Flagellum*.—With 39-41 segments; small unobtrusive, short-oval tyloids on about the seventh to fourteenth segments (mostly hidden by dense pilosity). Tricolored, with complete white annulus on segments 12 or 13 to 20 or 21; segments before annulus ferruginous-orange; scape ventrally yellowish-white.

**3. *Hemiphaisura gracilis* (Heinrich), new combination**

*Aethioplites gracilis* Heinrich, 1938, Mém. de l'Acad. Malgache, XXV, pp. 75-76, ♀ ♂.

**Types**

*Holotype*.—♀, "Madagascar, Rogez, 600 m, XI.-XII.1931, leg. A. Seyrig". G.G.H. I.

*Allotype*.—♂, same locality, V.-VII.1931, leg. A. Seyrig. C.G.H. II.

### Distribution

Madagascar: Rogez (type locality), Ampandrandava, Montagne d'Ambre, Anivorano.

### Preamble

Fairly closely related in structure and sculpture to *thyridiens* Morley, but distinguished by the distinct, though short and blunt apophyses of the propodeum, and in addition chromatically by lateral white marks on face and clypeus, and conspicuous white apical bands on tergites 5-7.

### Female

Orange-ferruginous; head black, the frons, lateral bands on face and clypeus, and outer orbits extensively white; tergites 4-7 black, 5-7 with conspicuous white apical bands; tibiae and tarsi III more or less strongly infuscated; flagellum black, with dorsal white annulus; length 12-13 mm.

**Flagellum.**—With 40-41 segments, the first about 4.5 times as long as wide, the 14th approximately square, the widest 1.5 times as wide as long. Black, with dorsal white annulus on segments 5 (apex) or 6 to 13 or 14; scape black.

**Head.**—Structure as described for the genus; malar space about 1.5 times as long as width of mandible base; face and clypeus strongly and rather densely, dorsal parts of head, frons and cheeks more finely punctured; median longitudinal furrow on frons slightly indicated. Black; the following white: sides of face and clypeus more or less extensively and in somewhat variable pattern, sometimes lateral fields of face entirely, frons up to vertex uniformly from side to side (excluding antennal cavities and ocellar triangle), and a patch on middle of outer orbits reaching from below temple region down to beyond middle of eyes.

**Thorax.**—As described for the genus *Phaisura*; notauli subobsolete; scutellum dorsally strongly convex and coarsely rugose-punctate, laterally with very high carinae, apically narrowed and sometimes weakly transversely carinate; horizontal part of propodeum coarsely reticulate-rugose, without carination; apices of areae dentiparae with distinct, short and blunt apophyses. Uniformly orange; collare white; sterna slightly yellowish-tinged.

**Legs.**—Orange; tibiae and tarsi III more or less extensively infuscated.

**Wings.**—Nervulus postfurcal; areolet pentagonal, almost quadrangular. Clear.

**Abdomen.**—As described for the genus *Phaisura*; postpetiole medially smooth, laterally punctured. Orange-ferruginous; tergites 4-7 black, 5-7 with conspicuous white apical bands.

### Male

Face and clypeus white, usually with narrow longitudinal black band on the middle of face or of face and clypeus; white on frons medially interrupted by a black band below lower ocellus; fourth tergite usually basally more or less extensively ferruginous, the fifth tergite without, or with greatly reduced white apical band; otherwise like female.

*Flagellum*.—With 40 segments; narrow, unobtrusive tyloids on segments (about) 11-17. Black, with dorsal white annulus on segments 10 or 13 to 17 or 18; scape black.

### 53. Genus *Phaisurella* Heinrich

*Phaisurella* Heinrich, 1938, Mém. de l'Acad. Malgache, XXV, p. 52.

*Type species*.—*Phaisurella nigrifacies* Heinrich. Original designation.

#### *Distribution*

Madagascar.

#### *Preamble*

The genus is closely related to *Phaisura* Cameron. In the original description (1938), the complete and very clear carination of the propodeum was the only distinctive character given. The difference in head structure should be added as a perhaps even more important distinction. In *Phaisurella* in contrast to *Phaisura*, the entire frons is evenly convex almost down to antennal sockets, the antennal cavities being subobsolete; furthermore, the head is much shorter, the malar space being shorter than the width of mandible base instead of longer as in *Phaisura*. The two included species are much smaller than any species of *Phaisura*.

#### *Morphological characters*

*Flagellum*.—Of females bristle-shaped, long and slender, ventrally flattened beyond middle but not widened, moderately sharply attenuated at apex; of males with bacilliform tyloids.

*Head*.—Occiput and temples declivous behind ocelli and eyes; lower temples and cheeks in lateral view comparatively narrow, therefore temple profile abbreviated, moderately narrowed behind eyes; malar space abbreviated, only about half as long as width of mandible base; carinae genalis and oralis normal, not lamelliform, the former running straight, in contrast to *Phaisura*, without apical turn, meeting carina oralis shortly before mandible base; clypeus polished, apically thinned blade-like, only slightly curved upward, and scarcely produced medially, the apical border almost straight, forming a very flat curve; mandibles as in *Phaisura*, the upper curved and sharply pointed tooth considerably longer than the lower.

*Thorax*.—Mesoscutum relatively shorter than in *Phaisura*, but still a little longer than medially wide, convex, densely punctured, subopaque; basal part of notauli sharply impressed; scutellum much less raised above postscutellum than in *Phaisura*, laterally carinate, apically gradually curved down toward postscutellum, dorsally slightly convex; propodeum with distinct basal furrow, of the clearly broken type, horizontal part and declivity of approximately equal length; carination complete and very distinct, including carina coxalis; apices of areae dentiparae forming distinct, though short and blunt, apophyses; area superomedia hexagonal, longer than wide, with costulae before middle, narrowed from costulae to area basalis, parallel-sided beyond costulae.

*Legs*.—Moderately long and slender; coxae III of females without scopa.

*Wings*.—Nervulus interstitial; areolet pentagonal, though strongly narrowed in front; radius straight; clear.

*Abdomen*.—Of females narrow, oxypygous, with slightly projecting ovipositor, somewhat compressed toward apex; postpetiole more distinctly separated from petiole than in *Phaisura*, with more or less distinct, rather smooth, median field; second tergite considerably longer than wide; gastrocoeli and thviridia subobsolete.

### Key to the species of *Phaisurella* Heinrich Females and Males

1. Tergites 2-4 orange, without black or white marks; scutellum moderately raised above postscutellum; length 10 mm. .... 1. *nigrifacies* Heinrich, ♀♂  
Madagascar
- Tergite 2 white, with subapical black band, third tergite black, with white band at base, fourth tergite black; scutellum only slightly raised above postscutellum; length 7-8 mm. .... 2. *elegantula* Heinrich, ♀♂  
Madagascar

### 1. *Phaisurella nigrifacies* Heinrich

*Phaisurella nigrifacies* Heinrich, 1938, Mém. de l'Acad. Malgache, XXV. p. 52, ♀♂.

#### Types

*Holotype*.—♀, "Madagascar, Rogez, 600 m, XI.-XII.1931, leg. A. Seyrig". C.G.H. I. Partially destroyed by dermestids.

*Allotype*.—♂, same data. C.G.H. II.

#### Distribution

Madagascar: Rogez (type locality) and Sihanaka Forest (Heinrich, loc. cit.).

