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THE ORTHOTYLINAE AND PHYLINAE (HEMIPTERA:
MIRIDAE) OF SOUTH AFRICA WITH A PHYLOGENETIC
ANALYSIS OF THE ANT-MIMETIC TRIBES OF THE
TWO SUBFAMILIES FOR THE WORLD

RANDALL TOBIAS SCHUH

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RANDALL T. SCHUH²

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**PART 2. A PHYLOGENETIC ANALYSIS OF THE ANT-MIMETIC TRIBES
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ABSTRACT: This study is divided into two parts: 1) a faunal study of the Orthotylinae and Phylinae of South Africa; and 2) a phylogenetic analysis of the tribal classification of the two subfamilies for the world. Much new information on the relationships of these taxa is derived from the South African fauna.

In South Africa the Orthotylinae and Phylinae are represented by 54 genera, 20 of which are described as new, and 103 species, 81 of which are described as new. Of the genera occurring in South Africa, 15 percent of the Orthotylinae and 34 percent of the Phylinae are ant mimetic. Generic keys are presented for the Orthotylinae and Phylinae of Africa south of the Sahara; keys to the species are given for those genera occurring in South Africa.

A zoogeographic analysis reveals that the fauna of South Africa is composed of endemic, tropical African, Paleotropical, pantropical, and cosmopolitan elements. The endemic element is the largest and is concentrated in the Southwest Cape and along the Drakensberg Escarpment.

Three tribes are recognized in the Orthotylinae—the Halticini, the Nichomachini, new tribe, and the Orthotylini. The Pilophorini, which have been placed in the Orthotylinae by all previous authors, are moved to the Phylinae, in which four tribes are recognized—the Hallodapini, the Leucophoropterini, new tribe, the Phylini, and the Pilophorini. The classification of the Miridae is discussed briefly. A morphological description and discussion of the phylogenetic and zoogeographic relationships are presented for each tribe. A discussion of each included genus is given for the primarily ant mimetic tribes Nichomachini, Hallodapini, Leucophoropterini, and Pilophorini. In the remaining tribes only those genera which must be moved relative to their placement in the Carvalho System of Classification are discussed in detail.

INTRODUCTION

This study had its origin in 1967–1968 when I had the opportunity to spend nearly a year in the field in South Africa collecting and observing the Miridae of the area. It soon became evident that the South African fauna was not only large and varied, but very poorly known, and that it contained a number of elements, knowledge of which was fundamental to a more mature understanding of the phylogeny and zoogeography of the Miridae as a whole.

My decision to approach the work in the format presented here has been based on the following premises: 1) that the current bases for placing genera in the Phylinae and Orthotyliinae were unsatisfactory; and 2) that the many ant-mimetic genera in the two subfamilies appeared to have been placed in the taxonomic hierarchy on the basis of shared mimetic characters of a superficial nature rather than on features of a more fundamental phylogenetic significance. Therefore, this paper is divided into two sections: a faunal and biological study of the Orthotyliinae and Phylinae of South Africa with an analysis of the taxonomic relationships and distributions of the genera and species of the region; and an analysis of the phylogeny, taxonomy, and zoogeography of the ant-mimetic tribes and genera of the two subfamilies, not only for South Africa, but for the entire world.

The Orthotyliinae and Phylinae are especially intriguing phylogenetically because 1) a relationship between the two subfamilies has been observed by most students of the Miridae (Reuter, 1905a; Slater, 1950; Wagner, 1955; Kelton, 1959b; Leston, 1961), but has never been carefully documented; 2) the subfamily Orthotyliinae has for some time been known to contain a number of possibly unrelated elements (Slater, 1950; Kelton, 1959b), but these have never been comprehensively reviewed; and 3) large numbers of ant-mimetic genera occur in both subfamilies but the phylogenetic relationships among these genera and their relationships to non-mimetic genera are very poorly understood.

In South Africa two genera (15 percent) in the Orthotyliinae and 14 genera (34 percent) in the Phylinae are ant mimetic. On a world basis approximately 20 (17 percent) of the orthotyline genera and 53 (24 percent) of the phylinae genera are ant mimetic. This high proportion of mimetic genera in South Africa, particularly in the Phylinae, identifies the area as one of active ant-mimic evolution and one suitable for studies involving the phenomenon. In addition, the extremely diverse nature of the South African flora,

in light of the strong host plant specificity of the Miridae, enhances the area's attractiveness as one in which to develop a greater systematic knowledge of the Orthotylinae and Phylinae and to begin phylogenetic studies.

METHODS AND MATERIALS

Throughout this study I have employed standard taxonomic procedures. All measurements were taken with an ocular micrometer and are in millimeters. The line drawings were made with the aid of a squared grid at 150 \times using a Leitz binocular dissecting microscope and all are reproduced to the same scale. The phallus is illustrated in a lateral view with the phallobase to the left, unless otherwise indicated. Consistency of orientation was attained by viewing the phallobase laterally and superimposing the two sides of the bilaterally symmetrical structure. In almost all cases this presents the most useful view of the vesica for comparative purposes. In a few cases other views of the vesica are given where the conventional orientation does not show the most useful structural details. The left clasper and phalotheca in the Phylinae are all illustrated in a lateral perspective. The right clasper is always drawn in such a view as to expose the greatest surface area. Consistency of orientation is more difficult with the claspers of the Orthotylinae but the view is usually obvious or explained in the figure captions. The posterior wall and sclerotized rings of the females are drawn showing their orientation relative to the ovipositor valves. Where genitalic structures are similar for all species of a given genus the structures under consideration are illustrated for only one or a limited number of species. All photographic illustrations were made with a Wild M-4 photomicrographic apparatus at 12.5 \times on Kodak Panatomic-X 35 mm. film and reproduced to the same scale.

I have relied heavily on the Carvalho Catalogue of the Miridae of the World (Carvalho 1952a; 1958a, b; 1960). This invaluable work brings together taxonomic references on the Miridae up to 1955.

A list of taxa treated in the South African faunal study is given below. These names are often cited in abbreviated form elsewhere in the text to conserve space. For each of these taxa I have included a complete citation for the original description. For genera treated in detail in the tribal analysis, a complete citation is included only for those not included in the Carvalho Catalogue. No references

are given between the date of original description (if before 1955) and 1955 unless they pertain to new synonymy or were omitted from the Carvalho Catalogue. All South African locality data are listed in a somewhat abbreviated form, except in the case of new species where the holotype data are transcribed from the specimen labels as accurately as possible, with the exception of abbreviated words. Collectors are listed by surname in parentheses at the end of the locality data. If no collectors are listed and the dates are 1967–1968 the specimens were collected by J. A. Slater, M. H. Sweet, S. T. Slater, R. T. Schuh, and in some cases J. Munting. Abbreviations of collections where specimens are deposited are listed in parentheses at the end of the locality data.

All keys are strictly utilitarian and I have made no attempt to show phylogenetic relationships in them. Where possible, if a couplet breaks out a higher category, this is indicated. In many cases genera are keyed out more than once. I have tried to avoid the use of sexual characters or those that require dissections, but in some cases this has not been possible.

The graphs used to depict distributional patterns follow Wygodzinsky (1966). As in Wygodzinsky's work, the hatched boxes represent endemic genera and the numbered boxes indicate more widespread genera and show the number of faunal regions in which a genus occurs. Papua is included in the Oriental Region, because the very limited number of taxa known from that area appear to have their strongest affinities with the mainland Oriental fauna. The Ethiopian Region includes Africa south of the Sahara and Madagascar.

At the end of each tribal analysis is included a section entitled "Discussion of individual genera". For the Orthotylini, Halticini, and Phylini I have included only ant-mimetic genera or genera that must be moved from their position in the Carvalho classification; the latter are marked with an asterisk. A complete generic listing is given for the primarily ant-mimetic tribes Nichomachini, Halodapini, Leucophoropterini, and Pilophorini. A terminal listing of genera *incertae sedis* and "misplaced genera" is also included for the Orthotylinae and Phylinae as defined in the Carvalho Catalogue.

The geographic area included in the South African faunal study encompasses the Republic of South Africa, Swaziland, Lesotho, and South West Africa. Some taxa from outside this area are discussed where they are either closely related to genera or species from South Africa or where it is probable that they may eventually be found there. They are placed at the end of the appropriate genus or tribe.

Data for this research were gathered from several sources. A large number of specimens were collected by J. A. Slater, M. H. Sweet, and myself from October 1967 to May 1968. During this time we worked intensively in most areas of South Africa except the arid western regions and South West Africa. The major additional sources of information for South Africa were the South African National Collection of Insects, Pretoria, the South African Museum, Cape Town, the Transvaal Museum, Pretoria, the Lund University Zoological Institute, Lund, Sweden, and the British Museum (Natural History), London.

Many Reuter and Poppius types important to this study are in the Helsinki Museum and I have relied heavily on this extremely valuable collection. Poppius (1914a; 1921) indicated that some of his type specimens were deposited in collections other than Helsinki. Most important were the Paris Museum and the Berlin-Humboldt Museum. I have determined, with the generous assistance of all curators concerned, that in fact most of the specimens which Poppius studied were never placed in the museums indicated. This was apparently a result of the outbreak of World War I. The specimens in question are all deposited in Helsinki and for the most part are in excellent condition. Where appropriate I have corrected Poppius' original statements and given the present location of the types. In many cases where original series of two, three, or four specimens were indicated, now only a single specimen can be found. The whereabouts of the remaining specimens are unknown, for I could not locate them after much searching. In all cases where I have been able to find only a single specimen of what was originally a co-type series of two or more specimens, I have designated the specimen as a lectotype.

Institutional and private collections from which I have borrowed material are listed below with the abbreviations used in the locality records in the text.

AMNH	American Museum of Natural History, New York
BM (NH)	British Museum (Natural History), London
CAS	California Academy of Sciences, San Francisco, California
HM	Helsinki Zoological Museum, Helsinki, Finland
JAS	J. A. Slater Collection, University of Connecticut, Storrs, Connecticut

LU	Lund University Zoological Institute, Lund University, Lund, Sweden
PM	Museum National D'Histoire Naturelle, Paris, France
RTS	R. T. Schuh Collection
SAM	South African Museum, Cape Town, South Africa
SANC	South African National Collection of Insects, Pretoria, South Africa
TM	Transvaal Museum, Pretoria, South Africa
USNM	United States National Museum, Washington, D. C.

TERMINOLOGY

Cobben (1968) discussed pretarsal nomenclature in the Hemiptera and concluded on morphological grounds that the structures arising between the tarsal claws in the Miridae are not true arolia and proposed the use of the term *parempodia*. For pseudarolia Cobben used the term *pulvilli*. Goel and Schaefer (1970) came to the same conclusions as Cobben, apparently independently, for they did not cite him.

Although there is justification for the argument that use of the terms *parempodia* and *pulvilli* in the Miridae is unnecessary substitution for the long-standing terms *arolia* and *pseudarolia* (Knight, 1918), the arguments for the change seem stronger. Cobben (1968) noted that true *arolia* do exist in the Hemiptera, notably in the Amphibicorisae. If the term *arolia* is used in non-Amphibicorisan families, a new term will have to be coined for the true *arolia*. The term *pseudarolia* is used only in the Miridae to apply to apparently homologous structures called *pulvilli* in most groups. Little confusion should arise in the Miridae because the change involves only a simple substitution of terms and not a reevaluation of the morphology of the structures (see also discussion under *Paramixia*, below).

I have adopted the terminology of Kelton (1959b) for the male genitalia and that of Slater (1950) and Davis (1955) for the female genitalia. Other terminology is more or less standard in the modern hemipterological literature.

NOMENCLATURE

Although the Carvalho Catalogue of the Genera of Miridae of the World (Carvalho, 1952a) was issued long before the most recent International Code of Zoological Nomenclature (1964), the

subfamily and tribal names applied by Carvalho in the Orthotylinae and Phylinae are correct. Many of these names were changed before 1961 to agree with the oldest included genus. All have received general acceptance subsequently and therefore are valid under Article 40A of the Code.

I am considering publication of names in the Carvalho Catalogue (1958a, b) to represent introduction into the primary zoological literature. If this was not done many of the names published by Poppius (1914a) would have to be considered as forgotten under Article 23b of the Code or they would have to be referred to the International Commission. Most previously described taxa in this paper illustrate the general inapplicability of Article 23b, particularly in entomology, and I have therefore not strictly followed the Code on this point.

PART 1. THE ORTHOTYLINAE AND PHYLINAE OF SOUTH AFRICA

HISTORICAL REVIEW

The only monographic treatment of the Miridae of the Ethiopian Region is Poppius' "Die Miriden der Äthiopischen Region" (1912; 1914a). In this work Poppius detailed the knowledge of the Miridae of Africa, Madagascar, and the adjacent islands of the Atlantic and Indian Oceans. Previous to this only a handful of small papers had treated the African Miridae.

Poppius (1914a) recorded 41 genera, 19 of which were described as new, for the Orthotylinae and Phylinae south of the Sahara. From 1914 to 1955 only five new genera and 13 new species of Orthotylinae and Phylinae were described from Africa, and very little additional information was added to the literature regarding previously recorded species. With the inception of the work of T. R. Odhiambo in 1958, the status of the African Miridae began to change rapidly. From 1955 to 1971, nine new genera and 50 new species of Orthotylinae and Phylinae were described from Africa south of the Sahara. The total number of genera in these two subfamilies now recorded from Ethiopian Africa, including those described below, stands at 68.

The publication of the South African Animal Life Series beginning in 1955 has greatly increased our knowledge of many groups of animals in South Africa, and it is certainly the most significant contribution to South Africa entomology in recent years. Unfortunately the mirid chapter (Carvalho, et al., 1960) was based solely on the original Brinck and Rudebeck collections and is therefore

incomplete. The neglected nature of the South African fauna is revealed in the fact that previous to 1960 and the publication of the Miridae section of the South African Animal Life Series, only nine genera and nine species of Orthotylinae and Phylinae were recorded from the region. Carvalho, et al. (1960) recorded 11 genera, none of which were described as new, and 12 species, one of which was described as new.

In the following treatment, of the 54 genera I record from South Africa, 20 (37%) are described as new and only 17 were previously recorded from the area. Of the 103 species, 81 (79%) are described as new and 14 were previously recorded from the region (species of *Orthotylus*, *Psallus*, and *Campylomma-Sthenarus* are not included in these figures). In addition, there are several apparently undescribed genera available in collections, but in all cases the material is either inadequate or its relationships too obscure to allow for description at the present time.

CHECKLIST OF GENERA AND SPECIES

Subfamily Orthotylinae

Tribe Halticini

- Namaquacapsus*, new genus
 - melanostethoides*, new species

Nanniella Reuter

Halticus Hahn

Nichomachini, new tribe

- Nichomachus* Distant
 - minutus*, new species
 - rufescens*, new species
 - sloggetti* Distant
 - sweeti*, new species
- Pseudonichomachus*, new genus
 - capeneri*, new species
 - mimeticus*, new species

Tribe Orthotylini

Cyrtorhinus Fieber

melanops Reuter

Felisacodes Bergroth

bryocorina (Poppius)

Orthotylus-complex

Pseudambonea, new genus

capeneri, new species

Pseudoloxops Kirkaldy

transvaalensis, new species

· *Pseudopilophorus*, new genus

· *capeneri*, new species

· *Zanchiella*, new genus

· *bowkeriae*, new species

· *capensis*, new species

· *ericae*, new species

· *natalensis*, new species

· *sweeti*, new species

Zanchius Distant

· *alba*, new species

· *buddleiae*, new species

· *leucosideae*, new species

· *nigrolineatus*, new species

Subfamily Phylinae

Tribe Hallodapini

Acrorrhinium Noualhier

· *brincki* Carvalho and Becker

· *capensis*, new species

· *drakensbergensis*, new species

· *formicarium* (Poppius)

· *incrassata*, new species

· *monticola*, new species

· *muntingi*, new species

· *oudtshoornensis*, new species

Azizus Distant

· *oculatus* (Poppius)

· *Carinogulus*, new genus

· *hobohmi*, new species

· *kochi*, new species

· *transvaalensis*, new species

· *varii*, new species

Formicopsella Poppius

· *regneri* Poppius

Hallodapus Fieber

· *albofasciatus* (Motschulsky)

· *pseudosimilis*, new species

· *quadrinaculatus*, new species

· *similis* (Poppius)

· *transvaalensis*, new species

· *dispar* (Odhiambo), new combination, extralimital

· *poseidon* (Kirkaldy), extralimital

· *vittatus* (Odhiambo), new combination, extralimital

Laemocoris Reuter

Myombea China and Carvalho

· *bathycephala* China and Carvalho

Pangania Poppius*fasciatipennis* Poppius*chnous* (Odhambo), new combination, extralimital*Skukuza*, new genus *slateri*, new species *zeugma* (Odhambo), new combination, extralimital*Systellonotopsis* Poppius *bifasciatus* Poppius*Systellonotus* Fieber *brincki*, new species*Trichophorella* Reuter *australis*, new species *Trichophthalmocapsus* Poppius *australis*, new species *hessei*, new species *pilosus* Poppius, extralimital *pumilis* (Odhambo), new combination, extralimital*Aeolocoris* Reuter, extralimital *alboconspersus* Reuter*Boopidella* Reuter, extralimital *fasciata* Reuter*Diocoris* Kirkaldy, extralimital *agalestus* Kirkaldy

Leucophoropterini, new tribe

Karoocapsus, new genus *bifasciatus*, new species *brunneus*, new species *flavomaculatus*, new species *middelburgensis*, new species *obscurus*, new species *occidentalis*, new species *pulchrus*, new species *trifasciatus*, new species *Tyththus* Fieber *parviceps* (Reuter)

Tribe Phylini

Austropsallus, new genus *albonotum*, new species *drakensbergensis*, new species *helichrysi*, new species *middelburgensis*, new species *saniensis*, new species *senecionus*, new species *Brachycranella* Reuter *viridipunctata* (Stål)

- Capecapsus*, new genus
 - *tradouwensis*, new species
- *Coatonocapsus*, new genus
 - *johannsmeieri*, new species
 - *pallidus*, new species
 - *sweeti*, new species
 - *transvaalensis*, new species
- *Denticulophallus*, new genus
 - *adenandrae*, new species
- Ellenia* Reuter
 - *obscuricornis* (Poppius)
- *Eminoculus*, new genus
 - *drosantheri*, new species
 - *hirsutus*, new species
- Lamprosthenarus* Poppius
 - near *sjostedti* Poppius
- *Lasiolabopella*, new genus
 - *capeneri*, new species
- *Lepidocapsus* Poppius
 - *rubrum*, new species
- Leptoxanthus* Reuter
- ~~*flaveolus*~~ ~~*flavomaculatus*~~ Reuter
- *Macrotylus* Fieber
 - *hemizygiae*, new species
 - *niger*, new species
- *Natalophylus*, new genus
 - *heteromorphae*, new species
- *Odhiamboella*, new genus
 - *solani* (Odhiambo), new combination
- *Parapseudosthenarus*, new genus
 - *buchenroederae*, new species
- *Parasciodema* Poppius
 - *albocoxa*, new species
 - *nigrofemur*, new species
 - *nitens*, Poppius
- *Plagiognathidea* Poppius
- *Psallus* Fieber
- *Pseudosthenarus* Poppius
 - *ater* Poppius
 - *grossus*, new species
 - *namaquaensis*, new species
 - *rozeni*, new species
- *Sthenarus-Campylomma*
 - *nigricornis* (Poppius) (*Sthenarus*), extralimital
- *Stoebea*, new genus
 - *barbertonensis*, new species

- *elginensis*, new species
- *plettenbergensis*, new species
- *Widdringtoniola*, new genus
- *kirstenboschiana*, new species
- Tribe Pilophorini
- *Aloea* Linnavuori, (in press)
 - *australis*, new species
 - *samueli*, new species
- *Ambonea* Odhiambo
 - *munroi*, new species
 - *rustenbergensis*, new species
- *Neoambonea*, new genus
 - *cynanchi*, new species
 - *slateri*, new species
- *Parambonea*, new genus
 - *transvaalensis*, new species
- *Paramixia* Reuter
 - *australis*, new species
 - *suturalis* Reuter
- *Pilophorus* Hahn
 - *pilosus* Odhiambo

KEY TO THE SUBFAMILIES OF MIRIDAE¹

1. Ocelli present Isometopinae
Ocelli absent 2
2. Parempodia fleshy, convergent or divergent apically 3
Parempodia hair like, parallel 4
3. Parempodia distinctly divergent apically; pronotal collar usually present, generally rounded and separated from the remainder of the pronotum by a furrow (see however *Stenodemini*) Mirinae
Parempodia convergent apically, usually recurved (lyre shaped); pronotal collar seldom present Orthotylinae and Phylinae (in part)
4. Pulvilli present, sometimes large, but often small and difficult to see, either free except at base or less commonly adnate to claw over entire length 5
Pulvilli absent; claws long and slender or strongly toothed basally; if claws strongly toothed, pronotal collar always present and rounded; if claws long and slender, pronotal collar either present or absent 7
5. Pulvilli arising from ventral surface of claws, usually small; tarsi linear; membrane with two cells Phylinae (in part)
Pulvilli arising from inner surface of claws, usually enlarged, flat-

¹ Modified from Carvalho (1955a). The Palauocorinae are not included. For figures of parempodia types see Carvalho (1955a), Knight (1923; 1941; 1968) and Wagner (1961).

- tened, adnate to claw only at base; tarsi and membrane variable 6
6. Membrane with one cell; tarsi thickened distally Bryocorinae
 Membrane with two cells; tarsi linear Dicyphinae
7. Claws strongly toothed basally; dorsum usually heavily punctate Deraeocorinae
 Claws not toothed basally, usually long and slender; dorsum punctate or impunctate Cylapinae

KEYS TO THE GENERA OF ORTHOTYLINAE AND PHYLINAE OF AFRICA SOUTH OF THE SAHARA

The following keys are divided into three basic sections. The first deals with genera that have fleshy, apically convergent, recurved parempodia, and also genera with weakly fleshy parempodia that are slightly convergent apically; this includes the Orthotylinae, Pilo-phorini, and certain genera in the Phylini. The second section deals with those genera that have hair-like parallel parempodia and also genera with weakly fleshy convergent parempodia that are also included in the first section of the key; this includes only the Hallo-dapini, Leucophoropterini, and Phylini. The third section deals with brachypterous forms in the Orthotylinae and Phylinae. Those genera of the Orthotylinae and Phylinae known to occur in Africa south of the Sahara that are not included in the keys are *Atractotomus* Fieber, *Bibundiella* Poppius, *Brachycranella* Reuter, *Chaetocapsus* Poppius, *Dimorphocoris* Reuter, and *Leptoxanthus* Reuter; *Marmorodapus* Schmitz keys to *Trichophorella* Reuter. Genera that are followed by the name of the author are not generally treated in detail elsewhere in the paper.

Genera with convergent parempodia

1. Ant mimetic, brown or black, with light maculae or transverse fasciae on hemelytra, at least at base of cuneus; lateral corial margins always sinuate 2
 Non-mimetic (see however *Pilophorus*), color variable, without distinct light maculae or fasciae; lateral corial margins only rarely sinuate 3
2. Pronotum strongly constricted just anterior to middle, posterior lobe tumid, anterior lobe narrow, neck-like (Fig. 7); scutellum without long erect hairs *Pseudonichomachus*
 Pronotum not strongly constricted near middle, posterior lobe tumid, anterior lobe short, not distinctly neck-like (Fig. 5); scutellum with a few long erect hairs *Nichomachus*
3. Pronotum very heavily punctured; dorsum entirely black 4
 Pronotum not heavily punctured; coloration of dorsum variable 5

4. Antennal segment 2 enlarged, spindle shaped, greater in diameter than segment one, densely covered with semierect stout hairs *Millerimiris* Carvalho
 Antennal segment 2 cylindrical, not enlarged, diameter slightly less than that of segment one, with fine reclining pubescence *Nanniella*
5. Entire body and all appendages with long erect black hairs; pronotum swollen posteriorly; cuneal incisure deep; red and black *Namaquacapsus*
 Pubescence not as above; pronotum and color variable 6
6. Head short, wide, flattened anteroposteriorly, concave behind; posterior margin of vertex finely carinate, head tending to obscure anterior margin of pronotum 7
 Head not particularly short, flattened, or concave behind, posterior margin of vertex not finely carinate, head not obscuring anterior margin of pronotum 14
7. Lateral corial margins distinctly sinuate; hemelytra with a few transverse patches of sericeous appressed, scale-like hairs *Pilophorus*
 Lateral corial margins never sinuate, either straight or convex; hemelytra never with transverse patches of scale-like hairs, although often with decumbent, sericeous, wooly hairs 8
8. Dorsum with single type of pubescence, without flattened or wooly hairs 9
 Dorsum with reclining setiform hairs and decumbent, sericeous, wooly hairs 10
9. Entirely black, including all appendages; antennal segment 2 about four-fifths width of head across eyes *Parambonea*
 Not entirely black; antennal segment 2 subequal to width head across eyes *Pseudambonea*
10. Antennal segment 2 distinctly laminate, broadest medially *Druthmarus* Distant
 Antennal segment 2 cylindrical, not flattened 11
11. Relatively small species about 3.5 mm. long; basically cream colored; pronotum, apex of corium, and sometimes cuneus, red *Aloea*
 Size variable; coloration never light with distinct red markings 12
12. Entirely black, excluding appendages *Neoambonea*
 Body not entirely black 13
13. Abdominal venter with decumbent, wooly, sericeous hairs; vesica in male U-shaped, gonopore subapical (Fig. 318) *Ambonea*
 Abdominal venter with only reclining setiform hairs, without wooly sericeous hairs; vesica forming nearly complete coil, gonopore apical (Figs. 332, 335) *Paramixia*

14. Head convexly rounded behind eyes, eyes removed from anterior margin of pronotum by distance about equal to or greater than diameter of antennal segment 2 (Fig. 14); body elongate, flattened; hemelytra often hyaline or subhyaline 15
 Head not convexly rounded behind eyes, posterior margin of eyes contiguous with anterior margin of pronotum or nearly so; body not particularly elongate or flattened; hemelytra seldom hyaline 19
15. Clavus usually with distinct row of punctures more or less parallel to claval suture (see however *Zanchiella sweeti* and *Z. ericae*) 16
 Clavus without row of punctures as above 17
16. Antennal segment 1 about as long as width of head across eyes; all appendages very long *Felisacodes*
 Antennal segment 1 about as long as interocular space *Zanchiella*
17. Antennal segment 1 longer than width of head across eyes, considerably enlarged, about three times diameter of segment 2, densely covered with stout hairs *Uleana* Carvalho
 Antennal segment 1 shorter than width of head across eyes, not greatly enlarged or more than one and a half times diameter of segment 2, without conspicuous stout hairs 18
18. Eyes set forward on head, removed from anterior pronotal margin by about half (or nearly so) diameter of eye (Fig. 19) *Zanchius*
 Eyes removed from anterior margin of pronotum by about diameter of antennal segment 2 (Fig. 9) *Cyrtorhinus*
19. Antennal segment 1 about as long as width of interocular space plus one eye, distinctly enlarged, rather densely covered with erect or semierect often dark hairs about as long as diameter of segment; coloration usually red and white or almost entirely red *Pseudoloxops*
 Antennal segment 1 usually about as long as width of interocular space, only moderately enlarged, pubescence short, inconspicuous, reclining or decumbent; coloration variable 20
20. Clypeus, juga, and lora brown or black, highly polished, shining, strongly contrasting in texture and usually in coloration with remainder of head 21
 Clypeus, juga, and lora not strongly contrasting with remainder of head in texture and coloration, although sometimes black and shining 22
21. Males elongate, lateral corial margins nearly straight; females ovate, brachypterous, hemelytra just covering abdomen; male genital capsule without ventral keel *Capecapsus*
 Ovate; lateral corial margins distinctly convex; both sexes macroppterous; male genital capsule with keel ventrally *Ellenia*

22. Small, length 3.0 mm. or less; body black; metafemora conspicuously enlarged; height of head below eyes greater than height of eye *Halticus*
 Size and color variable, body never totally black; metafemora not conspicuously enlarged; height of head below eyes about two-thirds height of eye or less 23
23. Parempodia recurved (Orthotylinae); usually elongate, green, although sometimes red or brown; antennal segment 3 about two-thirds length of segment 2; usually over 3.5 mm. long
 *Orthotylus* and *Pseudorthotylus* Poppius
 Parempodia not recurved (Phylinae); usually ovate or under 3.5 mm. long; antennal segment 3 less than two-thirds length of segment 2 24
24. Dorsum with only reclining, black, setiform hairs; frons strongly convex *Widdringtoniola*
 Dorsum with reclining setiform hairs and clumps of wooly sericeous hairs *Stibaromma* Odhiambo

Genera with hair-like parallel parempodia

1. Pronotum often strongly narrowed anteriorly, often with a distinct flattened collar at least as wide as diameter of antennal segment 2 (see *Karoocapsus*); hemelytra usually dark with one or more light maculae or fasciae contrasting with basic coloration; often strongly ant mimetic; pulvilli always minute (Hallodapini, Leucophoropterini in part) 2
 Pronotum sometimes narrowed anteriorly and with flattened collar; if pronotal collar present, eyes substylate or stylate; hemelytra never with contrasting maculae or fasciae; seldom appearing ant mimetic; pulvilli usually minute, sometimes long and free apically or long and fused with claw (Phylini, Leucophoropterini) 24
2. Anterior pronotal margin finely carinate, upturned, not in the form of flattened collar; head, pronotum, and scutellum with reclining, dark, setiform hairs and appressed, flattened, sericeous, scale-like hairs (the latter are very easily rubbed off); usually with two or three yellow maculae strongly contrasting with dark hemelytra (Figs. 42-49) *Karoocapsus*
 Anterior pronotal margin always in the form of flattened collar, at least as wide as diameter of antennal segment 2; vestiture of dorsum variable, never with appressed, scale-like, sericeous hairs; coloration variable, maculae or fasciae usually white if present 3
3. Vertex produced into spine above clypeus (Figs. 23, 24)
 *Acrorrhinium*
 Vertex not produced into spine 4

4. Eyes set far forward on head, removed from anterior margin of pronotum by distance equal to at least diameter of eye (Figs. 36, 37, and 38) 5
 Eyes contiguous with anterior margin of pronotum or nearly so, not removed by more than distance equal to diameter of antennal segment one (Figs. 26, 30, and 39) 7
5. Scutellum produced into sharp spine about as high as pronotum *Myombea*
 Scutellum flat or rounded, not produced into spine 6
6. Antennae inserted at about midpoint of anterior margin of eyes, fossae nearly contiguous with eyes *Formicopsella*
 Antennae inserted below ventral margin of eyes, fossae removed from eyes by distance equal to diameter of antennal segment 1 *Skukuza*
7. Hemelytra with at least one light macula or fascia contrasting with dark background; basic coloration never solid black 8
 Hemelytra without contrasting maculae or fasciae or if with fascia then basic coloration solid black 20
8. Head concave behind; posterior margin of vertex carinate, produced posteriorly over pronotal collar; scutellum strongly protuberant (Fig. 25) 9
 Head either weakly convex behind forming short neck, or neck obsolete and posterior margins of eyes contiguous with anterior margin of pronotum; posterior margin of vertex not carinate (although sometimes with low rounded transverse ridge between eyes); scutellum sometimes protuberant 10
9. Gula with distinct longitudinal carina; gula at least as long as diameter of antennal segment one; southern Africa
 *Carinogulus* (in part)
 Gula without carina; length of gula less than diameter of antennal segment one, buccal cavity sometimes contiguous with sternum; northern Africa
 *Glaphyrocoris* Reuter and *Hypomimus* Lindberg
10. Gula with distinct longitudinal carina; gula at least one and a half times length of diameter of antennal segment one; scutellum strongly protuberant; eyes removed from anterior margin of pronotum by distance about equal to diameter of antennal segment one; dorsum with some long, erect hairs
 *Carinogulus* (in part)
 Gula without distinct carina, length variable; scutellum occasionally protuberant or spiniform; eyes either contiguous with or slightly removed from anterior margin of pronotum; dorsal vestiture variable 11
11. Head greatly elongated dorsoventrally; gula almost vertical, nearly as long as height of eye; hemelytral fascia broad laterally, narrowed mesially, forming transverse hourglass-shaped marking