#### Female

*Orange*; head black, entire frons and sometimes sides of face and outer orbits more or less extensively white; tergites 5-7 black, with broad white apical bands, sixth and seventh tergite predominantly white; flagellum black with aorsal white annulus, scape and basal segments ferruginous; length 10 mm.

*Flagellum*.—With 39 segments, the first nearly 5 times as long as wide in dorsal view, about the 12th square, the widest approximately square. Black, with dorsal white annulus on segments 6 to 14 or 15; segments 1-5 and scape ferruginous.

*Head*.—Structure as described for the genus; scutellum only moderately raised above postscutellum; frons, clypeus, and cheeks smooth; face distinctly but sparsely punctured. Black; frons, excluding ocellar triangle, entirely white down almost to antennal sockets; usually mark on temple orbits and uppermost part of facial orbits, sometimes sides of face and outer orbits more extensively white.

*Thorax*.—Structure as described for the genus. Uniformly orange.

*Legs*.—Uniformly orange.

*Wings*.—As described for the genus.

*Abdomen*.—Structure as described for genus; postpetiole with distinct median field. Color as described above.

### Male

As female; color of face and clypeus varying individually from entirely black to entirely white; sometimes apex of fourth tergite black; flagellum with complete white annulus on segments 11 or 12 to 22 or 24; length 10 mm.

*Flagellum*.—Allotype: with 37 segments; distinct, nearly bacilliform tyloids on segments 9-15; tricolored, with complete white annulus on segments 11-24, scape and part before annulus orange, apex black.

### 2. *Phaisurella elegantula* Heinrich

*Phaisurella elegantula* Heinrich, 1938, Mém. de l'Acad. Malgache, XXV, p. 53. ♀♂.

### Types

*Holotype*.—♀, "Madagascar, Rogez, 600 m, I.-II.1931, leg. A. Seyrig".  
C.G.H. I. Head extensively destroyed by dermestids.

*Allotype*.—♂, same locality, IX.-X.1931. C.G.H. II.

### Distribution

Madagascar: Rogez (type locality).

### Preamble

Agrees almost exactly with the type species morphologically, but is considerably smaller and chromatically quite different, the abdomen being black, with extensive white markings.

### Female

Thorax and legs uniformly orange; head and abdomen black, with very extensive white markings; first abdominal segment orange; flagellum tricolored; length 7-8 mm.

*Flagellum*.—With 35 segments, the first about 5 times as long as wide, in dorsal view about the 16th square, none wider than long. Black, with complete white annulus on segments 6-15; scape and segments 1-4 orange.

*Head*.—Structure as described for the genus; malar space even a trifle shorter than in *nigrifacies* Heinrich. Black; the following white: entire frons below ocelli, entire face, including basal part of clypeus, and a narrow band on outer orbits.

*Thorax*.—Structure as described for the genus; scutellum still less raised above postscutellum than in *nigrifacies*. Uniformly orange.

*Legs*.—Uniformly orange.

*Wings*.—As described for the genus.

*Abdomen*.—Structure as described for the genus; still slenderer than in *nigrifacies*; median field of postpetiole less distinct. Black and white; the first tergite orange; the following white: the second tergite, except an irregular, broad subapical black band which does not quite reach to its lateral borders, a basal band on the third tergite occupying nearly one-third of its length, and tergites 5-7 predominantly.

### Male

*Allotype*: as female; first abdominal segment orange or black; flagellum with white annulus; length 7-8 mm.

*Flagellum*.—With narrow baciliform tyloids on segments 8-14. With complete white annulus on segments 10-18; tricolored, basal part, including scape, orange, part beyond annulus black.

#### 54. Genus *Allonotus* Cameron

*Allonotus* Cameron, 1907. Ann. Mag. Nat. Hist., XX, pp. 29-30.

*Type species*.—*Allonotus rufus* Cameron. Monobasic.

*Erythrojoppa* Uchida (nec Cameron), 1932, Journ. Agr. Hokk. Imp. Univ., XXXIII, pp. 153-154.

*Type species*.—*Acanthojoppa sauteri* Uchida. Original designation.

(Subspecies of *politus* Cushman, according to Townes, 1961.)

*Akajoppa* Uchida, 1932, Journ. Agr. Hokk. Imp. Univ., XXXIII, p. 217. New name for *Erythrojoppa* (preocc. by Cameron).

*Allonotus* Heinrich, 1938. Mém. de l'Acad. Malgache, XXV, p. 50.

#### *Distribution*

Oriental region and Madagascar.

#### *Preamble*

In structure of thorax and head, including mandibles and clypeus, closely related to *Phaisura* Cameron and *Phaisurella* Heinrich, but clearly distinguished as a genus by the strongly widened thyridia with very narrow interspace and also by a certain peculiarity of the clypeus (see below).

The two Madagascan species treated below differ from the Oriental type species by dense and partially coarse sculpture of thorax and post-petiole, by a stouter and wider shape of the abdomen, and by somewhat more strongly elevated scutellum.

#### *Morphological characters*

*Flagellum*.—Of females bristle-shaped, long and slender, ventrally flattened beyond middle, but not widened, long and sharply attenuated at apex; of males (at least in the two Madagascan species) without distinct tyloids.

*Head*.—Occiput medially declivous behind ocelli, temples, however, more or less distinctly swollen behind eyes; lower temples and cheeks fairly wide in lateral view and moderately convex; temple profile not, or moderately narrowed behind eyes, curved; frons, in contrast to *Phaisurella*, not evenly convex almost down to antennal sockets, but antennal cavities normal and distinct; malar space abbreviated, as in *Phaisurella*, shorter than mandible base; carina genalis and carina oralis normal, meeting close to mandible base; clypeus basally rather strongly convex, considerably depressed and concave medially, the blade-like thinned apex slightly bent upward, apical margin forming a flat curve from side to side; mandibles as in the preceding genera of the tribe.

*Thorax*.—Mesoscutum somewhat longer than medially wide, fairly strongly convex; anterior third (or more) of notauli unusually sharply impressed; scutellum moderately (Oriental species) to fairly strongly (Madagascan species) raised above postscutellum, laterally carinate, dorsally more or less convex; propodeum of the clearly broken type, the declivity longer than the horizontal part medially; apices of areae denticiparae more or less sharply pointed or slightly projecting, but without



real apophyses; carination distinct and complete; area superomedia hexagonal, usually slightly longer than wide, variable in shape, with costulae before, at, or behind middle.

*Legs*.—Moderately long; coxae III of females without scopa.

*Wings*.—Nervulus interstitial; areolet pentagonal, strongly narrowed in front; radius straight.

*Abdomen*.—Of females oxygygous, ovipositor projecting; in Oriental species slender and elongate, in Madagascan species of normal shape, with the third and following tergites wider than long; median field of postpetiole indicated, though not clearly defined; postpetiole in Oriental species smooth, or nearly so, in Madagascan basally fairly coarsely rugose-punctate, apically nearly smooth, sparsely and finely irregularly rugose; gastrocoeli slightly impressed, thyridia very large and wide, separated from each other by a narrow interspace and from the base of the tergite exteriorly by a distance about equal to the width of one of them.

### *Chromatic pattern*

In a perfect analogy to *Phaisurella*, this genus is represented by two species of different color pattern, one of which has the abdomen predominantly orange, apically black with white apical bands, while in the other the abdomen is entirely black with white bands; in both color types the head is predominantly white with dorsal black marks and the thorax is uniformly orange.