- on corium; metatibiae slightly to strongly flattened
 *Diocoris* and *Gampsodema* Odhiambo
- Head only moderately elongated dorsoventrally, length of gula less than one-half height of eye, or head not at all elongated and gula very short 12
12. Length of gula about one-half height of eye, gula nearly vertical *Systellonotus*
 Gula never longer than diameter of antennal segment one, often obsolete and buccal cavity contiguous with prosternum 13
13. Dorsum with long, erect hairs nearly as long or longer than diameter of antennal segment one, and with or without shorter decumbent hairs 14
 Dorsum never with long, erect hairs although occasionally with short, erect hairs, and always with short, decumbent hairs 18
14. Species always with wing-edge stridulatory mechanism; lateral corial margin always lacking projecting hairs and possessing fine serrations (sometimes not visible even under high magnification); inner surface of metafemora pebbled or otherwise modified into stridulatory plectrum, always glabrous; at least metatibiae with very long spines 15
 Species without wing-edge stridulatory mechanism; lateral corial margins usually with projecting hairs, always lacking serrations; inner surface of metafemora may be finely granulate, never distinctly pebbled or otherwise modified into stridulatory plectrum, usually with distinct pubescence; metatibiae without extremely long spines 17
15. Eyes of males very large (Figs. 33, 34), much larger than those of females, occupying nearly entire sides of head and reaching almost to bucculae; lateral corial margin distinctly sinuate; corium with single transverse fascia medially; metatibiae usually broadened medially, spindle-shaped *Trichophthalmocapsus*
 Eyes in males not extremely large, only slightly larger than those of females, genal area exposed; lateral corial margin and hemelytral markings variable; metatibia usually cylindrical 16
16. Scutellum in males usually spiniform; females brachypterous, pronotum strongly swollen, scutellum swollen, not spiniform as in males *Laemocoris*
 Scutellum in males more or less flat; females usually brachypterous, pronotum and scutellum not highly modified, similar in structure to males *Hallodapus* (in part)
17. Small species, always less than 4.5 mm. long; posterior margins of eyes contiguous with anterior margin of pronotum
 *Hallodapus* (in part)
 Larger species, about 4.5 mm. long; posterior margins of eyes slightly removed from anterior margin of pronotum
 *Systellonotopsis*

18. Eyes in males very large, occupying nearly entire sides of head and reaching almost to bucculae *Boopidella*
 Eyes in males not extremely large, genal area exposed (eyes of females only slightly smaller than those of males) 19
19. Small species, always less than 4.5 mm. long *Hallodapus* (in part)
 Larger species, at least 5.0 mm. long *Pangania*
20. Basic coloration velvety black, sometimes with broad white hemelytral fascia *Syngonus* Bergroth
 Basic coloration not black, usually light brown, often mottled 21
21. Slender bodied, ratio of total length to greatest width at least 3:1 *Trichophorella*
 More heavy bodied than above, ratio of total length to width 2.75:1 or less 22
22. Antennal segment 3 longer than segment 2 *Kapoetius* Schmitz
 Antennal segment 2 longer than segment 3 23
23. Metalegs, antennae, and most of dorsum marmorate *Aeolocoris*
 Legs, antennae, and dorsum more or less solid color, hemelytra sometimes with a few light markings *Azizus*
24. Eyes stylate, width of head across eyes nearly equal to or greater than width of posterior margin of pronotum; pronotum anteriorly with wide flat collar; black *Eminoculus*
 Eyes not distinctly stylate, sometimes substylate; head rarely as wide as posterior margin of pronotum; pronotum never with flattened collar; color variable, but if eyes substylate never solid black 25
25. Dorsum heavily punctate; black 26
 Dorsum never heavily punctate; if black seldom highly polished; head rarely very short 27
26. Antennal segment 2 enlarged, greater in diameter than segment 1 *Millerimiris* Carvalho
 Antennal segment 2 linear, of smaller diameter than segment 1 *Lamprosthenarus*
27. Antennal segment 2 conspicuously enlarged distally, diameter about equal to or greater than diameter of segment 1 and of much greater diameter than that of segments 3 and 4 28
 Antennal segment 2 not conspicuously enlarged, seldom more than two-thirds diameter of segment 1, not more than 2 times diameter of segments 3 and 4 29
28. Antennal segment 2 thickened distally to about two times proximal diameter; black *Rakula* Odhiambo
 Antennal segment 2 nearly uniformly thickened over entire length; reddish *Lepidocapsus*
29. Eyes substylate, head transverse, width across eyes nearly as great as maximum width of pronotum; body densely covered with flattened, appressed, scale-like hairs 30

- Eyes not substylate; dorsum, if at all, only partially covered with appressed, scale-like hairs, although sometimes rather densely covered with decumbent wooly pubescence 31
30. Antennal segment one short, cylindrical; antennae lacking scale-like hairs; tibiae without dark spines; coloration not entirely black, hemelytra with large light areas *Lasiolabopella*
 Antennal segment one long, increasing in diameter distally; antennae with scale-like hairs; tibiae with dark spines; black
 *Lasiolabops* Poppius
31. Pulvilli enlarged, flattened, free from claw apically, reaching to about apex of claw; clypeus prominent 32
 Pulvilli usually very small, occasionally enlarged and fused with nearly entire ventral surface of claw 33
32. Dorsum rather densely covered with semierect or reclining, dark, heavy, setiform hairs *Denticulophallus*
 Dorsum with only fine reclining hairs or with reclining hairs and decumbent wooly pubescence *Macrotylus*
33. Head including eyes concave behind, vertex finely carinate; anterior margin of pronotum obscured by posterior margin of head; small species, under 3.5 mm. long, body ovoid
 *Sthenarus-Campylomma*
 Head and eyes either convex or only weakly concave behind; posterior margin of vertex sometimes finely carinate and obscuring anterior margin of pronotum; if species under 3.5 mm. long, head never concave behind and not obscuring anterior margin of pronotum; species usually over 4.0 mm. long, moderately elongate 34
34. Dorsum with two distinct types of pubescence, usually with reclining setiform hairs and decumbent, somewhat flattened, wooly, sericeous pubescence, or very seldom with some clumps of scale-like, appressed sericeous hairs 40
 Dorsum with single type of pubescence, never with wooly sericeous hairs 35
35. Pulvilli large, fused with almost entire ventral surface of claw
 *Parasciodema*
 Pulvilli minute 36
36. Antennal segment 2 about 1.4 times as long as width of posterior margin of pronotum; elongate black species; labium just surpassing procoxae *Natalophylus*
 Antennal segment 2 equal to or less than width of posterior margin of pronotum; shape, color, and labial length variable 37
37. Small, light colored species; dorsum with reclining black hairs or inconspicuous light hairs 38
 At least pronotum dark; vestiture usually conspicuous, never only of black hairs 39

38. Dorsum with only reclining, black, setiform hairs; frons convex, clypeus not visible from above; parempodia weakly fleshy, convergent apically *Widdringtoniola*
 Dorsum with decumbent, fine, light hairs; frons produced anteriorly, clypeus prominent as viewed from above; parempodia hair-like and parallel *Plagiognathidea*
39. Ratio of length of head to width of head about 1:1.25; all femora light at least proximally *Tytthus*
 Ratio of length of head to width of head 1:4; all femora dark at least proximally *Odhiamboella*
40. Head, pronotum, and scutellum (also mesepisterna and metepisterna) with flattened, appressed, sericeous, scale-like hairs; hemelytra mostly with reclining setiform hairs except for a few scale-like hairs along claval suture; antennal segment 2 at least as long as width of posterior margin of pronotum and up to 1.6 times pronotal width; elongate species, usually with yellow maculae contrasting with dark background, sometimes solid brown or with inconspicuous maculae (Figs. 42-49)
 *Karocapsus*
 Dorsum including hemelytra usually rather densely covered with decumbent, sericeous, wooly hairs and semierect or reclining setiform hairs, never with scale-like hairs as above; length of antennal segment 2 and coloration variable 41
41. Small, 3.5 mm. long or less; light colored with variable markings (Fig. 82); labium very long, reaching to middle of abdomen; antennal segment 2 at least as long as width of posterior margin of pronotum *Stoebea*
 Usually over 3.5 mm. long; coloration either light or dark, if light usually with many dark spots on dorsum or unicolorous and labium reaching to or surpassing mesocoxae; if dark usually brown or black, unicolorous and labium short, reaching only slightly past procoxae at most; length of antennal segment 2 variable 42
42. Labium short, not or only slightly exceeding posterior margin of procoxae; brown or black 43
 Labium long, surpassing mesocoxae; usually light with heavily spotted dorsum; if labium just surpassing procoxae, clypeus, juga, and lora black, highly polished 45
43. Clypeus, juga, and lora at and below level of antennal bases black or dark brown, highly polished, shining, remainder of head dull or only weakly shining; parempodia weakly fleshy, convergent apically *Capecapsus*
 Clypeus, juga, and lora not highly polished or differing in texture from remainder of head; parempodia hair-like, parallel 44
44. All tibiae and antennae black; male genitalia as in Figs. 289-292
 *Parapseudosthenarus*

- All tibiae light with black spines with black bases; male genitalia as in Figs. 293–312 *Pseudosthenarus*
45. Clypeus, juga, and lora at and below level of antennal bases, black, highly polished, contrasting with remainder of head 46
 Clypeus, juga and lora unicolorous with surrounding areas of head and of same texture 47
46. Parempodia hair-like, parallel; vesica of male usually forming a loop (Figs. 238, 241–243); dorsum usually with heavy black setiform hairs; females brachypterous; male genital capsule without ventral keel *Coatonocapsus*
 Parempodia weakly fleshy, convergent apically; vesica in male not forming a loop (Fig. 248); dorsum with fine, dark, setiform hairs; females macropterous; male genital capsule with ventral keel *Ellenia*
47. Membrane marmorate; antennal segment 2 enlarged distally, clavate *Anapsallus* Odhiambo
 Membrane not marmorate, unicolorous or cells differing in coloration from remainder of membrane; antennal segment 2 linear or nearly so, not clavate 48
48. Large species, macropterous forms over 4.0 mm. long; dorsum with long, semierect setiform hairs; females occasionally brachypterous; parempodia hair-like, parallel *Austropsallus*
 Smaller species, less than 4.5 mm. long; dorsum with reclining, relatively short, setiform hairs; females macropterous; parempodia often slightly fleshy and weakly convergent apically 49
49. Woolly, sericeous hairs on dorsum in distinct patches; vesica long, forming complete loop *Stibaromma* Odhiambo
 Woolly sericeous hairs on dorsum (sometimes absent) more or less uniformly distributed; vesica short (e.g., Fig. 248) *Psallus*

Genera with submacropterous and brachypterous forms

1. Hemelytra greatly reduced, about the same length as pronotum or less, covering only base of abdomen (Figs. 6 and 37); ant mimetic 2
 Hemelytra reduced, either just covering abdomen or covering about half of abdomen, but never less than one and a half times length of pronotum (Figs. 32, 57, and 61); ant mimetic or not 4
2. Eyes removed from anterior margin of pronotum by distance greater than diameter of eye; anterior lobe of pronotum small
 *Skukuza*
 Eyes contiguous with anterior margin of pronotum; anterior lobe of pronotum variable 3
3. Scutellum swollen, protuberant; parempodia fleshy, convergent apically, recurved *Nichomachus*
 Scutellum flat, not swollen; parempodia hair-like, parallel
 *Karoocapsus*

4. Hemelytra covering about half of abdomen, often truncate posteriorly (Figs. 24 and 65); sometimes ant mimetic 5
 Hemelytra just covering abdomen, often appearing fully winged in absence of comparison with macropterous forms (Fig. 57) 9
5. Eyes stylate, head conspicuously produced laterally beyond anterolateral angles of pronotum; shining black; coleopteroid *Eminoculus*
 Eyes not stylate although may be protuberant; not entirely black; not coleopteroid 6
6. Frons with distinct spine projecting over clypeus (Fig. 24) *Acrorrhinium*
 Frons without spine as above 7
7. Eyes removed from anterior margin of pronotum by distance equal to at least diameter of eye; ant mimetic *Formicopsella*
 Eyes contiguous with anterior margin of pronotum 8
8. Pronotum with posterior lobe strongly swollen, elevated high above hemelytra; scutellum swollen *Laemocoris*
 Pronotum with posterior lobe not strongly swollen; scutellum nearly flat (Fig. 32) *Hallodapus*
9. Labium short, not or only slightly exceeding procoxae 10
 Labium long, reaching at least to mesocoxae, occasionally to middle of abdomen 12
10. Clypeus, juga, and lora nearly black, highly polished, contrasting with dull surface of remainder of head; parempodia weakly fleshy, convergent apically *Capecapsus*
 Clypeus, juga, and lora not strongly contrasting with remainder of head in color and surface texture; parempodia hair-like and parallel 11
11. Tibiae light with black spines with black bases *Pseudosthenarus*
 Tibiae black with black spines *Parapseudosthenarus*
12. Clypeus, juga, and lora black, highly polished, shining, strongly contrasting with remainder of head *Coatonocapsus*
 Clypeus, juga, and lora neither black nor strongly shining, not contrasting with remainder of head in color and surface texture 13
13. Antennae with numerous erect, black hairs about three times as long as diameter of segment on which they occur *Austropsallus*
 Antennae without long, erect, black hairs 14
14. Hemelytra cream, pronotum, scutellum, and macula at cuneal fracture red; parempodia fleshy, convergent apically, recurved *Aloea*
 Dorsum generally light with reddish, greenish, or brownish markings; parempodia hair-like and parallel *Stoebea*

SUBFAMILY ORTHOTYLINAE
TRIBE HALTICINI

Namaquacapsus, new genus

MACROPTEROUS MALE: Robust; entire dorsum, thoracic pleura, abdominal venter, femora, and tibiae densely covered with erect black hairs about two and a half times as long as tibial diameter; antennal segment one with a few, erect, fine spines, segments 2, 3, and 4 with short reclining pubescence and a few long, erect, black hairs; labium with short erect hairs.

Head short, deflexed; eyes weakly granular, about half height of head; frons convex between antennal bases; antennal segment one moderately enlarged, swollen medially, segment 2 with proximal half narrow, distal half enlarged to about one and a half times diameter of proximal half, approaching diameter of segment one, segments 3 and 4 subequal in diameter (4 missing in holotype), slightly less than proximal diameter of segment 2; clypeus large, flattened dorsally, rounded ventrally; bucculae narrow; buccal cavity large, broad; gula about half length of distal diameter of antennal segment 2; pronotum with flattened collar about as wide as proximal diameter of antennal segment 2; lateral pronotal margins nearly straight posteriorly, broadly rounded anteriorly; calli obsolete; pronotum with anterior lobe short, depressed behind collar, posterior lobe elevated, inflated, mesoscutum obscured by pronotum; scutellum strongly convex, clavi steeply declining laterally from scutellum and commissure; corium rounded transversely, lateral margins strongly convex; cuneal incisure very deep, fracture perpendicular to longitudinal axis of body; cuneus strongly convex laterally; membrane with two cells; tibiae without rows of tiny, closely spaced spines; tarsal claws relatively short, weakly curved; parempodia fleshy, convergent apically, recurved; pulvilli minute.

MALE GENITALIA: Figures 100, 101. Vesica membranous.

Female unknown.

TYPE SPECIES: *Namaquacapsus melanostethoides*, new species.

This genus is named for Namaqualand, the region of the type locality of *Namaquacapsus melanostethoides*.

Namaquacapsus is placed in the Halticini because of the flattened pronotal collar, dorsoventrally elongated head, dark coloration, and the structure of the male genitalia. The genus appears to be most closely related to *Orthocephalus* Fieber, from Europe and the Mediterranean, by virtue of the heavy vestiture and body

shape. *Namaquacapsus* shows specialized features within the Halcini, particularly in the type of vestiture and the reddish coloration of the hemelytra; the former condition may be an adaptation to an extremely arid environment.

***Namaquacapsus melanostethoides*, new species**

Figures 1, 100, 101

MACROPTEROUS MALE: Basic coloration deep castaneous; anterior two-thirds and apex of corium and anterior two-thirds of cuneus red.

Head, pronotum, scutellum, antennae, labium, legs, and abdominal venter polished, shining; remainder of body, including anterior lobe of pronotum dull; eyes glabrous.

Posterior margin of vertex nearly straight, with broad rounded carina; antennae removed from margins of eyes; labium just surpassing mesocoxae; pronotum with anterior margin sinuate, posterior margin straight across mesoscutum, broadly rounded laterally; abdomen reaching to apex of corium; metatarsal segments 1 and 3 subequal in length, segment 2 about two-thirds length of segment 3.

MEASUREMENTS: Total length 5.36, maximum width 2.16, length head .60, width head .76, interocular space .60, length pronotum 1.00, width pronotum 1.92, length scutellum .64, width scutellum .96, length corium 2.36, length clavus 2.00, length cuneus 1.04, width cuneus .92, length claval commissure 1.04, distance apex commissure-apex membrane 2.36, length metatibia 1.92; length antennal segments 1—.32, 2—1.30, 3—.88, 4—.38 (from paratype); length labial segments 1—.42, 2—.42, 3—.20, 4—.40.

MALE GENITALIA: Figures 100, 101.

HOLOTYPE: Macropterous male, SOUTH AFRICA: *Cape Province*, Kamieskroon, Namaqualand, Museum Staff, Sept. 1930 (SAM).

PARATYPE: 1 macropterous male, same data as holotype (RTS).

This species is named for its similarity to *Melanostethus* Stål (Lygaeidae) in general coloration.