### **Key to the species of *Allonotus* Cameron** **Females and Males**

1. Tergites 1 to 3 or 1 to 4 orange, without black or white marks. (Length 11 mm.)  
..... 2. *inexpectatus* Heinrich, ♀ ♂  
Madagascar (altitudes below 1000 m.)
- Tergites 1 (except sometimes red petiole) to 4 black, the second with basal and apical white bands, the third at least with basal, sometimes also with apical white band, the fourth always only with apical white band. (Length 9-11 mm.)  
..... 1. *lepidus* Heinrich, ♀ ♂  
Madagascar (altitudes near 2000 m.)

### **1. *Allonotus lepidus* Heinrich**

*Allonotus lepidus* Heinrich, 1938, Mém. de l'Acad. Malgache, XXV, pp. 50-51, ♀ ♂; pl. IV, fig. 20: head in front view.

### *Types*

*Holotype*.—♀, "Vatondrangy, 1800 m, Madagascar, XII.29, leg. A. Seyrig." C.G.H. I.

*Allotype*.—♂, "Madagascar, Ankaratrageb., 1800 m, XII.-II., leg. A. Seyrig". C.G.H. II.

### *Distribution*

Madagascar: Mt. Vatondrangy and Ankaratra Mts.; altitudes near 2000 m.

### *Female*

*Thorax orange; head and abdomen black with abundant white markings; face and clypeus uniformly white; tergites 2 and 3 with basal white bands, the second and sometimes the third also with apical white bands,*

tergites 4-7 with broad apical white bands; legs ferruginous, including coxae, legs III somewhat infuscated; flagellum black with dorsal white annulus, basal part brownish; length 9-11 mm.

*Flagellum*.—With 40 segments, the first about 5 times as long as wide, the 15th approximately square, none wider than long. Black, with dorsal white annulus on segments 6 (apex) to 14 (base), scape and basal segments brownish.

*Head*.—Structure as described for genus; malar space distinctly shorter than width of mandible base; finely and fairly densely punctured, including cheeks, except smooth clypeus; middle of frons below lower ocellus with shallow longitudinal furrow. Black; the following white: clypeus and face entirely, usually mark on temple orbits, sometimes whole length of outer orbits, frontal orbits up to summit of vertex broadly, gradually narrowed on vertex, widened and projecting triangularly toward middle of frons below ocellar region.

*Thorax*.—Structure as described for genus; anterior fourth of notauli distinct; mesoscutum very densely punctured, coriaceous between punctures, opaque; scutellum strongly raised above postscutellum, dorsally strongly convex, densely sculptured and opaque; propodeum densely rugose-punctate, opaque, except declivity; apices of areae dentiparae scarcely projecting; area superomedia often confluent with area basalis, nearly parallel-sided, with the costulae in the middle. Orange; collare and sometimes the very apex of pronotal ridge whitish.

*Legs*.—Ferruginous, including coxae; legs I and II dorsally slightly brownish, legs III more intensely infuscated.

*Wings*.—As described for the genus: clear.

*Abdomen*.—Structure as described for the genus; postpetiole basally densely and strongly, laterally sparsely punctured, medio-apically very finely and irregularly rugose, nearly smooth; second and third tergites densely and fairly strongly punctured, not opaque. Black, petiole sometimes red; the following white: base of second tergite broadly including thyridia and the interspace, narrow apical band on second tergite, basal band and rarely also an apical band on third tergite, and broad apical bands on tergites 4-7.

### Male

*Cheeks*, including outer orbits, entirely white; segments 2 (except basè) to 5 of tarsi III white; coxae I and II whitish; otherwise as female.

*Flagellum*.—Allotype; with 42 segments; without tyloids. Black, with dorsal white annulus on segments 10 (apex) to 19 (base); scape and basal segments brownish.

## 2. *Allonotus inexpectatus* Heinrich

*Allonotus inexpectatus* Heinrich, 1938, Mém. de l'Acad. Malgache, XXV, pp. 51-52, ♀♂

### Types

*Holotype*.—♀, "Madagascar, Rogez, 600 m, IX.-X.1931, leg. A. Seyrig". C.G.H. I.

*Allotype*.—♂, same locality. C.G.H. II.

### Distribution

Madagascar: Rogez (type locality).

### Female

Orange; head white, with dorsal black marks; apex of fourth tergite and bases of tergites 5-7 black, 4 and 5 with apical white bands, 6 and 7 predominantly white; flagellum tricolored, with dorsal white annulus; length 11 mm.

*Flagellum*.—With 40 segments, the first about 6 times as long as wide, the 18th nearly square, none wider than long. Black, with dorsal white annulus on segments 6-14; scape and segments 1-4 ferruginous.

*Head*.—Structure as described for genus; sculpture as in *lepidus* Heinrich, including median longitudinal furrow on frons. White, the following black: ocellar region, the black patch tapering in front into a narrow black line down the middle of frons, occipital region, the black color projecting on each side to temple margins of eyes; mandibles ferruginous.

*Thorax*.—Structure as described for the genus; anterior third of notauli somewhat more sharply impressed than in *lepidus*, scutellum a trifle less strongly elevated above postscutellum, but dorsally just as strongly convex as in that species; apices of areae dentiparae more distinctly projecting, costulae and area basalis less distinct than in *lepidus*; sculpture of mesoscutum, scutellum, and propodeum as in *lepidus*, opaque. Uniformly orange.

*Legs*.—Uniformly orange, tarsi III a shade darker than the rest.

*Wings*.—As described for the genus; clear.

*Abdomen*.—Structure as described for the genus; postpetiole basally densely and strongly, laterally sparsely punctured, medio-apically finely and irregularly rugose; entire second tergite and the third (except apical part) densely and fairly strongly punctured. Orange; apex of fourth tergite narrowly and bases of tergites 5-7 black, the fourth with narrow, the fifth to seventh with broad white apical bands.

### Male

Fourth tergite more extensively black, and without apical band; otherwise as female.

*Flagellum*.—Allotype. With 39 segments; without tyloids. Black, with dorsal white annulus on segments 8-17; scape and basal segments brownish.

### 54a. Genus *Spinallonotus*, new genus

Figs. 249, 250

*Type species*.—*Spinallonotus oweni*, new species

### Distribution

Uganda.

### Preamble

In structure of clypeus and mandibles a typical genus of the tribe and most closely related to *Allonotus* Cameron, sharing with that genus the very large, transverse thyridia with the space between them very narrow.

Different from *Allonotus* by unique structure of head, by wing venation, and the structure of flagellum of females: (1) occipital carina and occiput deeply emarginate, the latter steeply declivous immediately from ocelli but not from temple orbits, the declivity excluding on temples a broad, strongly convex area contiguous to margins of eyes; this convex, bulging part of temples is strongly produced backward (fig. 250) (as in the genus *Thaumatocephalus* Heinrich); on its exterior edge, the joining carina occipitalis and carina genalis emit an upward directed, pointed spine (fig. 249); (2) areolet small, not regularly pentagonal but irregularly trapezoidal; intercubiti coalescent in front, or almost so; the first abscissa of cubitus and the exterior intercubitus usually distinctly abbreviated; (3) flagellum of female bristle-shaped, extraordinary thin, hair-like, with extremely elongate segments, the first about 7-8 times as long as wide, all segments considerably longer than wide; (4) upper edge of median field of face forming a projecting shelf.

### *Morphological characters*

*Flagellum*.—As described above (3).