Namaquacapsus melanostethoides can be recognized by its dark red and almost black coloration and extremely long, dense, black pubescence.

No host or ecological data are available.

Nanniella Reuter

Nanniella Reuter, 1904, p. 6.

Nanniella was described by Reuter (1904) for a single species, *N. chalybea* Reuter, from Kinshasa; Poppius (1914a) added *N. reuteri* Poppius from "Nyassa." Both authors placed the genus in the Halticini. *Nanniella* was synonymized with *Falconia* Distant by Carvalho (1952a), but no explanation was given for the action. Comparison of type specimens of *F. poetica* Distant, the type species of the genus, from South America, and *Nanniella* from Africa, indicates that there is indeed a very close superficial resemblance between the two genera. However, a careful examination reveals that in fact they are much less closely related than general facies would indicate. The parempodia in both *Falconia* and *Nanniella* are apically convergent and recurved. The female genitalia, however, are diagnostic for the two genera: in *Falconia* the posterior wall possesses well developed K-structures characteristic of the Orthotylini; in *Nanniella* the posterior wall is a simple sclerotized plate and lacks K-structures, a feature which in combination with the convergent parempodia suggests that the genus belongs to the Halticini. Additional characters supporting this tribal placement for *Nanniella* are: the solid black coloration; the flattened, rather broad, pronotal collar; the club-shaped right clasper; the simple membranous vesica; and the dorsoventrally elongated head. *Nanniella* does not have noticeably enlarged hind femora, which are characteristic of most members of the Halticini.

Nanniella can be recognized by its heavily punctate, shining, black dorsum, vertical head with protuberant eyes removed from the anterior margin of the pronotum, and flattened pronotal collar. It is most closely related to *Acratheus* Distant from India, which is also heavily punctate on the dorsum. *Acratheus* has a light cuneus and membrane whereas in *Nanniella* the entire dorsum is black.

The available material suggests that several closely related species of *Nanniella* are present in Africa. Three specimens are known from South Africa which agree generically with the type series of *N. chalybea* deposited in the Musee Royal de l'Afrique Central, and a specimen identified by Poppius as *chalybea* in the Helsinki Museum which is from Kinshasa. A male from Sarnia, Natal (Fig. 2), deposited in the British Museum (Natural History), and a female from Umkomaas, Natal, deposited in the South African National Collection of Insects, have completely brown antennae and a band of dense wooly hairs immediately posterior to the pro-

notal collar. A female from Albert Falls, Umgeni River, Natal, deposited in the Lund University Collection (see Carvalho, et al., 1960), has dark antennae, but lacks the band of wooly hairs on the pronotum and has distinctly brown tibiae, whereas in other specimens from South Africa the tibiae are light. Specimens of *N. chalybea* from Kinshasa, Congo, have the first antennal segment light and lack the band of wooly hairs on the pronotum.

At the present time it seems undesirable to assign names or describe new species until a careful study of *Nanniella* and *Acratheus* is undertaken.

Halticus Hahn

Halticus Hahn, 1832, p. 113.

Only two species of the cosmopolitan genus *Halticus* are currently recorded from Africa (Carvalho, 1958b). A male specimen from Satara Camp, Kruger National Park, Transvaal, deposited in the J. A. Slater Collection, probably represents a new species. It has the second antennal segment about three times as long as the first, the femora generally black, and the posterior margin of the vertex narrowly white.

NICHOMACHINI, new tribe

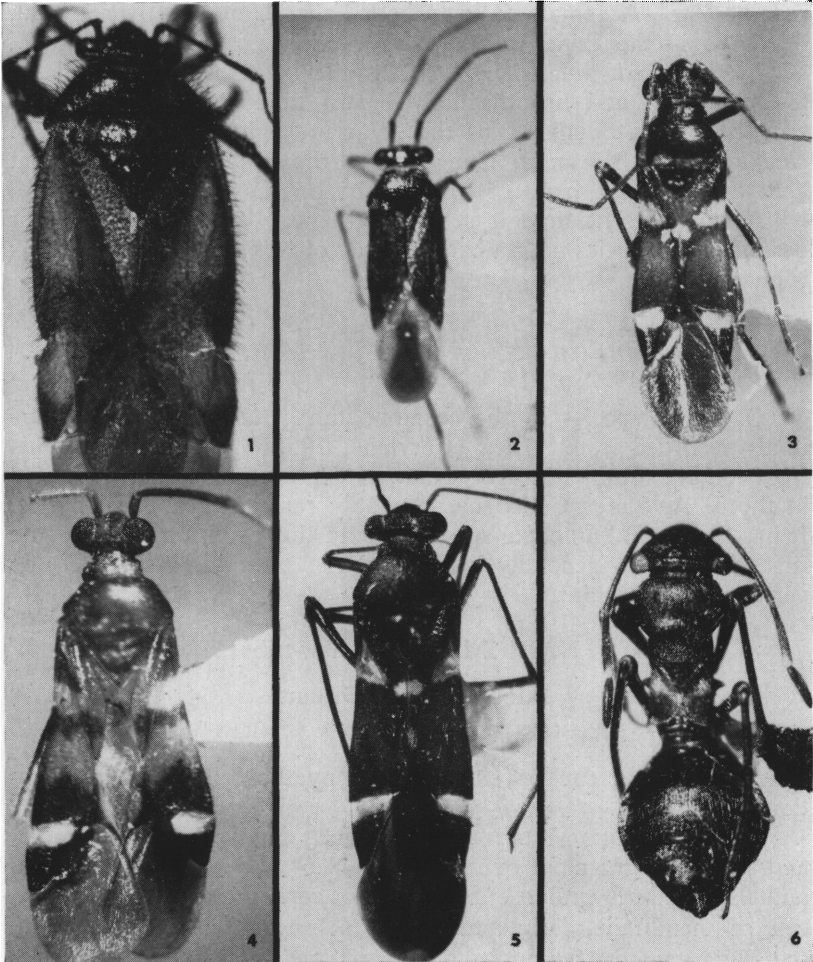
Nichomachus Distant

Nichomachus Distant, 1904a, p. 104.

Nichomachus can be characterized by the following redescription of the genus.

MACROPTEROUS MALE: Elongate, ant mimetic; head, pronotum, and scutellum granulose or rugulose, dull or weakly shining; corium and clavus mostly pruinose; basal fifth of corium and clavus, cuneus, cell of membrane, legs, and venter polished, shining; pronotum, scutellum, cuneus, femora, and antennal segment 1 with short, decumbent, sericeous hairs; scutellum, clavus, and corium with a few long, erect, shining hairs; antennal segments 2, 3, and 4 with dense short vestiture; tibiae with a few semierect spines about as long as tibial diameter.

Head nearly vertical, concave behind; vertex depressed between eyes, posterior margin carinate; frons transversely rugose, weakly convex, with faint longitudinal sulcus; eyes large, occupying entire sides of head; antennae inserted just above ventral margin of eyes, fossae contiguous with eyes; antennal segment 1 slightly enlarged,



FIGS. 1-6. Halticini, Nichomachini. Fig. 1. *Namaquacapsus melano-stethoides*, male, holotype. Fig. 2. *Nanniella* near *chalybea*, male (Sarnia, Natal). Fig. 3. *Nichomachus minutus*, male, holotype. Fig. 4. *Nichomachus rufescens*, male, holotype. Fig. 5. *Nichomachus sweeti*, male, holotype. Fig. 6. *Nichomachus sweeti*, female (Schoemanspoort, Cape Province).

segments 2 and 3 subequal in diameter, about three-fourths diameter of segments 1 and 4; labium just surpassing posterior margin of metasternum; pronotum with anterior lobe about one-fifth length of entire pronotum, forming poorly defined neck, anterior margin carinate, upturned, posterior lobe tumid; mesoscutum inclined anteriorly; scutellum strongly inflated, bulbous; lateral corial margins weakly sinuate, reflexed ventrally on anterior half, cuneal incisure obsolete; membrane with two cells; abdomen long, slender, just surpassing apex of cuneus; parempodia fleshy, convergent apically, recurved; pulvilli minute.

MALE GENITALIA: Figures 96, 97. Left clasper long, slender, with a barb apically, basal lobe with spine formed of long, stiff, erect hairs; left clasper situated as in Figure 93A; right clasper extremely small, lanceolate; vesica membranous, with minute spines.

BRACHYPTEROUS FEMALE: See *Nichomachus sweeti*.

FEMALE GENITALIA: Figures 98, 99. Ring glands very small, contorted; posterior wall a simple sclerotized plate, oriented cephalocaudad.

Nichomachus is most closely related to *Pseudonichomachus*, but can be separated from it by the form of the anterior lobe of the pronotum, which is short in the former and long and neck-like in the latter. Distant (1904a) related *Nichomachus* to *Systellonotus*. Carvalho (1952a) placed the genus in the Pilophorini. The structure of the male and female genitalia and the type of sexual dimorphism in *Nichomachus* show no close relationship to the Pilophorini or *Systellonotus*, but suggest that the genus belongs to a distinct evolutionary line within the Orthotylinae. I have therefore placed it in a new tribe with several other Ethiopian genera (see tribal classification below).

A brachypterous female from Swartberg Pass, 25 miles north of Oudtshoorn, Cape Province and deposited in the J. A. Slater Collection, may be congeneric with *Nichomachus*. This specimen has an hourglass-shaped pronotum which is, however, very much different from the pronotum of *N. sweeti*. An additional female specimen from Mkuze Game Reserve, Natal, which is deposited in the J. A. Slater Collection, also appears to be related to *Nichomachus*. It is submacropterous, with only the connexival region of the dorsally flattened abdomen being exposed. The head is very similar in structure to that of *N. sweeti*, but the pronotum is hourglass-shaped, and similar in structure to that of the abovementioned female from the Swartberg Pass.

The four described species of *Nichomachus* are all from South-

ern Africa. The genus does not seem to be associated with the tropical African vegetative element but with the Southwest Cape related flora.

KEY TO MACROPTEROUS SPECIMENS OF *Nichomachus*

1. Dorsum mostly red or reddish brown, except for white hemelytral maculae 2
 Dorsum nearly uniform dark brown or black except for white hemelytral maculae 3
2. Scutellum dark brown, contrasting with reddish pronotum and corium; clavi with white transverse macula at about midpoint of claval commissure *sloggetti*
 Scutellum unicolorous with pronotum and corium; clavi without white macula *rufescens* (Fig. 4)
3. Large black species, 4.80 mm. long; distal fifth of antennal segment 3 usually white *sweeti* (Fig. 5)
 Smaller, dark brown species, 4.24 mm. long; antennal segment 3 unicolorous brown *minutus* (Fig. 3)

Nichomachus minutus, new species

Figure 3

MACROPTEROUS MALE: Basic coloration dark brown or castaneous; most of corium and clavus lighter brown than remainder of body; membrane smoky brown; hemelytra with white macula on basal third of corium, on calvi at about midpoint of claval commissure, and on basal third of cuneus; posterior margin of metepisternum white; scutellum and cuneus strongly shining.

MEASUREMENTS: Total length 4.24, maximum width 1.14, length head .36, width head .80, interocular space .34, length pronotum .70, width pronotum .98, length scutellum .46, width scutellum .46, length corium 1.74, length clavus 1.16, length cuneus .60, width cuneus .44, length claval commissure .76, distance apex commissure-apex membrane 1.78, length metatibia 1.80, length antennal segments 1—.30, 2—1.02, 3—.80, 4—.62; length labial segments 1—.36, 2—.24, 3—.52, 4—.42

MALE GENITALIA: Basic structure as in *N. sweeti*.

Female unknown.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Cape Province*, 4 mi. W. Gydo Pass summit, N. of Ceres, 26 Jan. 1968, J. A. & S. Slater, T. Schuh, M. H. Sweet (SANC).

This species is named for its relatively small size.

Nichomachus minutus most closely resembles *N. sweeti* but is much smaller and is generally brown rather than black.

The type locality was a dry sandy wash with macchia vegetation.

Nichomachus rufescens, new species

Figure 4

MACROPTEROUS MALE: Basic coloration bright brownish orange; corium at level of apex of scutellum with broad, transverse, transparent band; corium with complete, brown, transverse fascia contiguous with posterior margin of transverse band above; basal two-fifths of cuneus white, apical three-fifths castaneous; membrane light smoky brown; abdomen yellowish basally, castaneous apically; antennal segments 1 and 2 and metafemur only appendages present on holotype.

MEASUREMENTS: Total length 4.80, maximum width 1.22, length head .38, width head .92, interocular space .26, length pronotum .74, width pronotum 1.22, length scutellum .64, width scutellum .72, length corium 2.20, length clavus 1.68, length cuneus .80, width cuneus .48, length claval commissure .68, distance apex commissure-apex membrane 2.26; length antennal segments 1—.36, 2—1.42, 3—?, 4—?; length labial segments 1—.52, 2—.56, 3—.42, 4—.56.

MALE GENITALIA: Basic structure as in *N. sweeti*.

Female unknown.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Cape Province*, Bulshoek, Clw., S.A.M., 12-56 (SAM).

This species is named for its reddish coloration.

Nichomachus rufescens is most similar to *N. sloggetti* and also resembles *Pseudonichomachus capeneri*. The absence of the white transverse macula on the posterior portion of the clavus in *rufescens* will separate it from *sloggetti*. The generic differences in the shape of the pronotum will separate *rufescens* from *P. capeneri*.

Nichomachus sloggetti Distant

Nichomachus sloggetti Distant, 1904a, p. 104.

Distant's original description from a single macropterous male and the preceding key will distinguish *N. sloggetti* from congeneric species. The coloration of *sloggetti* is very similar to that of *N. rufescens* and also resembles closely that of *Pseudonichomachus capeneri* (see *rufescens* discussion).

MALE GENITALIA: Basic structure as in *N. sweeti*.

Only two male specimens of *N. sloggetti* are known: the holotype from Deelfontein, Cape Province, deposited in the British Museum (Natural History), and an individual from Zomerkomst, Politzi, Transvaal, 23.X.64, deposited in the South African National

Collection of Insects. A large number of species from the South African National Collection of Insects (see e.g. *Karooapsus*) are known from Middelburg, Cape Province, and also from Zomer-komst, Politzi, Transvaal. These localities are very different floristically (Acocks, 1951), and there is some question about the accuracy of labeling. The occurrence of *N. sloggetti* in Deelfontein and Middelburg, would be more logical than in Deelfontein and Politzi because of the greater similarity of available habitats at Middelburg and Deelfontein. This situation merits further investigation to be sure that distributions within South Africa are not being interpreted incorrectly.

***Nichomachus sweeti*, new species**

Figures 5, 6, 96–99

MACROPTEROUS MALE: Body generally black or nearly so; hemelytra with white maculae on basal third of corium, on clavi at about midpoint of claval commissure, and on basal third of cuneus; posterior margin of metepisternum white; distal sixth of antennal segment 3 yellow.

MEASUREMENTS: Length 4.80, maximum width 1.36, length head .34, width head .92, interocular space .34, length pronotum .82, width pronotum 1.16, length scutellum .52, width scutellum .56, length corium 2.14, length clavus 1.40, length cuneus .66, width cuneus .54, length claval commissure .90, distance apex commissure-apex membrane 2.24, length metatibia 2.10, length antennal segments 1—.26, 2—1.10, 3—.80, 4—.60; length labial segments 1—.40, 2—.42, 3—.40, 4—.44.

MALE GENITALIA: Figures 96, 97. See generic description.

BRACHYPTEROUS FEMALE: Strongly ant-mimetic, brachypterous; black; transverse fascia at level of apex of scutellum, posterior margin of hemelytra laterally, posterior margin of metepisternum, metacoxae distally, and antennal segment 3 white.

Entire body granulose or rugulose, weakly shining, with scattered, short, decumbent, shining hairs; abdomen also with scattered, long, erect, shining hairs; scutellum with several long, erect, shining hairs; antennae, tibiae, and tarsi with decumbent shining hairs.

Head broad, concave behind, frons convex; eyes small; posterior margin of vertex slightly concave and broadly carinate; antennal segment 1 only very slightly enlarged, segment 2 tapering distally to slightly less than diameter of segment 1, segments 3 and 4 subequal in diameter, slightly greater than diameter of segment 1;

antennae inserted just below eye and mesad of eye by distance nearly equal to length of antennal segment 1; labium just surpassing metacoxae; pronotum with narrow depressed collar, anterior lobe greatly swollen, posterior lobe about one-quarter length of anterior lobe, collar-like, posterior margin straight; mesoscutum strongly inclined anteriorly; scutellum inflated, nearly conical; hemelytra undifferentiated, lateral margins nearly straight, posterior margin sinuate, posterolateral angles forming acute projections; abdomen narrow basally, greatly expanded medially, pointed apically; all femora swollen distally; metatibiae bowed.