*Head*.—Occiput and temples as described above (1); cheeks, in lateral view, broad and strongly convex; malar space about as long as width of mandible base; clypeus and mandibles as described for *Allonotus*; face and clypeus smooth and shiny, the median field of face clearly limited, slightly convex, its upper edge strongly raised and projecting, forming a conspicuous shelf; frons evenly convex, nearly smooth.

*Thorax*.—Anterior third of notauli and the sternaui pronounced; mesoscutum short, slightly longer than medially wide, finely and moderately densely punctured, shiny; scutellum moderately strongly raised above postscutellum, with vertical lateral and apical slopes, dorsally barely convex, laterally strongly, apically weakly carinate, shiny and almost smooth; propodeum with complete and strong carination, shiny and almost smooth, the metapleura with scattered and very fine punctures, the declivity with some irregular rugosity, distinctly longer than horizontal part medially; horizontal part slightly slanting from costulae toward posterior end, in front gently curved down into basal furrow; area superomedia hexagonal, with costulae nearly in the middle; apices of areae dentiparae a trifle projecting; carinae dentiparae interiores meet area posteromedia far behind area superomedia; spiracles about 4 times as long as wide; mesopleura smooth and shiny, with sparse and fine puncturation.

*Legs*.—Slender and fairly long.

*Wings*.—Nervulus interstitial; areolet as described above (2); radius rather short, nearly straight, apically slightly curved toward margin of wings.

*Abdomen*.—Of female oxypygous, very slender; postpetiole without indication of median field, polished; second tergite much longer than apically wide, shiny, with sparse, moderately fine puncturation, the following tergites shiny, sparsely and finely punctured; thyridia slightly impressed, very large and very wide, the space between them very narrow, with a longitudinal median impression; ovipositor slightly projecting; the extreme apex of abdomen slightly compressed and nearly semiamblypygous.

### 1. *Spinallonotus oweni*, new species

#### Types

*Holotype*.—♀, "Kampala, Uganda, Oct. 1964, Denis F. Owen." Collection H. Townes.

*Paratypes*.—2 ♀♀, same locality. July and Nov. 1964. Collection H. Townes; 2 ♀♀, same locality, June and September 1964. C.G.H. II.

#### Distribution

Uganda.

#### Female

Pale orange; yellow-tinged are: pleura, sterna, coxae and trochanters I and II, sides of face and clypeus, malar space, apex of clypeus, and faintly the lower frontal and the vertical orbits; fifth segment of all tarsi moderately infuscated; flagellum with white annulus; length 7 mm.

*Flagellum*.—Structure as described for the genus; with 35 segments, the first nearly 8 times as long as wide, all considerably longer than wide. Black, with dorsal white annulus on segments 8 (apex) or 9 to 13; scape, pedicel, and basal 4 or 5 segments pale orange, shading gradually on dorsal side into blackish before annulus.

*Head, thorax, legs, wings, abdomen*.—Structure as described for the genus. Color as described above.

### 55. Genus *Pseudoplatylabops*, new genus

*Type species*.—*Ichneumon mundulus* Tosquinet

#### Distribution

South Africa: Cape Province; Ethiopia.

#### Preamble

Related in morphology and color to the Holarctic genus *Pseudoplatylabus* Smits van Burgst, but differing in the structure of propodeum (see below) and in the coarse sculpture of head, thorax, and abdomen. In structure of thyridia similar to the Madagascan species of *Allonotus* Cameron, but strongly differing from them by the lack of notauli and by the structure of propodeum, with the areae dentiparae downward-sloping, not projecting, and the area posteromedia deeply concave.

#### Morphological characters

*Flagellum*.—Of females fairly long, very slender, bristle-shaped, ventrally flattened beyond middle but not at all widened, apically strongly attenuated.

*Head*.—Temple profile fairly wide, only slightly narrowed behind eyes, slightly curved; cheek profile moderately narrowed toward mandible base; cheeks in lateral view wide and convex; carina genalis normal, its lower part swinging in a rather strong curve toward carinal junction and base of mandible; mandibles curved, with pointed upper tooth, the subapical tooth short, bent out of normal horizontal plane with apical tooth and situated nearly in vertical plane with it; clypeus basally con-

vex, otherwise concave, the sides slightly raised, the apical margin leaf-like thinned and gently curved; face, clypeus, and lower part of cheeks coarsely rugose-punctate; antennal cavities large and smooth; frons coriaceous, obliquely-transversely rugose; frons below lower ocellus with slight longitudinal furrow.

*Thorax*.—Mesoscutum strongly convex, coarsely and very densely rugose-punctate and coriaceous. opaque; notauli lacking; scutellum strongly raised above postscutellum, dorsally strongly convex and very coarsely and densely reticulate-rugose, with high lateral carinae; propodeum very densely and coarsely rugose-punctate, the area superomedia with costulae near posterior end, at costulae wider than medially long, very strongly narrowed from costulae toward front, its apical carina strongly curved inward; area posteromedia comparatively narrow, parallel-sided and about twice as long as area superomedia and area basalis together, unusually concave and in contrast to the rest of propodeum shiny, irregularly transversely rugose; areae dentiparae gradually and considerably sloping from costulae toward apices, which are not projecting; carinae dentiparae exteriores, metapleurales, and coxales obsolete; mesopleura coarsely and densely rugose-punctate, opaque, a small speculum indicated.

*Legs*.—Fairly slender.

*Wings*.—Nervulus interstitial; areolet rhomboidal, short petiolate; radius nearly straight.

*Abdomen*.—Of females apically pointed, oxypygous, ovipositor distinctly projecting; postpetiole without distinct median field, medially finely coriaceous, almost smooth, laterally punctured; tergites 2 and 3 coarsely and very densely punctured, subopaque, separated from each other by a distinct suture; the following tergites very finely punctured, somewhat shiny; gastrocoeli indistinct, thyridia large, each wider than the space between them.

### 1. *Pseudoplatylahops mundulus* (Tosquinet), new combination

*Ichneumon mundulus* Tosquinet, 1896, Mém. Soc. Ent. Belg., V, pp. 41-43, ♀.

*Cratichneumon mundulus* Berthoumieu, 1904, Gen. Ins., VIII, p. 39, ♀.

#### *Types*

*Holotype*.—♀, "Capland, Krebs." No. 9395. Z.M.H.U.

#### *Distribution*

South Africa, Cape Province (type locality); Zululand, Mfongosi (S.A.M.).

#### *Female*

Head and thorax ferruginous-red, the collare white-marked, tegulae blackish; abdomen dark red, the 4th and 5th tergites usually blackish, the latter with broad apical white band, the 6th and 7th predominantly white; legs dark rufous; whitish are: tibiae I ventrally, apical margins of trochanters, a mark on ventral side of coxae I; flagellum tricolored, with white annulus; length 11 mm.

*Flagellum*.—Structure as described for the genus; with 33 segments, the first about 4.5 times as long as wide, in lateral view the 16th segment

approximately square, seen from the flat side the widest also approximately square. Light ferruginous, segments 7-12 or to 13 with dorsal white annulus, section behind annulus and about last two segments before annulus blackish-infuscated; scape light ferruginous.

*Head, thorax, legs, wings, abdomen.*—Structure and sculpture as described for the genus. Color as described above.