MEASUREMENTS: Total length 4.48, maximum width 1.60, length head .32, width head 1.08, interocular space .66, length pronotum .94, width pronotum .95, length scutellum .32, width scutellum .44, length hemelytra .90, length metatibia 2.10, length antennal segments 1—.28, 2—1.00, 3—.68, 4—.62; length labial segments 1—.50, 2—.50, 3—.40, 4—.56.

FEMALE GENITALIA: Figures 98, 99. See generic description.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Cape Province*, Schoemannspoort, 10 mi. N. of Oudtshoorn, elevation 1200 ft., 18 Nov. 1967, M. H. Sweet (SANC).

PARATYPES: *Cape Province*—3 macropterous ♂♂, 2 brachypterous ♀♀, same data as holotype; 1 macropterous ♂, Cape Peninsula, Noordhoek Beach, 23 Jan. 1968 (JAS, RTS).

This species is named for Dr. Merrill H. Sweet, of Texas A. & M. University, who collected most of the known specimens.

Nichomachus sweeti most closely resembles *N. minutus* but can be recognized by its larger size and much darker coloration.

The resemblance of the female of *N. sweeti* to species of *Crematogaster* ants from both Schoemannspoort and Noordhoek Beach is remarkable. The Noordhoek Beach specimen of *sweeti* was taken under *Helichrysum crispum* (L.) D. Don. (Compositae).

Pseudonichomachus, new genus

MACROPTEROUS MALE: Ant mimetic; head, pronotum, and scutellum smooth, weakly shining; anterior two-thirds of clavus, adjacent corium, cuneus, and cell of membrane strongly shining; remainder of corium pruinose; membrane dull; dorsum with scattered, decumbent, short hairs; antennae with dense short vestiture; tibiae with scattered semierect spines about as long as tibial diameter.

Head nearly vertical, concave behind; frons weakly convex, transversely rugose, longitudinally sulcate; posterior margin of vertex with low, broad carina; eyes occupying entire sides of head;

antennae inserted just above ventral margin and very close to eyes; antennal segment 1 slightly swollen, segments 2, 3, and 4 subequal in diameter, slightly less than diameter of segment 1; labium reaching or just surpassing mesocoxae; pronotum strongly constricted just anterior to middle, with narrow depressed collar, anterior lobe about two-thirds width of head, neck-like, posterior lobe inflated, nearly hemispherical; mesoscutum inclined anteriorly; scutellum bulbous; lateral corial margin strongly sinuate, anterior half strongly reflexed ventrally; clavus raised along commissure to nearly height of scutellum; cuneal incisure obsolete; membrane with single cell; abdomen narrow, reaching almost to apex of membrane; parempodia fleshy, convergent apically, recurved; pulvilli minute.

MALE GENITALIA: Figures 93A-95. Basic structure as in *Nichomachus*.

Females unknown.

TYPE SPECIES: *Pseudonichomachus mimeticus*, new species.

This genus is named for its close relationship to *Nichomachus*.

Pseudonichomachus differs from *Nichomachus* by the former having a much longer, more neck-like, anterior pronotal lobe than the latter.

Both known species of this genus are from South Africa and are ground living.

***Pseudonichomachus capeneri*, new species**

Figure 7

MACROPTEROUS MALE: Basic coloration reddish brown; apex of clavus, anterior quarter of corium, legs, antennae, and labium weakly castaneous; cuneus deep castaneous; abdomen light basally, castaneous apically; membrane smoky gray brown; hemelytra with white transverse maculae on anterior third and posterior third of corium, on basal quarter of cuneus, and on clavus at about midpoint of claval commissure; posterior margin of all epistrena above coxae and distal margin of all trochanters white.

Head and pronotum rather strongly shining.

Vertex slightly depressed between eyes, labium reaching to middle of mesocoxae; all appendages except antennal segments 1 and 2 and mesofemora and metafemora and tibiae missing in holotype.

MEASUREMENTS: Total length 4.80, maximum width 1.24, length head .38, width head 1.00, interocular space .24, length pronotum .88 (anterior lobe .28, posterior lobe .60), width pronotum 1.24, length scutellum .78, width scutellum .78, length corium 2.00, length clavus 1.60, length cuneus .82, width cuneus .50, length

claval commissure .66, distance apex commissure-apex membrane 2.12, length metatibia 2.18, length antennal segments 1—.32, 2—.96, 3—?, 4—?; length labial segments 1—.34, 2—.34, 3—.40, 4—.44.

MALE GENITALIA: Basic structure as in *P. mimeticus*.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Transvaal*, Elandshoek II.1956, A. L. Capener (SANC).

PARATYPES: *Transvaal*—2 macropterous ♂♂, Zoutpansberg District, Khalarha District, 3700 ft., 23. iv. 1954, at light, very open bush and grass veld (Balfour-Browne) (BM[NH]).

This species is named for Mr. A. L. Capener of Pretoria, who has been one of the most active collectors of Miridae in South Africa over the last two decades and has therefore made available for this study a tremendous amount of invaluable material.

Pseudonichomachus capeneri can be separated from *P. mimeticus*, the only other described species in the genus, by its bright orangish to reddish brown coloration; *mimeticus* is dark brown to nearly black.

***Pseudonichomachus mimeticus*, new species**

Figures 8, 93A–95

MACROPTEROUS MALE: General coloration blackish brown; head and anterior lobe of pronotum, corium at level of claval commissure, and femora, castaneous; distal third of antennal segment 3, broad band on distal half of mesotibiae and metatibiae, transverse fascia on corium at level of apex of scutellum (just reaching onto clavus), narrow transverse marking on clavus at midpoint of claval commissure, and narrow, anteriorly inclined, transverse bands two-thirds of width of corium (reaching lateral corial margin) at apex of clavus, dull white; anterior quarter of cuneus, posterior margin of all mesepisterna above coxae, and distal margin of trochanters white; all tarsi and abdominal sternite 2 light brown.

Head, pronotum and scutellum weakly shining.

Labium just surpassing mesocoxae.

MEASUREMENTS: Total length 4.08, maximum width 1.10, length head .20, width head .82, interocular space .26, length pronotum 1.06 (anterior lobe .40, posterior lobe .66), width pronotum 1.10, length scutellum .62, width scutellum .58, length corium 1.66, length clavus 1.26, length cuneus .76, width cuneus .40, length claval commissure .60, distance apex commissure-apex membrane 1.70, length metatibia 1.86; length antennal segments 1—.26, 2—1.04,

3—.80, 4—.35; length labial segments 1—.36, 2—.32, 3—.32, 4—.38.

MALE GENITALIA: Figures 93A-95. Basic structure as in *Nichomachus*.

Female unknown.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Transvaal*, top Magoebaskloof, 12 Dec. 1967, J. A. & S. Slater, T. Schuh, J. Munting (SANC).

PARATYPES: *Cape Province*—1 macropterous ♂, Cape Town (Bridwell). *Transvaal*—1 macropterous ♂, same data as holotype; 1 macropterous ♂, 22 mi. S. Barberton, 4900 ft. elevation, 24 Mar. 1968 (USNM, JAS, RTS).

This species is named for its ant-like appearance.

See discussion under *P. capeneri* for separation of species.

TRIBE ORTHOTYLINI

Cyrtorhinus Fieber

Cyrtorhinus Fieber, 1858, p. 313.

Cyrtorhinus was monographed by Carvalho and Southwood (1955). The genus presently contains six species distributed primarily in the Old World tropics with one species common to Europe and North America.

Cyrtorhinus melanops Reuter

Figures 9, 102, 103

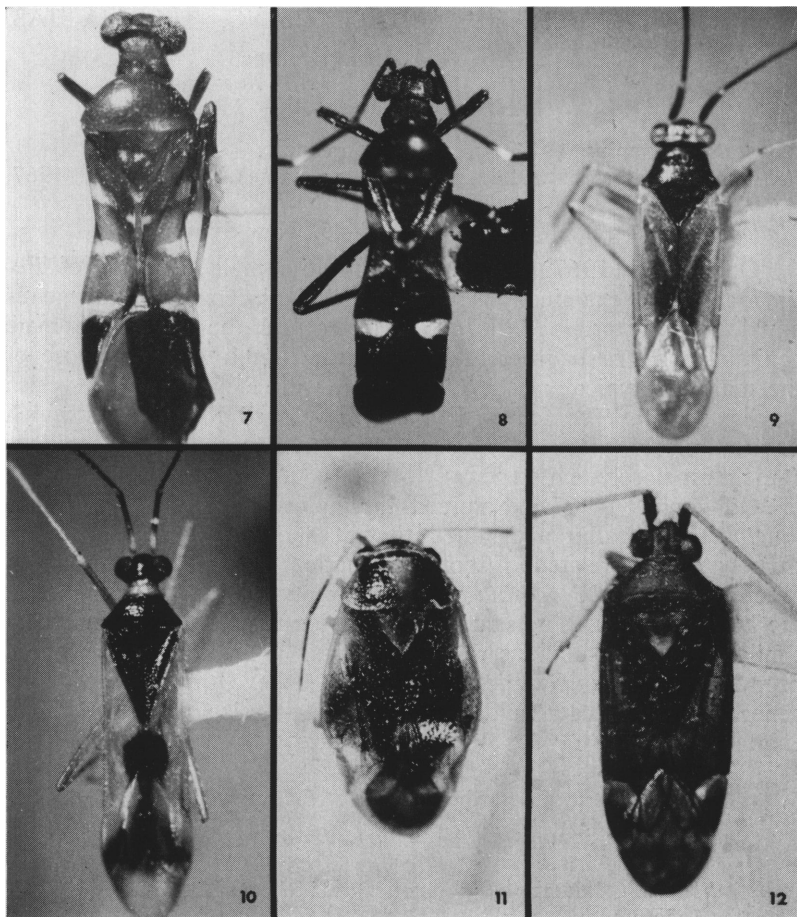
Cyrtorhinus melanops Reuter, 1905a, p. 6.—Carvalho, Dutra, and Becker, 1960, pp. 459-460, 475 (in part).

Cyrtorhinus melanops can be most easily recognized by the apically convergent, recurved parempodia, orthotyline-type male genitalia (Figs. 102, 103), the dark head, pronotum, and scutellum, the light hemelytra, and the shape of the head and body (Fig. 9).

No biological information is available for this species, but it is possible that it is primarily predatory, as is *Cyrtorhinus caricis* (Fallen) (Southwood and Leston, 1958).

Cyrtorhinus melanops is known only from Ethiopia and South Africa (Carvalho, 1958b). Carvalho et al. (1960), incorrectly recorded specimens of *Tytthus parviceps* from 10 miles north of Matatiele, Cape Province, as *C. melanops* (see also *T. parviceps*).

SPECIMENS EXAMINED: SOUTH AFRICA: *Cape Province*—1 macropterous ♂, Kokstad, 6.III.51 (Brinck and Rudebeck). *Trans-*



FIGS. 7-12. Nichomachini, Orthotylini. Fig. 7. *Pseudonichomachus capeneri*, male, holotype. Fig. 8. *Pseudonichomachus mimeticus*, male, holotype. Fig. 9. *Cyrtorhinus melanops*, male (Rustenburg, Transvaal). Fig. 10. *Felisacodes bryocorina*, male (Grootvatersbosch Forest Reserve, Cape Province). Fig. 11. *Pseudoambonea capeneri*, female, holotype. Fig. 12. *Pseudoloxops transvaalensis*, male (Messina, Transvaal).

vaal—1 macropterous δ , Hartebeespoort Dam, 20 mi. W. Pretoria, 30 October 1967; 3 macropterous ♀♀ , Little Sabie River, Sabie, 29 Nov. 1967; 1 macropterous ♀ , Rustenburg, I-4-11-1957 (Capener); 2 macropterous $\delta\delta$, Rustenburg, I-5-1957 (Capener); 1

macropterous ♂, Rietfontein, 4.12.06 (SANC, TM, LU, JAS, RTS).

Felisacodes Bergroth

Rhodesiella Poppius, 1914a, pp. 64–65 (preocc.).

Felisacodes Bergroth, 1926, p. 64 (new name).—Odhiambo, 1967, p. 1681.

Madagascariella Carvalho, 1953a, pp. 44–45. **New Synonymy.**

Odhiambo (1967) noted that until the male genitalia of *Felisacodes* were examined the correct tribal placement of the genus could not be determined. I have dissected both the male and female genitalia of *F. bryocorina* (Poppius) from South Africa. Those of the male are typical of the Orthotylini, with a membranous vesica lacking spiculi. The female has well developed K-structures which unquestionably places *Felisacodes* in the Orthotylini. *Zanchiella* is the most closely related genus.

Odhiambo (1967) examined the holotype of *Madagascariella longipides* Carvalho and noted that it and *Felisacodes* were extremely closely related, if not congeneric. I have also compared specimens of *F. bryocorina* with the holotype of *M. longipides* in the Paris Museum. The structure and coloration of the two are very similar, the most obvious difference being a more strongly rugose pronotum in *Madagascariella*. I do not believe this feature to be generically significant and therefore synonymize *Madagascariella* Carvalho with *Felisacodes* Bergroth.

List of described species of *Felisacodes*

bryocorina Poppius (*Rhodesiella*), 1914a, p. 65. Rhodesia; South Africa.

dibuora Odhiambo (*Felisacodes*), 1967, pp. 1681–1683. Cameroon.

longipides Carvalho (*Madagascariella*), 1953, pp. 44–45. Madagascar.

Felisacodes bryocorina (Poppius)

Figure 10

Rhodesiella bryocorina Poppius, 1914a, p. 65.

Felisacodes bryocorina Carvalho, Dutra, and Becker, 1960, pp. 462–463.

Felisacodes bryocorina can be distinguished from all other South African mirids by the elongate body (total length 4.12 mm., maximum width 1.04 mm.), the hyaline hemelytra, the row of punctures

on the clavus parallel to the claval commissure, and the extremely long appendages, with antennal segment 1 being longer than the width of the head. *F. bryocorina* can be separated from *F. dibuora*, the only other species of *Felisacodes* in Africa, in that *dibuora* has a light colored scutellum and *bryocorina* has a dark scutellum, which is unicolorous with the posterior lobe of the pronotum.

Three males and one female of *F. bryocorina* are in the British Museum (Natural History). I have selected a male as the lectotype. It bears the labels: "S. Rhodesia, Chirinda, 12.VI.1911, Swynerton" and "LECTOTYPE *Rhodesiella bryocorina* Poppius, det. R. T. Schuh."

The only host plant record for this species is *Plectranthus fruticosus* L'Hes. (Labiatae). The plants were growing in a heavily shaded forest.

SPECIMENS EXAMINED: SOUTH AFRICA: *Cape Province*—40 macropterous ♂♂, 23 macropterous ♀♀ (1 nymph in alcohol), Grootvatersbosch For. Res., 14 mi. N. Heidelberg, 5 Feb. 1968 (Adults and nymphs on *Plectranthus fruticosus* L'Hes.); 2 macropterous ♀♀, Port St. Johns, Pondoland, Sept. 1923 (Turner); 1 macropterous ♂, Storms River Mouth, 13 Feb. 1968; 1 macropterous ♂, Tsitsikama Forest, Stormsrivierpiek, 13.I.51 (Brinck and Rudebeck). *Natal*—1 macropterous ♂, Kloof, 1500 ft., Aug. 1926 (Turner) (SANC, BM[NH], TM, SAM, HM, LU, USNM, JAS, RTS).

"The *Orthotylus* complex"

Several groups of species that can be placed in *Orthotylus* Fieber or closely related genera are present in South Africa. The only comprehensive work on *Orthotylus* is that of Southwood (1953) which is restricted to the British species. This work is unfortunately of limited use outside of Europe for it does not define the genus on a world basis and the subgenera of Southwood are based only on European species. Lindberg (1951; 1953) has dealt extensively with the species of *Orthotylus* from the Canary Islands and segregated *Canariocoris* Lindberg from *Orthotylus*. Knight (1968) described several new species of *Melanotrichus* Reuter, which he considered as a distinct genus, from the western United States.

The extreme variation found in *Orthotylus* is described in part by Southwood (1953) and can be judged also by the number of generic synonyms associated with the genus (see Carvalho, 1958b). *Orthotylus* is probably cosmopolitan, although Carvalho does not record it from South America. Poppius (1914a) listed only four

species from Africa (including *Chlorosomella geniculata* Reuter). Very little has been done to advance our knowledge of *Orthotylus* in Africa since Poppius' work.

In the collections I have examined from South Africa there are approximately 20 species that can be assigned to *Orthotylus* and related genera. Several distinct groups of species exist, and the type of character variation in them is difficult to understand.