## 2. *Pseudoplatylabops ethiopiae*, new species

### *Types*

*Holotype.*—♀; "Ambo, Ethiopia, 7500', 3.-6.11.62, S. M. Clark." Canadian National Collection, Ottawa.

### *Distribution*

Ethiopia.

### *Female*

*Head and thorax* dark ferruginous, *collare* not white-marked, *tegulae* blackish, *prosternum* infuscated; *abdomen* black, the fourth tergite with narrow, the fifth with broad, apical white band, the sixth and seventh tergites predominantly white; *legs* dark rufous, all *tarsi* and dorsal side of all *tibiae* blackish; *tibiae* I ventrally and apical margins of *trochanters* I and II narrowly whitish; *trochanters*, *coxae*, and dorsal side of *femora*, partially infuscated; *flagellum* tricolored; length 8 mm.

*Flagellum.*—Structure as described for the genus; with 33 segments; proportions and color as in *mundulus* Tosquinet.

*Head, thorax, legs, wings, abdomen.*—Structure as described for the genus. Color as described above.

### *Note*

Differs from the South African species *mundulus* only by the black (except red first tergite) *abdomen* and by smaller size. A subspecific relation of the two forms seems possible.

## ADDENDA and CORRIGENDA

VI. Tribe *Listrodromini*31. Genus *Neotypus* Foerster3. *Neotypus angolensis* Heinrich

This species was originally separated from *semirufus* Kriechbaumer mainly on the difference in structure of claws III, which are distinctly pectinate in the holotype of *angolensis*, not pectinate in the few females of *semirufus* at hand at the time of the treatment of the two species.

Recently, when Volume II of this monograph was already in the press, I received a large series of about 25 females from Uganda, containing a majority of specimens with distinctly pectinate claws, and a minority with them not noticeably so. I was unable to detect any other reliable differences between the two categories, which, according to my original diagnosis and key (pp. 268, 274), would have to be identified as the two species *angolensis* and *semirufus*. The broad series from Uganda gives the impression that it represents just one species, and I am now inclined to believe that in this species the pectination of claws varies individually (in a parallel to the case of another listrodromine, *Jacotitypus exquisitus* (Tosquinet), see p. 291; if so, *angolensis* would be a synonym, or possibly a chromatically slightly different subspecies of *semirufus*. The matter needs further attention.

7. *Neotypus septimus*, new species*Types*

*Holotype*.—♀, "Kampala, Uganda, April 1965, Denis F. Owen." Collection H. Townes.

*Distribution*

Uganda.

*Preamble*

Chromatically similar to *semirufus* Kriechbaumer, but clearly different as a species in structure by obsolete sternauli, longer flagellum (24 segments) with more elongate and slenderer segments, considerably larger size, and in color by a longitudinal white band on exterior side of coxae III. In size and the lack of distinct sternauli similar to *cottrelli* Benoît, but strongly differing in structure and color of flagellum, and in uniformly red head with only base of mandibles white.

*Female*

Head and thorax uniformly red, without white markings, except white base of mandibles; abdomen black, tergites 1 and 2 with latero-apical white marks, tergites 4-7 with laterally abbreviated apical white bands, basic color of first tergite red; tibiae I and II dorsally, coxae I and II predominantly, white, coxae III with broad longitudinal white band on exterior side from base to apex; flagellum with dorsal white annulus and pale ferruginous-orange base; length 9 mm.



*Flagellum*.—Structure as described for the genus; rather slender, longer than in *semirufus* and *cottrelli*, in contrast to these two species all segments distinctly longer than wide. Black, with dorsal white annulus on segments 8 (apex) to 12 (base), segments 1-3 pale ferruginous-orange, scape only ventrally so colored.

*Head*.—Structure as described for the genus; clypeus without noticeable median projection. Uniformly red, except base of mandibles white.

*Thorax*.—Structure as described for the genus; scutellum rather strongly raised above postscutellum and dorsally strongly convex; anterior fourth of notauli fairly distinct, sternauli obsolete (both in contrast to *semirufus*); spiracles of propodeum comparatively small and nearly circular; area posteromedia rather deeply impressed; area superomedia medially about twice as wide as long, with costulae close to area posteromedia, strongly narrowed toward area basalis, not clearly separated from it in holotype. Uniformly red.

*Legs*.—All claws long, strongly and very clearly pectinate. Black; legs III black except longitudinal white band on exterior side of coxae III; white are also: coxae I and II predominantly, dorsal side of tibiae I and II, and apex of femora I on anterior side; basic color of femora I and of tarsi I and II dark brown.

*Wings*.—As described for the genus; nervulus slightly antefurcal.

*Abdomen*.—Structure as described for the genus; apex of postpetiole and tergites 2 and 3 strongly and fairly densely punctured, ovipositor hidden. Color as described above.

### 32. Genus *Deuterotypus* Heinrich

#### 4. *Deuterotypus congolensis*, new species

##### *Types*

*Holotype*.—♀, "Kabongo, Belgian Congo, Nov. 1953, Ch. Seydel." Collection H. Townes.

##### *Distribution*

Congo.

##### *Preamble*

The only known species with uniformly light ferruginous basic color of the entire body, including abdomen. Scutellum ascending into a medio-apical pyramidal elevation as in *lycaenarum* and *aethiopicus* Heinrich, but (in contrast to the former species) lateral carinae only slightly prominent.

##### *Female*

*Head, thorax, and abdomen light ferruginous-red, only prosternum and mesosternum to sternauli black; tergites 3-7 with broad, laterally abbreviated apical yellowish-white bands; coxae I and II predominantly and an apical mark on ventral side of coxae III white; base of coxae I and II, ventral side of coxae III, all trochanters, tarsi II and III, and dorsal side of tibiae II and III slightly to moderately infuscated, anterior side of tibiae I and II and of apices of femora I and II ivory; flagellum without white annulus; length 9 mm.*

*Flagellum*.—Structure as described for the genus; with 24 segments, the first considerably shorter than the second, the 15th approximately square. Light ferruginous-orange, without annulus.

*Head*.—Structure as described for the genus. Uniformly light-ferruginous, without white markings.

*Thorax*.—Structure as described for the genus; anterior third of notauli distinct; scutellum apically ascending into a pyramidal elevation, the top of which is formed by an apically pointed ridge; lateral carinae of scutellum only moderately raised, continuing apically down the sides of the vertical apical slope of the scutellum to postscutellum. Light ferruginous, with only prosternum and mesosternum to sternauli black.

*Legs and wings*.—As described for the genus. Color of legs as described above.

*Abdomen*.—Structure as described for the genus; tergites 4-7 distinctly compressed; gastrocoeli about as long as wide. Color as described above.

### VIII. Tribe *Ctenocalini*

#### 43. Genus *Ctenocalops* Heinrich

Additions to treatment of genus, p. 389.

*Flagellum*.—Of males slender, apically strongly attenuated, with very slender, elongate apical segments, slightly nodose, segments with transverse bristle-ridges on ventral side, with a row of extremely small, barely visible (at 60 times magnification) tyloids.

*Abdomen*.—Hypopygium of males wide, nearly truncate, protruding very slightly in an obtuse angle.

#### 1. *Ctenocalops fossifrons* (Morley) (description of male)

*Neallotype*.—♂, "Zika Forest, Mengo, X.18.'63, Uganda, G. A. Lancaster." Collection H. Townes.

*Distribution*

Uganda.