At least two species from South Africa appear to be related to the European genus *Pachylops* Fieber. The claspers of the males are modified and bizarre in one species, which has a slender, elongate labium, while the other species has much more conventional male genitalia, and a short apically thickened labium, very similar to *Pachylops* species from Europe. The coloration of these species is essentially brownish or reddish and the dorsum is polished and shining.

Two specimens very close to *Chlorosomella* (= *Orthotylus*) *geniculata* Reuter are known from Politzi, Transvaal.

A long series of light green males from light traps, primarily at Grootfontein, Middelburg, Cape Province, probably represents a single rather variable species. These specimens have the black, scale-like hairs of the subgenus *Orthotylus* (*Melanotrichus*); they also have claspers that are of a type that occurs in several species that lack the black scale-like hairs.

Two small groups of light green species, with the clasper type found in the "*Melanotrichus*" species mentioned above, can be distinguished on labial length. Eight additional species which vary in characters of the eyes, beak length, male genitalia, and general body shape have also been examined.

One of the most common "*Orthotylus*" species is velvety green and lives on *Acacia*. Two specimens appearing to be closely related to this species are known from Djab, South West Africa and are deposited in the Transvaal Museum; they have the hemelytra velvety red instead of green.

A very small species with a dark head, pronotum, and scutellum and light hemelytra is known from Malips Drif, Transvaal.

***Pseudambonea*, new genus**

MACROPTEROUS FEMALE: Head nearly vertical, body thick-set; pronotum distinctly transversely rugose, head, scutellum, and hemelytra smooth, head with scattered, semierect, light hairs about as long as tibial diameter; remainder of dorsum with decumbent light hairs about as long as tibial diameter; antennae with short, light

hairs about as long as diameter of segment 3; antennal segment 1 with a few, erect, fine, light spines on inner surface; labium with some short, erect, light hairs; thoracic pleura glabrous; femora with some decumbent light hairs and a few very long, fine, erect hairs on ventral surfaces; tibiae and tarsi with reclining, short, light hairs and a few semierect light spines about the length of tibial diameter; abdomen with reclining light hairs about as long as tibial diameter.

Head strongly declivous, slightly wider than anterior margin of pronotum; eyes occupying about half height of head, not noticeably granular; antennae inserted at level of ventral margin of eyes; antennal segment 1 moderately enlarged, segment 2 distinctly tapering proximally, distally about three-fourths diameter of segment 1, segments 3 and 4 subequal in diameter, equal to proximal diameter of segment 2 (about three-fourths distal diameter of segment 2); clypeus large, rounded transversely, strongly curved posteroventrally; bucculae small; buccal cavity short; gula short, length about equal to diameter of antennal segment 1; pronotum only very slightly narrowed anteriorly, anterior margin finely carinate, upturned, lateral margins nearly straight; pronotum flattened, calli indistinct; entire posterior margin of pronotum slightly upturned; mesoscutum concealed beneath pronotum; scutellum very slightly elevated; hemelytra strongly convex transversely; lateral corial margins strongly and somewhat irregularly convex, hemelytra widest at level just posterior to midpoint of claval commissure; cuneal incisure deep, fracture at right angles to longitudinal axis of body; cuneus and membrane strongly declivous; membrane with two cells; femora narrow; only metatibiae with longitudinal rows of tiny closely-spaced spines; claws stout, strongly curved, thickened basally; parempodia fleshy, convergent apically, recurved; pulvilli minute.

FEMALE GENITALIA: Figure 106. Posterior wall with well developed K-structures.

MACROPTEROUS MALE: Structurally similar to female but more elongate.

MALE GENITALIA: Figures 104, 105. Vesica membranous with sclerotized spiculi.

TYPE SPECIES: *Pseudambonea capeneri*, new species.

This genus is named for its very close resemblance to *Ambonea Odhiambo*.

Pseudambonea appears superficially to be closely related to *Ambonea* in the Pilophorini. The structure of the posterior wall of the female, in particular, indicates that there is actually no close relationship between the two genera. This contention is supported

also by the structure of the male genitalia. The genus can be most easily recognized by the compact body form, the posteriorly concave, strongly declivous, broad head, the single type of pubescence, the orthotyline pretarsal structures and the type of male and female genitalia. *Ambonea* can be easily separated from *Pseudambonea* in that it has wooly pubescence as well as setiform hairs on the dorsum.

***Pseudambonea capeneri*, new species**

Figures 11, 104–106

MACROPTEROUS FEMALE: Dorsum generally light brown or tan; broad median longitudinal band on head including clypeus (excluding posterior margin of vertex), pronotum very broadly on either side of midline, and clavi (except anteriorly along suture) brown; posterior half of hemelytra and cuneus mesally more or less strongly suffused with brown or reddish brown; membrane smoky brown; antennal segment 1, proximal half of antennal segment 2, labium, and legs including procoxae cream; distal half of antennal segment 2, antennal segments 3 and 4, and all tarsal segments 3 dark brown; metafemora with broad red band distally; mesocoxae and metacoxae, thoracic pleura, and most of abdominal venter reddish brown; anterior half of abdominal segment 9 light.

Entire body highly polished and shining.

Posterior margin of vertex with distinct raised carina; antennal fossae removed from anterior margins of eyes by distance equal to distal diameter of antennal segment 2; labium reaching apex of mesocoxae; anterior pronotal margin weakly sinuate, posterior margin straight across scutellum, very broadly rounded laterally; posterior margin of membrane cells broadly rounded; abdomen just surpassing apex of cuneus; metatarsal segment 2 slightly longer than segment 1, segment 3 about 2 times length of segment 1.

MEASUREMENTS: Total length 3.36, maximum width 1.92, length head .16, width head 1.04, interocular space .60, length pronotum .64, width pronotum 1.40, length scutellum .52, width scutellum .72, length corium 1.64, length clavus 1.36, length cuneus .64, width cuneus .56, length claval commissure .72, distance apex commissure-apex membrane 1.52, length metatibia 1.48; length antennal segments 1—.32, 2—1.08, 3—.52, 4—.40; length labial segments 1—.34, 2—.32, 3—.20, 4—.24.

FEMALE GENITALIA: Figure 106.

MACROPTEROUS MALE: Appearing uniformly gray brown; coloration may be result of teneral condition of only known male specimens.

MALE GENITALIA: Figures 104, 105.

HOLOTYPE: Macropterous ♀, SOUTH AFRICA: *Cape Province*, 16 mi. north of Steytlerville, 24.X.64, A. L. Capener (SANC).

PARATYPES: 3 macropterous ♀♀, 2 macropterous ♂♂, same data as holotype (SANC, RTS).

This species is named for the collector, Mr. A. L. Capener.

As the only known species in the genus, *P. capeneri* can be recognized by the characters noted in the generic discussion.

***Pseudoloxops* Kirkaldy**

Loxops Fieber, 1858, p. 314 (preocc.).

Pseudoloxops Kirkaldy, 1905, p. 268 (new name).

Pseudoloxops Kirkaldy is widely distributed in the southern Palearctic and Old World tropics including the Southwest Pacific. It currently includes 16 described species. The genus can be recognized by the following combination of characters: body ovoid; coloration usually carmine-red and yellow-white; frons bluntly produced; antennal segment 1 and dorsum with long, shaggy pubescence; parempodia convergent apically, recurved; and male and female genitalia of the "*Orthotylus*-type". The shaggy pubescence is often badly rubbed.

Several specimens probably representing three new species of *Pseudoloxops*, in addition to the species described below, are known from South Africa. They are: a male from Satara Camp, Kruger National Park, deposited in the J. A. Slater Collection; a female from Malelane, Transvaal, deposited in the Transvaal Museum, probably the same species as the Satara specimen; a female from Port St. Johns, Cape Province, deposited in the British Museum (Natural History), probably closely related to the above specimens, and a female from Keiskama Hoek, King Williams Town District, Cape Province, deposited in the South African National Collection of Insects, distinct from all of the above specimens.

***Pseudoloxops transvaalensis*, new species**

Figures 12, 107, 108

MACROPTEROUS MALE: Red as follows—pronotum, mesoscutum, clavus, corium, apical half of cuneus, veins of membrane, midline of frons, vertex very narrowly, juga, antennal segment one, thoracic pleura, distal two-thirds of metafemora, and venter of abdomen laterally; vertex, frons, scutellum (heavily suffused with red medially), antennal segment 2 (segments 3 and 4 missing from

holotype), thoracic sternum, all coxae, profemora and mesofemora entirely, metafemora proximally, all tibiae, all tarsi, and abdominal venter, irregularly, cream; basal half of cuneus orange.

Entire body surface smooth, dull; dorsum with moderately dense, semierect, wooly hairs about as long as $1\frac{1}{2}$ times diameter of antennal segment 2; pronotum, scutellum, clavus, and corium with some decumbent, flattened, sericeous hairs (in patches on clavus and corium); antennal segment 1 with many long, shaggy, dark hairs as on dorsum, segment 2 with very short, decumbent, light pubescence; labium with some erect, short, light hairs; femora with reclining hairs and a few long, fine, erect hairs on ventral surfaces; tibiae with only very sparse, fine, reclining light hairs and a few semierect light spines slightly longer than tibial diameter; thoracic pleuron glabrous; abdominal venter with long, reclining, light hairs.

Eyes very large, strongly protuberant, occupying nearly entire sides of head as viewed from above, vertex flat, nearly horizontal, posterior margin poorly defined, ecarinate; frons transversely rugose, produced into broad, blunt, rounded projection occupying entire space between antennal bases as viewed from above; anterior margins of eyes strongly sinuate; antennae inserted at middle of anterior margins of eyes, fossae contiguous with eyes; antennal segment 1 distinctly enlarged, somewhat swollen medially, segment 2 cylindrical, slightly more than half diameter of segment 1; bucculae only slightly expanded; buccal cavity reaching prosternum; labium reaching to trochanteral joint of mesocoxae; pronotum with anterior margin finely carinate, upturned, sinuate, lateral margins nearly straight, distinctly convergent anteriorly, posterior margin excavated across mesoscutum; calli obscure, with shallow longitudinal depression between them; mesoscutum broadly exposed, about half length of flat scutellum; lateral corial margins straight, parallel; cuneal incisure obsolete, fracture at right angles to corial margin; metatibiae only with longitudinal rows of tiny closely spaced spines; metatarsal segments 1 and 2 subequal in length, segment 3 slightly longer than segment 2; claws strongly curved, broad basally; parempodia fleshy, convergent apically, recurved; pulvilli minute.

MEASUREMENTS: Total length 3.68, maximum width 1.44, length head .36, width head .84, interocular space .32, length pronotum .44, width pronotum 1.24, length scutellum .64, width scutellum .92, length corium 1.84, length clavus 1.44, length cuneus .60, width cuneus .30, length claval commissure .84, distance apex commissure-apex membrane 1.44, length metatibia 1.96, length antennal segments 1—.48, 2—.80, 3—.28, 4—.32.

MALE GENITALIA: Figures 107, 108. Vesica membranous with sclerotized spiculi.

MACROPTEROUS FEMALE: Similar to male but with the eyes smaller and vertex relatively wider; pronotum more flattened than in male, posterior margin not excavated; lateral corial margins slightly convexly rounded.

FEMALE GENITALIA: Posterior wall with well developed K-structures.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Transvaal*, Claudiushoop, 11 mi. N. Dendron, 15.12.65, M. Johannsmeier (SANC).

PARATYPES: *Transvaal*—1 macropterous ♂, Messina, XII-30-I-2-1957 (Capener); 1 submacropterous ♀, Punda Milia, KNP., 16.I.65 (Hoffman) (SANC, RTS).

ADDITIONAL SPECIMENS: *South West Africa*—1 macropterous ♀, Abachaus, IX. 1946 (Hobohm) (TM).

This species is named for its occurrence in the Transvaal.

P. transvaalensis is characterized by long wooly pubescence, a bluntly produced frons, deep red coloration with the basal half of the cuneus orange, and the structure of the male genitalia. The specimen from Abachaus, South West Africa, is in very poor condition and therefore has not been included in the paratype series.

Nothing is known of the biology of this species.

***Pseudopilophorus*, new genus**

MACROPTEROUS FEMALE: Elongate, ant mimetic; entire body smooth, dull; pronotum indistinctly transversely rugose; body with moderately dense, sericeous, decumbent pubescence; antennae with very fine, short, semiappressed vestiture; femora and tibiae with decumbent hairs.

Head vertical, elongate dorsoventrally, frons and gula nearly parallel; eyes large, somewhat reniform in lateral view, contiguous with anterior margin of pronotum; posterior margin of vertex carinate, slightly arched above dorsal margin of eyes; vertex depressed just anterior to posterior margin; frons nearly flat; antennae inserted just above ventral margin of eyes; antennal segment 1 only slightly enlarged, segment 2 tapering proximally, distal diameter about equal to diameter of segment 1, segment 3 about equal to proximal diameter of segment 2, segment 4 of slightly smaller diameter than segment 3; clypeus large; labrum compressed laterally; gula about length of antennal segment 1; buccal cavity large, elongate oval; labium very short; pronotum campanulate, flat, somewhat

inclined posteriorly; mesoscutum exposed, flattened; scutellum convex; hemelytra with lateral margins strongly sinuate, narrowest at about middle of corium; clavi elevated along commissure; cuneal fracture angled anteromedially; membrane with 2 cells; profemora and tibiae of conventional structure; mesofemora slightly larger proximally than distally; mesotibiae flattened laterally, tapered, greatest width about one-third distance from femoral joint; metafemora and tibiae similar in structure to mesolegs but much longer and conspicuously bowed; mesotibiae and metatibiae with longitudinal rows of tiny closely spaced spines; parempodia fleshy, apically convergent, recurved; pulvilli minute; abdomen strongly constricted basally.

FEMALE GENITALIA: Figures 109, 112. Posterior wall with well developed K-structures; sclerotized rings with lateral margins strongly infolded.

MACROPTEROUS MALE: Very similar to female.

MALE GENITALIA: Figures 110, 111. Vesica membranous with long sclerotized spiculum.

TYPE SPECIES: *Pseudopilophorus capeneri*, new species.

This genus is named for its resemblance to *Pilophorus*.

Pseudopilophorus superficially resembles *Pilophorus*; however, the structure of the male and female genitalia place it in the Orthotylini, rather than in the Pilophorini. This is the only ant-mimetic genus in the Orthotylini known to occur in Africa and it is not obviously related to any other described genus. *Pseudopilophorus* can be recognized by its ant-mimic appearance, coloration pattern, convergent recurved parempodia, and male and female genital structures.

***Pseudopilophorus capeneri*, new species**

Figures 13, 109–112

MACROPTEROUS FEMALE: Posterior two-thirds of pronotum, scutellum (except as noted below), thoracic pleura and venter, and abdomen slate gray; head, anterior half of pronotum, protibiae on dorsal and ventral surfaces, antennal segment 3, distal half of antennal segment 4, labial segments 1 and 2, labrum, and dorsal stripe on profemora orangish to mahogany; proximal half of antennal segment 4, labial segments 3 and 4, procoxae, profemora, lateral surfaces of protibiae, mesotibiae distally, all tarsi, metacoxae, oval maculae covering most of posterior half of scutellum and most of cunei cream to light yellow; remainder of legs castaneous to black; corium and clavus generally gray brown; membrane and posteromesial por-

tion of cuneus smoky gray; much of body surface with dull whitish bloom.

Mesial margins of eyes straight, diverging only slightly ventrally in anterior view; antennal fossae nearly contiguous with eyes; labium just attaining middle of mesosternum; anterior margin of pronotum straight, posterior margin sinuate, concave across mesoscutum; abdomen not quite attaining apex of membrane; posterior margin of large membrane cell broadly rounded; metatarsal segments subequal in length.

MEASUREMENTS: Total length 4.96, maximum width 1.44, length head .20, width head 1.04, interocular space .48, length pronotum .84, width pronotum 1.32, length scutellum .96, length corium 2.44, length clavus 1.92, length cuneus .92, width cuneus .52, length claval commissure 1.12, distance apex commissure-apex membrane 1.96, length metatibia 4.20; length antennal segments 1—.32, 2—1.76, 3—1.28, 4—.72; length labial segments 1—.30, 2—.32, 3—.28, 4—.32.

FEMALE GENITALIA: Figures 109, 112.

MALE GENITALIA: Figures 110, 111.

HOLOTYPE: Macropterous ♀, SOUTH AFRICA: *Transvaal*, Tzaneen, 11–16 Dec. 1963, A. L. Capener (SANC).

PARATYPES: Macropterous ♂, 10 macropterous ♀♀, same data as holotype (1 specimen—host plant *Terminalia sericea*). SWAZILAND—Eranchi, XII-15-31-1954 (Capener) (SANC, JAS, RTS).

This species is named for Mr. A. L. Capener.

As the only species in the genus, *P. capeneri* can be recognized by the characters noted in the generic discussion.

This species has been taken on *Terminalia sericea* Burch. (Combretaceae), but no other biological information is available.

Zanchiella, new genus

MACROPTEROUS MALE: Small, elongate, elliptical, or nearly parallel sided; head, pronotum, and scutellum smooth; pronotum weakly transversely rugulose; hemelytra hyaline or subhyaline; dorsum with shining or dull, moderately long, semierect hairs; head broad, narrowed behind eyes; eyes large, granular, with or without short hairs; vertex weakly convex; antennae inserted slightly below middle of anterior margin of eyes which are more or less emarginate; antennal segment 1 slightly enlarged distally, segment 2 of slightly smaller diameter than segment 1, segments 3 and 4 subequal in diameter, about two-thirds diameter of segment 2; bucculae weakly

developed; gula short; labium long; pronotum with very narrow collar; calli low, indistinct; lateral margins of pronotum slightly concave; mesoscutum narrowly exposed, separated from scutellum by distinct, deep, transverse impression; scutellum usually broadly convexly elevated; lateral margins of hemelytra usually broadly convexly rounded; cuneal incisure very shallow, fracture slightly angled anteromedially; clavus with row of very fine punctures adjacent to scutellum and commissure and also row of punctures parallel to claval suture; two cells in membrane, inner vein nearly parallel to inner margin of clavus; abdomen reaching approximately to base of membrane; metatibiae with several longitudinal rows of tiny, closely-spaced spines; all tibiae with a few scattered, light, reclining spines about length of tibial diameter; tarsal claws strongly curved; parempodia fleshy, apically convergent, recurved; pulvilli minute.

MALE GENITALIA: Vesica membranous, without spiculi.

MACROPTEROUS FEMALE: Structurally similar to macropterous male; eyes slightly smaller and vertex correspondingly wider in female than in male.

FEMALE GENITALIA: Posterior wall with well developed K-structures.

TYPE SPECIES: *Zanchiella bowkeriae*, new species.

This genus is named for its close resemblance to *Zanchius* Distant.

Zanchiella can be recognized by the generally hyaline hemelytra with a row of punctures along the claval suture (see however *Z. ericae*) and the relatively short appendages. It is most closely related to *Felisacodes* and *Zanchius* in Africa.. The row of punctures on the clavus, the shape of the head, and the hyaline hemelytra, ally *Zanchiella* to *Felisacodes*; the general body form, particularly the structure of the hemelytra, and the type of vestiture, relate *Zanchiella* to *Zanchius*. The convergent recurved parempodia, the membranous vesica in the male, and the posterior wall with well developed K-structures in the female support the placement of *Zanchiella* in the Orthotylini.

KEY TO SPECIES OF *Zanchiella*

1. Basic coloration greenish (some specimens yellowish), cuneus red, contrasting with remainder of hemelytra; hemelytra not hyaline *ericae* (Fig. 16)
- Basic coloration sometimes greenish, but cuneus and remainder of hemelytra never contrastingly colored; hemelytra hyaline or subhyaline 2

2. Clavus dark brown except for narrow light area along lateral margin; frons, clypeus, and pronotum partially red; veins of membrane cells dull red *capensis* (Fig. 15)
Clavus entirely light or with dark marking only on posterior third and along mesial margin; frons, clypeus, pronotum, and veins of membrane not red 3
3. Anterior third of pronotum tan, posterior two-thirds very dark brown to black; posterior third of clavus suffused with dark brown *natalensis* (Fig. 17)
Pronotum and clavus nearly unicolorous light yellow or green 4
4. Basic coloration light yellow; hemelytra with distinct brown fascia between apex of claval commissure and base of membrane *bowkeriae* (Fig. 14)
Basic coloration of hemelytra light greenish; head, pronotum, and scutellum light brownish; transverse fascia on hemelytra obsolete or very faint *sweeti* (Fig. 18)

Zanchiella bowkeriae, new species

Figure 14

MACROPTEROUS MALE: Head, pronotum, scutellum, hemelytra, thoracic venter, and legs very light yellowish with darker markings as noted below; pronotum lateroventrally and posterolaterally and scutellum anterolaterally suffused with brown; corium with irregular brown transverse macula between apex of clavus and base of membrane; inner margin of costal vein and lateral margin of cuneus obscurely suffused with green; eyes black; antennal segment 1 and distal third of segment 2 dark brown, proximal two-thirds of segment 2 light brown or yellow, distal half of segment 2 with broad reddish band; antennal segments 3 and 4 light brown; membrane smoky brown, veins slightly darker; abdomen very light green to nearly white.

Hemelytra hyaline, weakly shining.

Frons slightly produced between eyes; anterior margin of eyes conspicuously emarginate at antennal bases; labium just attaining distal end of metacoxae; punctures on clavus small but distinct.

MEASUREMENTS: Total length 4.52, maximum width 1.34, length head .30, width head .66, interocular space .24, length pronotum .52, width pronotum 1.02, length scutellum .46, width scutellum .62, length corium 1.98, length clavus 1.30, length cuneus .81, width cuneus .40, length claval commissure .72, distance apex commissure-apex membrane 2.00, length metatibia 2.20; length antennal segments 1—.42, 2—1.50, 3—.82, 4—approx. .74; length labial segments 1—.28, 2—.30, 3—.40, 4—.38.

MALE GENITALIA: Not illustrated. See generic discussion.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Transvaal*, 22 mi. S. Barberton, 4900 ft. elevation, 24 Mar. 1968, T. Schuh, J. A. & S. Slater, M. Sweet (Adults on *Bowkeria cymosum* McOwan) (SANC).

PARATYPES: 4 macropterous ♂♂, 3 macropterous ♀♀, same data as holotype (SANC, JAS, RTS).

This species is named for the host plant genus *Bowkeria*.

Zanchiella bowkeriae is most closely related to *Z. capensis* and *Z. natalensis*. It can be most easily recognized by the light colored pronotum in combination with the conspicuous dark fascia on the posterior half of the corium.

This species is known only from the type locality on *Bowkeria cymosum* McOwan (Scrophulariaceae). The host genus is endemic to South Africa (Phillips, 1951).

***Zanchiella capensis*, new species**

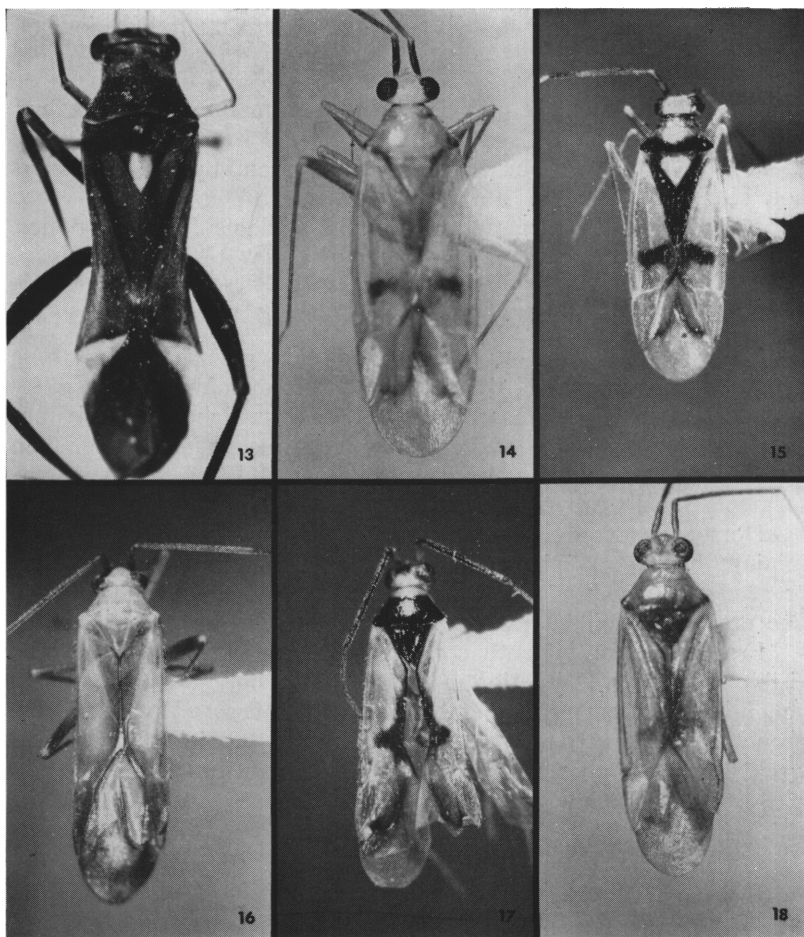
Figure 15

MACROPTEROUS MALE: Basic coloration very light yellowish; frons, clypeus, basal third of antennal segment 1, pronotum dorsally (except for a rounded, light, central marking and the posterior quarter), mesoscutum, and extreme apex of cuneus, bright red; remainder of antennae brown; eyes black; pronotum on pleural region and posterior quarter dorsally dark brown; clavus mesiad of row of punctures along claval suture dark brown; transverse macula on corium between apex of cuneus and base of membrane, and veins of membrane dull red brown; thoracic pleuron light reddish brown (except as above); abdomen lateroventrally and genital segments red, remainder white.

Pronotum very obscurely rugulose, polished, shining; hemelytra hyaline, weakly shining.

Frons slightly convexly produced between eyes; eyes weakly emarginate at antennal bases; labium just surpassing apex of mesocoxae.

MEASUREMENTS: Total length 3.20, maximum width 1.12, length head .26, width head .58, interocular space .26, length pronotum .44, width pronotum .84, length scutellum .40, width scutellum .58, length corium 1.64, length clavus 1.10, length cuneus .66, width cuneus .30, length claval commissure .64, distance apex commissure-apex membrane 1.44, length metatibia 1.86; length antennal segments 1—.32, 2—1.16, 3—.66, 4—.60; length labial segments 1—.30, 2—.30, 3—.42, 4—.40.



FIGS. 13–18. Orthotylini. Fig. 13. *Pseudopilophorus capeneri*, male, holotype. Fig. 14. *Zanchiella bowkeriae*, male, holotype. Fig. 15. *Zanchiella capensis*, male, holotype. Fig. 16. *Zanchiella ericae*, male (Giants Castle, Natal). Fig. 17. *Zanchiella natalensis*, male, holotype. Fig. 18. *Zanchiella sweeti*, female (Fountains, Pretoria, Transvaal).

MALE GENITALIA: Not illustrated. See generic discussion.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Cape Province*, Ysterhoutrug Picnic Site, 18 mi. NE Knysna, 10 Feb. 1968, T. Schuh, J. A. & S. Slater, M. Sweet (SANC).

PARATYPES: *Cape Province*—1 macropterous ♂, same data as holotype; 1 macropterous ♀, Storms River Mouth, 14-15.X.1964 (Capener) (SANC, RTS).

This species is named for its occurrence in the Cape Province.

Zanchiella capensis is most closely related to *Z. natalensis* and *Z. bowkeriae* but can be separated from them by the characters noted in the above key.

No host or biological information is available for this species.

Zanchiella ericae, new species

Figure 16

MACROPTEROUS MALE: Basic coloration greenish with strong yellow tinge, or nearly all yellow; cuneus red; membrane light smoky gray, veins slightly reddish; antennae and legs light brownish, antennal segments 3 and 4 and all tarsal segments slightly darker than remainder of appendages; labial segments 1 and 2 greenish yellow, segments 3 and 4 brown; eyes dark brown.

Dorsum generally smooth and very finely granulose, weakly shining; hemelytra subhyaline; dorsum with scattered, fine, erect or semierect, moderately long, light brown hairs; antennae with a fine erect spine on interior surface of segment 1; eyes glabrous.

Frons rather prominently convexly rounded between eyes, clypeus visible from above; anterior margins of eyes only weakly concave, not noticeably emarginate; labium slightly surpassing metacoxae; pronotal collar extremely narrow; anterior margin of pronotum weakly sinuate; posterior margin of pronotum broadly excavated across scutellum; row of punctures on clavus obsolete; tibial spines semierect.

MEASUREMENTS: Total length 3.92, maximum width .92, length head .30, width head .60, width vertex .26, length pronotum .30, width pronotum .76, length scutellum .50, width scutellum .62, length corium 1.96, length clavus 1.28, length cuneus .84, width cuneus .30, length claval commissure .76, distance apex commissure-apex membrane 2.00, length metatibia 2.06; length antennal segments 1—.38, 2—1.44, 3—.98, 4—.54; length labial segments 1—.34, 2—.34, 3—.36, 4—.34.

MALE GENITALIA: Not illustrated. See generic discussion.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Natal*, Giants Castle Park, 5800 ft. elevation, 6 Mar. 1968, T. Schuh, J. A. & S. Slater, M. Sweet (Adults and nymphs on *Erica leucopelta* Tausch.) (SANC).

PARATYPES: 5 macropterous ♂♂, 6 macropterous ♀♀, same data as holotype (SANC, JAS, RTS).

ADDITIONAL SPECIMENS: *Cape Province*—3 macropterous ♀♀, Bainskloof Pass Summit, 21 Jan. 1968; 2 macropterous ♂♂, 3 macropterous ♀♀, Fernkloof Nat. Res., Hermanus, 3 Feb. 1968; 1 macropterous ♀, 2 mi. S. Goukamma, Knysna, 8 Feb. 1968; 1 macropterous ♂, 1 macropterous ♀, Hermanus, 1 Feb. 1968; 4 macropterous ♂♂, 15 macropterous ♀♀ (in alcohol—1 ♂, 2 ♀♀, 4 nymphs), just W. of Knysna, 8 Feb. 1968 (Adults and nymphs on *Erica floribunda* Lodd.); 1 macropterous ♂, 1 macropterous ♀, 6 mi. E. Plettenburg Bay, elevation 500 ft., 12–13 Feb. 1968; 2 macropterous ♂♂, 4 macropterous ♀♀ (in alcohol—1 ♂), Ysterhoutrug Picnic Site, 18 mi. NE Knysna, 10 Feb. 1968 (Adults and nymphs on *Erica* sp.). *Natal*—9 ♂♂, 12 ♀♀ (6 nymphs in alcohol), same data as holotype; 1 macropterous ♂, 1 macropterous ♀, Sani Pass, 6200 ft., 10 Mar. 1968 (Adults and nymphs on *Erica leucopelta* Tausch.). *Orange Free State*—7 macropterous ♂♂, 2 macropterous ♀♀, Golden Gate, 12.X.66 (Capener) (Host plant—*Erica maesta*). *Transvaal*—6 macropterous ♀♀ (in alcohol—1 ♂, 1 nymph), 22 mi. S. Barberton, 4900 ft. elevation, 24 Mar. 1968 (Adults and nymphs on *Erica drakensbergensis* Guth. & Bol.) (SANC, HM, BM[NH], JAS, RTS).

This species is named for the host plant genus, *Erica*.

I am placing this species in *Zanchiella* with some reservations. The other four species of the genus are very closely related based on the presence of claval punctures (obscure in *sweeti* and absent in *ericae*), the general body shape (much less oval in *sweeti* and *ericae* than in the other species), and the coloration pattern. *Zanchiella ericae* is isolated within the genus, but it seems unwise at the present time to erect a new genus for the reception of this species until the taxonomy of *Zanchiella* and related genera is better understood.

The variation in coloration and relative proportions between specimens from different localities is in many cases extreme, and if an adequate series were not available many specimens would almost certainly be considered as representing distinct species. The most obvious variation is in the ratio of the total length to maximum width, the ratio of length to width of the cuneus, and the ratio of total width of the head to the interocular space. The Giants Castle specimens have a very elongate aspect with a long narrow cuneus and rather large eyes and a narrow vertex. Specimens from Fernkloof Nature Reserve, Hermanus, are at the opposite extreme in all

of these characters. Specimens from other localities show intermediate conditions, but there is no obvious geographical pattern to the variation. Most specimens are light green with some yellowish suffusion, but others are almost totally yellow. Because of this variation I have designated only those specimens from the type locality as paratypes. The structure of the male genitalia of all specimens examined is very similar.

Z. ericae is apparently restricted to the genus *Erica* (Ericaceae), and seems to occur in nearly all regions of South Africa where *Erica* is present. Known host species include *E. floribunda* Lodd., *E. maesta*, *E. leucopelta* Tausch., and *E. drakensbergensis* Guth. and Bol.