#### *Preamble*

The specimen described below comes from the same country where the holotype was collected, and shares with it the general distribution of color and the details of light markings; hence, the specimens can in all probability be regarded as the sexes of the same species, although the color of the light markings is yellow in the holotype, white in the male.

#### *Male*

*Head white, with the following black parts: middle of frons broadly, ocellar, occipital, and temple regions; white on orbits narrowly interrupted on vertex and on temples; thorax dorsally and ventrally predominantly black, the pleura predominantly white; mesoscutum with two short white median lines, the postscutellum, sides of scutellum, and the area posteromedia, white; abdomen predominantly ferruginous-red, the seventh tergite with narrow apical white band, the petiole whitish, postpetiole black, tergites 2 and 3 dorsally infuscated in part; coxae and trochanters I and II*

white, coxae III black, apically white; femora and tibiae predominantly red and light brown, the tarsi II and III black; flagellum without annulus; length 14 mm.

*Flagellum*.—With 41 segments, slightly nodose; extremely small, barely visible tyloids on about segments 6-14. Black, without annulus; scape uniformly black.

*Head*.—Color as described above; there is a narrow black line on malar space and another median black line on upper part of face; mandibles white, the teeth black.

*Thorax*.—Color as described above; pronotum black, with collare, pronotal ridge and base, and the lateral inferior triangle of propleura, white; mesopleura white with a black band below subalarum almost completely surrounding the speculum; metapleura white, with a large black mark on anterior lower part extending downward onto metasternum; prescutellar carinae and extreme apex of scutellum also white.

*Legs*.—Color as described above; dorsal side of tibiae III, apex of femora III, and a narrow dorsal longitudinal line on femora III blackish-infuscated; trochanters III predominantly black; tibiae I and II dorsally slightly infuscated; femora I and II light ochreous-brown; coxae III narrowly white apically on ventral side, broadly dorsally white on interior surface.

*Wings*.—Nervulus postfurcal; areolet rhomboidal, short-petiolate.

*Abdomen*.—Color as described above.

#### 4. *Ctenocalops ruficeps*, new species

##### *Types*

*Holotype*.—♀, "Kampala, Uganda, Jan. 1966, Denis F. Owen." Collection H. Townes.

*Allotype*.—♂, same locality, November 1964. Collection H. Townes.

*Paratypes*.—3 ♀♀, 7 ♂♂, same locality, March 1964 to June 1965. Collection H. Townes; 2 ♀♀, 5 ♂♂, same locality, October 1964. C.G.H. II.

##### *Distribution*

Uganda.

##### *Preamble*

This form is closely related to *brevicillus* Tosquinet from Zanzibar; these two are the only species of the genus with white-banded tergites 5-7; *ruficeps* differs from *brevicillus* mainly by the red color of head (instead of black) with only a black patch on each lateral field of face and usually completely without white markings (exceptionally with a yellowish dot on vertical orbits). Apparently the vicariant form of *brevicillus*, but tentatively treated as a full species. Strikingly variable in size.

##### *Female*

Head red, only lateral fields of face more or less extensively black-marked; exceptionally temple orbits with yellowish dot; thorax red, only prosternum and tegulae extensively black, tergites 1-3, or at least 1-2 red, the following tergites black, the third often partially blackish-infuscated,

the sixth and seventh predominantly white, the fifth with apical white band; all trochanters, tarsi II and III, and usually all coxae black, the coxae often partially red; legs III predominantly black, the tibiae III often ventrally, the femora III often laterally red-brown; tibiae and femora I and II and the tarsi I predominantly brown; flagellum with white annulus; length 8-11 mm.

*Flagellum*.—Bristle-shaped, slender, strongly attenuated toward apex, only slightly widened beyond middle, with 37-42 segments, the first fully 4 times as long as wide, the 14th approximately square, the widest 1.3-1.5 times as wide as long. Black, with dorsal white annulus on segments 7 (apex) to 13 or (usually) 14 (base); scape predominantly ferruginous-red.

*Head*.—Structure as described for the tribe; malar space slightly shorter than width of mandible base; frons a trifle raised medially, with a very slight median longitudinal impression; median field of face slightly protruding, separated from the clypeus by a faintly indicated transverse depression; face and clypeus coarsely and moderately densely punctured, shiny. Color as described above.

*Thorax*.—Structure as described for the genus; notauli pronounced, extending over the entire length of mesoscutum; mesoscutum and scutellum very coarsely and rather densely punctured, shiny; transverse basal furrow of scutellum filled with dense, longitudinal ribs; mesopleura and metapleura coarsely and very densely rugose-punctate, opaque, the speculum strongly protruding and polished. Color as described above.

*Legs*.—Moderately long, fairly slender; coxae III without tooth; base of all claws with short pectination. Color as described above.

*Wings*.—As described for the tribe.

*Abdomen*.—As described for the tribe; of females semiamblypygous, moderately slender; postpetiole and tergites 2 and 3 very coarsely and extremely densely rugose-punctate. Color as described above.

### Male

*Head* black, usually dorsal parts more or less extensively red, the following white: face, clypeus, frontal orbits, spot on vertical orbits, outer orbits broadly; thorax red, prosternum, tegulae, and prepectus black, the following white: extreme apex of pronotal ridge, upper surface of subalarum, sometimes apex of prosternum; abdomen as in female, but more often entirely black, except only postpetiole red; white apical markings always as in female; legs generally darker than in female, legs III entirely black; coxae I or I and II, and sometimes trochanters I and II, ventrally white, tibiae I and II ivory-tinged in front; flagellum with annulus; length 8-10 mm.

*Flagellum*.—Slender, fairly long, strongly attenuated at apex, with 35-39 segments, the basal and apical segments elongate, nodose, with distinct bristle-ridges on ventral side from fifth segment on, and with a long row of extremely small, hardly distinguishable tyloids on segments 4 to about 15. Black, with almost complete white annulus on segments 9 or 10 (apex) to 14; brownish on ventral side and usually basally also on dorsal side; scape ventrally white.

IX. Tribe *Platylabini* (see also p. 475)16. (?) *Afrectopius holerytreus*, new species*Types*

*Holotype*.—♂, "South Africa, East London, 27.VII.1961." C.G.H. II.

*Distribution*

South Africa: southeastern Cape Province.

*Preamble*

The holotype differs from all the numerous known species of *Afrectopius* Heinrich by the wide, distinctly swollen temples and cheeks, and by the more rounded propodeum (devoid of carination except carina metapleuralis). The clypeus is normal, though slightly less convex as usually in *Afrectopius*. In the key to the genera of the *Platylabini* the species runs to *Neeurylabia*, but it also differs distinctly from that genus, particularly by the small, nearly rounded spiracles of the propodeum, lack of tyloids, and rather normal structure of clypeus. The generic position will remain uncertain until discovery of the female.

*Male*

Almost uniformly light ferruginous; the following white: scutellum, subalarum, very apex of pronotal ridge, and facial orbits up to slightly above antennal sockets; the following black: entire postscutellum, collare, nearly all sutures of thorax; flagellum dorsally brownish, without annulus; length 9 mm.

*Flagellum*.—(Apices missing); without tyloids; the first segment about 3 times as long as wide. Dorsally brownish, ventrally light ferruginous; scape light ferruginous, apically infuscated on dorsal side.

*Head*.—Temple profile not narrowed behind eyes, rounded; occiput and temples not steeply declivous from ocelli and eyes but gradually rounded downward; malar space somewhat longer than width of mandible base; cheeks in lateral view fairly wide and convex; cheek profile moderately narrowed toward mandible base and slightly curved; clypeus normal, moderately convex, with the straight apical border slightly depressed; entire head fairly coarsely and moderately densely punctured all over, shiny. Color as described above; mandibles slightly yellowish-tinged.

*Thorax*.—Mesoscutum strongly convex, coarsely and fairly densely punctured, smooth and shiny between punctures; about anterior fourth of notauli weakly, sternaui scarcely indicated; scutellum strongly raised above postscutellum, strongly convex dorsally, sparsely punctured, laterally carinate; propodeum fairly short and wide, coarsely and densely irregularly rugose-punctate, without distinct carination except carinae metapleurales, and without a trace of projections, gradually rounded toward petiole and also sideways; spiracles of propodeum small, very short, oval, barely twice as long as wide; mesopleura and metapleura densely and coarsely punctured, space between punctures smooth and shiny; subalarum somewhat swollen. Color as described above.

*Legs*.—Moderately slender. Light ferruginous, apical margin of all coxae very narrowly infuscated.

*Wings*.—Nervulus a trifle antefurcal; areolet irregularly rhomboidal, the intercubiti not completely coalescent in front; radius almost straight.

*Abdomen*.—Petiole only slightly wider than high, gradually widening toward spiracles; postpetiole somewhat longer than wide, nearly parallel-sided, smooth and shiny; second tergite extremely finely coriaceous, shiny, without distinct puncturation, except moderately densely punctured on about apical third, with a very narrow, medially interrupted transverse basal impression (rudimental gastrocoeli ?); third tergite fairly densely and distinctly punctured all over; hypopygium bluntly triangular. Uniformly light ferruginous.

#### 46a. Genus *Nimbolabus*, new genus

*Type species*.—*Nimbolabus silvaemontis*, new species

##### *Distribution*

Southwestern Tanganyika: Rungwe Mts.; cloud forest.

##### *Preamble*

The type species agrees with *Afrectopius* Heinrich in the lack of nearly the entire carination of the propodeum and in the small size of the very short, oval spiracles. It is distinguished from *Afrectopius* and from most of the other genera of the tribe by the following characters:

- (1) Clypeus unusually strongly convex basally from side to side, declivous from about middle on toward almost straight apical border.
- (2) Areolet unusually small, irregular, approaching a triangular shape; the intercubiti are practically coalescent in front and the second abscissa of the cubitus is strongly abbreviated (little more than half as long as the first abscissa); the second intercubitus is translucent in type specimen.
- (3) Petiole fairly short and very wide, with very distinct lateral longitudinal edges below and above, and with a distinct longitudinal furrow between these edges.
- (4) Propleura before apex slightly depressed, their apices before tegulae rather strongly protruding.
- (5) Wings with deeply infuscated apical cloud beyond areolet.

So far the only known platylabine of the Ethiopian fauna with banded wings.

##### *Morphological characters*

*Flagellum*.—Long and slender, not at all nodose, with unobtrusive longish-oval tyloids on segments 12-16; all segments much longer than wide.

*Head*.—Temple profile not narrowed behind eyes, broadly rounded; temples not declivous behind margins of eyes, but slightly convex; occiput somewhat depressed behind ocelli; distance from carinal junction to mandible base, malar space, and width of mandible base all of approximately equal length; clypeus as described in preamble; cheeks in lateral view moderately wide and moderately convex; outlines of cheeks straight and narrowed toward mandible base; face with slight longitudinal impression on each side of the median field.

*Thorax*.—Mesoscutum somewhat longer than wide, convex, coarsely and moderately densely punctured, polished between punctures; base of notauli slightly indicated, sternaui fairly distinct; scutellum strongly raised above postscutellum, with vertical apical slope, laterally strongly, apically weakly carinate, dorsally convex, sparsely and coarsely punctured, shiny between punctures; propodeum gradually slanting from basal furrow to the apex, coarsely irregularly rugose, without areolation, only the carinae metapleurales and the carinae dentiparae interiores fairly distinct; apices of areae dentiparae a trifle prominent; spiracles small, about twice as long as wide; metapleura and mesopleura (including most of the speculum) coarsely and fairly densely punctured, shiny between punctures.

*Legs*.—Long and fairly slender.

*Wings*.—Nervulus slightly postfurcal; areolet as described in preamble; radius apically distinctly curved toward border of wings, otherwise straight.

*Abdomen*.—Petiole as described in preamble; spiracles of first tergite very strongly protruding; postpetiole parallel-sided, flat, irregularly longitudinally-rugose; gastrocoeli and thyridia obsolete; second tergite apically about as wide as medially long, fairly densely and coarsely punctured, basally and latero-basally with some irregular rugosity; third tergite also fairly densely and coarsely punctured; hypopygium apically broadly rounded.

### 1. *Nimbolabus silvaemontis*, new species

#### *Types*

Holotype.—♂, "S. Tanganyika, Rungwe Mts., 2600 m, 30.X.62."  
C.G.H. II.

#### *Distribution*

Southwestern Tanganyika: Rungwe Mts., at 2600 m.

#### *Male*

Head black, facial orbits and small spots on frontal orbits white, frontal and vertical orbits reddish; thorax red and black, the following red: mesoscutum (except short longitudinal median black band on median lobe), scutellum (except infuscated middle), mesopleura (except infuscated inferior half), exterior part of prepectus, and lateral slopes of postscutellum; abdomen black, sixth tergite with apical white band, seventh tergite predominantly white; legs predominantly black; flagellum with white annulus; length 9 mm.

*Flagellum*.—With 34 segments. Black, with complete white annulus on segments 11 (apex) to 16; basally brownish on ventral side.

*Head*.—Face, clypeus, and cheeks coarsely and rather densely punctured, middle of face longitudinally rugose-punctate; frons below ocelli finely irregularly transversely rugose. Color as described above; clypeus and cheeks faintly reddish-tinged.

*Thorax*.—Color as described above; lowest section of propleura and the metapleura faintly red-tinged.

*Legs*.—Black; base of all femora and the apices of all tarsal segments narrowly reddish; apical margins of all trochanters whitish; all coxae partially faintly red-tinged.

*Abdomen*.—Color as described above.

**XI. Tribe Acanthojoppini****53a. Genus *Phaisurellops*, new genus**

*Type species.*—*Phaisurellops rugifrons*, new species

**Distribution**

Tropical West and East Africa.

**Preamble**

Evidently closely related to the Madagascan genus *Phaisurella* Heinrich. Differs by the following characters: (1) frons extensively coarsely and irregularly rugose (smooth in *Phaisurella*); (2) antennal cavities present though small; (3) basal part of notauli not sharply incised but indicated only by a longitudinal depression; (4) scutellum much more raised above postscutellum, carinate also apically, with deep, vertical apical slope; (5) ovipositor unusually long, longer than tergites 6 and 7 together; (6) apical tooth of mandible considerably shorter and less curved, mandibles not quite as strongly twisted; (7) propodeum more abbreviated.

The type species is a small, slender insect of almost uniformly light ferruginous-orange color with extensively yellowish-white head and tarsi III. The West African and East African populations are so alike in color, structure, and sculpture that at first even a subspecific separation did not seem feasible. Then examination of the flagellum of males revealed a difference in structure of the tyloids so striking and fundamental, that I feel compelled to treat the two populations as full species, although I am not able to distinguish the females.

**Morphological characters**

**Flagellum.**—Of females long, very slender, bristle-shaped, not at all widened beyond middle, strongly attenuated at apex, with very elongate basal segments. Of males likewise slender and strongly attenuated at apex, distinctly nodose, with distinct bristle-ridges on ventral side of segments (except some basal segments), and with a long row of extremely large (West Africa) or extremely small (East Africa) tyloids.

**Head.**—Temple profile moderately narrowed behind eyes, slightly curved; cheeks in lateral view fairly wide, convex; malar space in females nearly as long as width of mandible base, in males distinctly shorter; clypeus with slightly oblique sides and approximately straight apical border, basally a trifle convex and punctured, apically somewhat depressed, polished, with thinned apical border; mandibles narrowed, with fairly small teeth, the apical tooth somewhat curved, moderately long, the subapical tooth twisted backward out of normal relation to the apical tooth; face fairly coarsely and densely punctured, very slightly protruding medially; frons extensively densely and coarsely rugose-punctate, with fairly distinct median longitudinal furrow; vertex and occiput rather densely and moderately coarsely punctured; antennal cavities distinct although small.

**Thorax.**—Mesoscutum longer than medially wide and rather strongly convex, coriaceous and very densely punctured, opaque; anterior third of notauli indicated by shallow longitudinal impressions, sternaui indistinct; scutellum strongly raised above postscutellum, with vertical apical slope, laterally strongly carinate, apically weakly, dorsally only slightly convex,



coarsely irregularly rugose and punctate; propodeum with complete carination, except area basalis and sometimes costulae indistinct; lateral and apical carinae of horizontal part usually more prominent than the rest of carination; area posteromedia considerably longer than horizontal part medially; area superomedia hexagonal, about as long as wide or slightly longer than wide, with costulae somewhat before middle, moderately narrowed from costulae toward area basalis; apices of areae dentiparae slightly projecting; carinae dentiparae exteriores and interiores straight and distinct, area basalis indistinct; spiracles small, oval 3-4 times as long as wide; mesopleura rugose-punctate and irregularly longitudinally rugose, shiny, with large, polished speculum; metapleura shiny, finely and fairly sparsely punctured.

*Legs*.—Slender and fairly long; coxae III without scopa, finely and densely punctured.

*Wings*.—Nervulus interstitial; areolet rhomboidal; radius straight.

*Abdomen*.—Fairly narrow, the second tergite medially markedly longer than apically wide; postpetiole shiny, without puncturation, the median field slightly indicated, extremely finely coriaceous; thyridia indicated but not distinctly defined; second and third tergites extremely finely coriaceous, very finely and moderately densely punctured, distinctly shiny; ovipositor unusually long, longer than tergites 6 and 7 together.

### 1. *Phaisurellops rugifrons*, new species

#### *Distribution*

Northwestern and northeastern Angola.

#### *Preamble*

This species is separated from the East African *geminus*, new species, only by the striking difference in structure of the tyloids, which are very large, elongate-oval, present on segments 5 or 7 to 20 or 21, the longest (on segments 10-15) reaching nearly from bases to apices of segments.

#### *Female*

Almost uniformly light feruginous-orange; yellowish-white are only: base of mandibles, clypeus, face, orbits around eyes, and tarsi III extensively; the limits of light orange basic color and yellowish-white markings are not clearly defined; sometimes lateral field of horizontal part of propodeum and indistinct longitudinal median bands on lateral lobes of mesoscutum slightly infuscated; flagellum with white annulus; length 8 mm.

*Flagellum*.—Structure as described for the genus; with 32-33 segments, the first nearly 6 times as long as wide, all longer than wide. Black, with dorsal white annulus on segments 8-14 (base), segments 1-4 ventrally pale ochreous, dorsally brownish; scape pale orange.

*Head, thorax, legs, wings, and abdomen*.—Structure and sculpture as described for the genus. Color as described above.

#### *Male*

As in female; flagellum with white annulus and basic color of metatarsus III ferruginous in nominate form, flagellum without annulus and

basic color of metatarsus III and second segment of tarsi III black in specimen from Dundo (northeastern Angola).

**Flagellum.**—Structure as described for the genus; with 34 segments; large elongate-oval tyloids on segments 7 to 21, the longest (on segments 10-15) reaching nearly from bases to apices of segments. Black, with dorsal white annulus on segments 10-14, ventrally pale ochreous-orange, except section beyond annulus; section before annulus dorsally ochreous at base, then gradually shading into brownish; scape pale ferruginous-orange.

### 1a. *Phaisurellops rugifrons rugifrons*, new subspecies

#### Types

**Holotype.**—♂, "Roca Canzele, Angola, 30 km nördl. Quiculungo, III.54." C.G.H. II.

**Allotype.**—♀, Angola, south of Gabela, 15.VIII.55. C.G.H. II.

**Paratype.**—1 ♀, same locality as holotype. C.G.H. II.

#### Distribution

Northwestern Angola.

#### Male

**Flagellum** with dorsal white annulus; metatarsus III, except yellowish-white apex, ferruginous.

#### Female

**Thorax** in allotype uniformly ferruginous-orange, in paratype with slightly infuscated lateral fields of horizontal part of propodeum and lateral lobes of mesoscutum.

### 1b. *Phaisurellops rugifrons dorado*, new subspecies

#### Types

**Holotype.**—♂, "Angola, Dundo, Distr. Lunda, Febr.-April 1958." C.G.H. II.

#### Distribution

Northeastern Angola.

#### Male

**Flagellum** without annulus; metatarsus III and the second segment of tarsi III predominantly black.

### 2. *Phaisurellops geminus*, new species

#### Types

**Holotype.**—♂, "Tanganyika, E. Usambara Mts., Amani." C.G.H. II.

**Allotype.**—♀, "Tanganyika, W. Usambara Mts., 1600 m, Lushoto, II.1962." C.G.H. II.

**Paratypes.**—2♂♂, same locality as holotype. Collection H. Townes.

#### Distribution

Northern Tanganyika: Eastern Usambara Mts. (type locality) and Western Usambara Mts., at 1200-1600 m.

### Preamble

Differs from West African *rugifrons* Heinrich only by the structure of tyloids, which are very small, extremely narrow, bacilliform, and present only on segments 10 or 11 to 16. Structure, sculpture, and size in both sexes as in *rugifrons*, color barely different.

### Male

Color as described for the species *rugifrons*, but a shade lighter; yellowish-white on orbits less distinct and lacking on temple orbits; yellowish-white on face faintly orange-tinged; flagellum with white annulus; tarsi III yellowish-white, the base or most of the metatarsus pale orange.

*Flagellum*.—Structure as described for the genus; with 33 segments; very small and narrow bacilliform tyloids on segments 10 or 11 to 16. Black, with almost complete white annulus on segments 9 or 10 to 15 or 16, section before annulus dorsally brownish, ventrally pale ochreous-orange, section beyond annulus black; scape pale ferruginous-orange.

### Female

Color as in male, except that the middle of face and the clypeus (except narrowly whitish sides) are more distinctly pale ferruginous-orange instead of yellowish-white.

## IX. Tribe Platylabini

### 3. *Spanophatnus bicinctorius* (Thunberg)

In the treatment of the tribe (p. 393) *Ichneumon bicinctorius* has been mentioned as belonging to the genus *Affectopius* Heinrich. The generic position of the species has later been changed to *Spanophatnus* Cameron.

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