Zanchiella natalensis, new species

Figure 17

MACROPTEROUS MALE: Anterior portion of vertex and frons including clypeus brown; posterior half of vertex, head below eyes, and anterior third of pronotum very light brown; posterior two-thirds of pronotum and entire scutellum very dark brown; hemelytra hyaline, nearly transparent; clavus along scutellum and commissure very dark brown; posterior third of clavus and macula on corium between apex of clavus and base of membrane brown; membrane, particularly veins, smoky brown; mesial margin of costal vein and lateral margin of clavus suffused with green; antennae dark brown; labium white; thoracic pleura generally brown; coxae and legs very light brown or yellowish; base of abdomen and genital segment dark brown; remainder of abdomen light greenish.

Pronotum and scutellum polished, shining, with transverse rugosities.

Head very weakly produced between eyes; anterior margins of eyes weakly emarginate; labium just surpassing apex of metacoxae.

MEASUREMENTS: Total length 3.64, maximum width 1.08, length head .28, width head .62, interocular space .20, length pronotum .44, width pronotum .84, length scutellum .42, width scutellum .52, length corium 1.68, length clavus 1.28, length cuneus .66, width cuneus .30, length claval commissure .66, distance apex commissure-apex membrane 1.74, length metatibia 1.94; length antennal segments 1—.40, 2—1.24, 3—.81, 4—.79; length labial segments 1—.26, 2—.30, 3—.58, 4—.20.

MALE GENITALIA: Not illustrated. See generic discussion.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Natal*, Olivier-

shoek Pass Summit, 5400 ft. elevation, 25 mi. S. Harrismith, 4 Mar. 1968, T. Schuh, J. A. & S. Slater, M. Sweet (SANC).

PARATYPES: *Natal*—1 macropterous ♂, Cathedral Peak, Jan. 1964 (Capener); 1 macropterous ♂ (?), Drakensberg, 1-22.I.1927 (Turner); 1 macropterous ♂, same data as holotype. *Transvaal*—1 macropterous ♀, Wylies Poort, 10.2.41 (Capener) (SANC, BM [NH], RTS).

This species is named for its occurrence in Natal.

Zanchiella natalensis is most closely related to *Z. capensis* and *Z. bowkeriae*. It can be recognized by the pronotum being light on the anterior third and dark on the posterior two-thirds, in combination with the dark transverse macula on the posterior half of the corium.

***Zanchiella sweeti*, new species**

Figure 18

MACROPTEROUS MALE: Elongate, nearly parallel sided; head (excepting posterior margin of vertex and genae), pronotum, scutellum, clavus along posterior two-thirds of commissure, and transverse macula on corium at level of base of membrane orangish brown; genae, posterior half of vertex, hemelytra (excluding membrane), thoracic venter, legs, and labium very light green; abdominal venter green; proximal fifth of antennal segment 1 light green, distal four-fifths red; antennal segment 2 brown on proximal end, remainder with broad reddish brown bands alternating with light coloration; antennal segments 3 and 4 brown; membrane light smoky gray.

Head polished, smooth, and shining; pronotum and scutellum obscurely transversely rugulose, weakly shining; hemelytra subhyaline, dull; membrane rugulose; dorsum with semierect, moderately long, light hairs; anterolateral angles of pronotum with single, long, erect, fine seta; antennae with short, decumbent, light vestiture; abdomen with moderately long, reclining, light hairs.

Frons weakly convexly produced between eyes; anterior margins of eyes weakly emarginate; labium just surpassing metacoxae; calli rather widely separated, demarcated posteriorly by weak furrow; posterior pronotal margin very slightly convex; punctures on clavus faint; tibiae with scattered, very fine, short, reclining light spines, hardly distinguishable from light tibial hairs; metatarsal segment 1 about half length of segment 2; segments 2 and 3 subequal in length.

MEASUREMENTS: Total length 3.24, maximum width .98, length

head .28, width head .60, interocular space .20, length pronotum .42, width pronotum .78, length scutellum .34, width scutellum .46, length corium 1.58, length clavus 1.04, length cuneus .58, width cuneus .30, length claval commissure .60, distance apex commissure-apex membrane 1.52, length metatibia 1.80; length antennal segments 1—.38, 2—1.14, 3—.74, 4—.64; length labial segments 1—.30, 2—.28, 3—.38, 4—.34.

MALE GENITALIA: Not illustrated. See generic discussion.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Transvaal*, Pretoria, Fountains, 15 December 1967, M. Sweet, at light (SANC).

PARATYPES: *Transvaal*—11 macropterous ♂♂, 8 macropterous ♀♀, same data as holotype; 2 macropterous ♀♀, Pretoria, Springbok Park, Jan. 1966 (Paliatseas) (SANC, BM[NH], JAS, RTS).

This species is named for the collector, Dr. Merrill H. Sweet.

Zanchiella sweeti can be recognized by the basic greenish coloration of the hemelytra and the inconspicuous transverse macula on the posterior half of the corium.

Zanchius Distant

Zanchius Distant, 1904c, p. 477.—Carvalho, 1956b, p. 66.

Zanchius can be characterized as follows—

MACROPTEROUS MALE: Body flattened, structure delicate; coloration light; dorsal vestiture of moderately long, semierect, light hairs; head usually flattened and quadrate (or somewhat broader than long); eyes conspicuously set forward, small, granular, protuberant, with short hairs present in some species; vertex flat or nearly so; frons convex, clypeus not or only barely visible from above; antennae inserted just above ventral margin of eyes, fossae nearly contiguous with eyes; antennal segment 1 long, cylindrical, moderately enlarged; antennal segment 2 slightly smaller in diameter than segment 1, segments 3 and 4 subequal in diameter, of slightly smaller diameter than segment 2; labium surpassing mesocoxae; calli distinct, set off by a transverse impression posteriorly; mesoscutum broadly exposed; scutellum nearly flat; hemelytra hyaline or subhyaline, very long; abdomen reaching at most to cuneal incisure; membrane with 2 cells; legs long and slender; tibiae with a few very thin, light colored spines about length of tibial diameter; metatibiae with several longitudinal rows of tiny closely spaced spines; metatarsal segment 1 shorter than segments 2 and 3; claws curved; parempodia fleshy, apically convergent, recurved; pulvilli minute.

MALE GENITALIA: Vesica membranous, without spiculi, of the Orthotylini-type.

MACROPTEROUS FEMALE: Very similar to macropterous male.

FEMALE GENITALIA: Posterior wall with well developed K-structures.

Zanchius is most closely related to *Zanchiella* in South Africa. The absence of the row of punctures paralleling the claval suture, the flattened head, and the absence of hemelytral maculae in *Zanchius* will help to separate it from *Zanchiella* in which there is a distinct row of punctures on the clavus, the head is somewhat globose, and the hemelytra usually have a contrasting dark macula. The structure of the parempodia and male and female genitalia support placement of *Zanchius* in the Orthotylini.

Distant (1904c) described *Zanchius* from India. The known range of the genus now includes the Southern Palearctic, South Africa, Southeast Asia, and the islands of the Southwest Pacific. Twelve species are currently placed in the genus, including those described as new below.

Three female specimens from Roodeplaat, Transvaal, deposited in the South African National Collection of Insects, probably represent a fifth new species in addition to those described as new in this paper. They differ from the other South African species of the genus in being somewhat smaller and generally orangish in coloration rather than green or white. Also available are several male and female specimens of what appears to be a new species of *Zanchius*; they are much smaller than any of the species of *Zanchius* described below and have the eyes only slightly set forward on the head, but agree closely with *Zanchius* in nearly all other characteristics. These specimens are deposited in the South African National Collection of Insects and the J. A. Slater Collection.

KEY TO SOUTH AFRICAN SPECIES OF *Zanchius*

1. Antennal segment 1 with a black stripe on lateral surface; antennal segment 2 black proximally; general coloration light green or yellow-green *nigrolineatus* (Fig. 22)
 Antennal segment 1 without black stripe; coloration either very light greenish or white 2
2. Basic coloration white, hemelytra usually faintly suffused with light green; pronotum and hemelytra with elongate, longitudinal, yellow-orange markings *buddleiae* (Fig. 20)
 Basic coloration either white or very light green or greenish yellow without yellow-orange markings 3
3. Basic coloration dull white; large species, length 4.40 mm.; head

broad, ratio width across eyes to median length 37:14

..... *alba* (Fig. 19)

Basic coloration very light green to nearly white; smaller species than above, length 3.48 mm.; head quadrate, ratio width across eyes to median length 2:1 *leucosideae* (Fig. 21)

Zanchius alba, new species

Figure 19

MACROPTEROUS MALE: Entire body and appendages dull white or cream; hemelytra translucent but not hyaline, with only weak, scattered pigmentation; appendages and labium infuscate apically.

Body surface smooth, dull; dorsum with rather long (about length of diameter of antennal segment 1), scattered, semierect, light hairs; antennae with short, fine, decumbent pubescence; venter of abdomen with rather dense, semidecumbent, light hairs; femora with semidecumbent, light hairs (about length of tibial diameter); tibiae with short, decumbent, light hairs and a few very light, fine, semierect spines about length of tibial diameter.

Head short, much broader than long, vertical; eyes protuberant, noticeably granular, with some very short hairs; head constricted behind eyes; vertex nearly flat; frons weakly convex, not produced beyond anterior margin of eyes as viewed from above; clypeus not visible from above; antennae inserted just above ventral margin of eyes; antennal segment 1 moderately enlarged, nearly cylindrical, segment 2 about three-fourths diameter of segment 1, segments 3 and 4 subequal in diameter, about three-fourths diameter of segment 2; head in frontal view triangular below eyes; bucculae small; labium just surpassing metacoxae; pronotum with anterior lobe somewhat swollen, demarcated by distinct transverse impression behind calli, anterolateral angles sharply rounded, anterior margin weakly sinuate, posterior lobe flattened, posterior margin shallowly excavated; mesoscutum about one-half length of scutellum; transverse impression separating scutellum and mesoscutum sinuate; scutellum weakly convex; lateral margins of hemelytra weakly convex, cuneal incisure shallow but distinct; fracture angled slightly anteromedially; metatarsal segment 1 half length of segment 3, segment 3 slightly shorter than segment 2.

MEASUREMENTS: Total length 4.40, maximum width 1.20, length head .28, width head .74, interocular space .36, length pronotum .36, width pronotum .82, length scutellum .48, width scutellum .74, length corium 2.24, length clavus 1.38, length cuneus .84, width cuneus .34, length claval commissure .68, distance apex

commissure-apex membrane 1.90, length metatibia 2.30; length antennal segments 1—.48, 2—1.50, 3—1.00, 4—.34; length labial segments 1—.32, 2—.38, 3—.34, 4—.40.

MALE GENITALIA: Not illustrated. See generic discussion.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: Natal, Olivier-shoek Pass Summit, 5400 ft. elevation, 25 mi. S. Harrismith, 4 March 1968, T. Schuh, J. A. & S. Slater, M. Sweet (Adults and nymphs on *Buddleia salviifolia* [L.] Lam.) (SANC).

PARATYPES: Natal—2 macropterous ♂♂, 6 macropterous ♀♀, Cathedral Peak, Jan. 1964 (Capener); 1 macropterous ♂, 1 macropterous ♀, Giants Castle Park, 5800 ft. elevation, 6 Mar. 1968 (Adults and nymphs on *Buddleia salviifolia* [L.] Lam.); 14 macropterous ♂♂, 27 macropterous ♀♀, same data as holotype; 1 macropterous ♂, 9 macropterous ♀♀, Sani Pass, 6200 ft., 10 Mar. 1968 (SANC, TM, BM[NH], USNM, JAS, RTS).

ADDITIONAL SPECIMENS: Natal—7 macropterous ♂♂, 5 macropterous ♀♀, 17 nymphs (in alcohol), same data as holotype. Transvaal—3 males, 3 nymphs (in alcohol), 20 mi. NE Machadodorp, Schoemanskloof, 4300 ft., 22 Mar. 1968 (ex: *Buddleia salviifolia*) (RTS).

This species is named for its very light coloration.

Zanchius alba is the largest South African species of the genus. It is totally white or cream colored, becoming somewhat brownish in specimens preserved in alcohol. *Z. alba* is most easily separated from other South African species, particularly *Z. leucosideae*, by the length-width ratio of the head (see key).

Zanchius alba was taken on *Buddleia salviifolia* (Loganiaceae) at all collection localities, but never at the same localities as *Z. budleiae*, which apparently has the same host.

Zanchius budleiae, new species

Figure 20

MACROPTEROUS MALE: Basic coloration of body and appendages dull, opaque white; hemelytra translucent, nearly devoid of white pigmentation, weakly and irregularly suffused with blue-green (this is absent in some specimens); dorsum with yellow-orange markings as follows—vertex medially at level of posterior margin of eyes with small round spot, posterior lobe of pronotum medially and on each side about one-third distance mesially from lateral margins with elongate markings, clavus with elongate streak, corium with elongate streaks along claval suture, claval commissure, and parallel to lateral margin of posterior half of clavus, cuneus with

round spot basomedially, and large cell of membrane with small spot medially.

Body surface, pubescence, and structure very similar to *Z. alba* and *Z. leucosideae*, except as follows—head more or less quadrate, labium just attaining distal end of metacoxae, and posterior margin of pronotum very weakly sinuate.

MEASUREMENTS: Total length 2.92, maximum width .80, length head .28, width head .54, interocular space .24, length pronotum .28, width pronotum .60, length scutellum .38, width scutellum .50, length corium 1.50, length clavus 1.00, length cuneus .56, width cuneus .22, length claval commissure .58, distance apex commissure-apex membrane 1.24, length metatibia 1.60; length antennal segments 1—.28, 2—1.10, 3—.52, 4—.46; length labial segments 1—.24, 2—.26, 3—.34, 4—.26.

MALE GENITALIA: Not illustrated. See generic discussion.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: *Transvaal*, Nat. Botanical Gardens, Pretoria, 22 November 1967, J. A. & S. Slater, T. Schuh (Adults and nymphs on *Buddleia salviifolia* [L.] Lam.) (SANC).

PARATYPES: 9 macropterous ♂♂, 23 macropterous ♀♀, same data as holotype (SANC, HM, JAS, RTS).

ADDITIONAL SPECIMENS: 30 macropterous ♂♂, 3 macropterous ♀♀, 4 nymphs (in alcohol), same data as holotype (RTS).

This species is named for the host plant genus, *Buddleia*.

Zanchius buddleiae most closely resembles *Z. alba*, but is much smaller, has orange markings on the pronotum and hemelytra and has a rather quadrate head compared to the broad head of *alba* (see key).

Zanchius buddleiae is apparently host specific on *Buddleia salviifolia* (Loganiaceae).

Zanchius leucosideae, new species

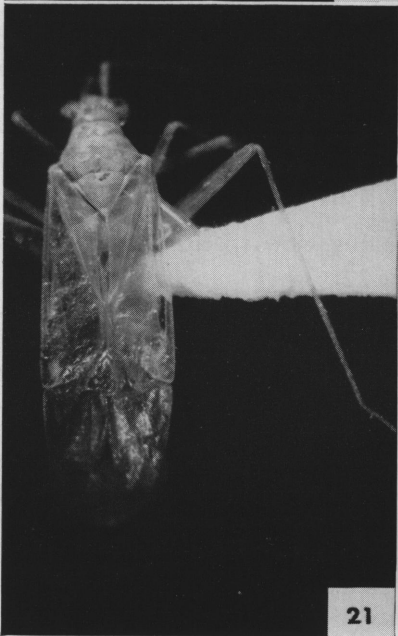
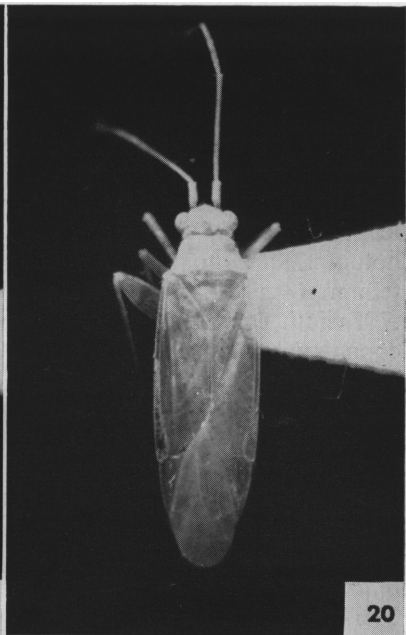
Figure 21

MACROPTEROUS MALE: Basic coloration dull light green; legs, antennae, and labium infuscate apically.

Entire body surface smooth, dull or weakly shining; hemelytra

→

FIGS. 19–22. Orthotylini. Fig. 19. *Zanchius alba*, male, holotype. Fig. 20. *Zanchius buddleiae*, male (Pretoria, Transvaal). Fig. 21. *Zanchius leucosideae*, male, holotype. Fig. 22. *Zanchius nigroleneatus*, male, holotype.



subhyaline; vestiture essentially as in *Z. buddleiae*, except eyes glabrous.

Structurally very similar to *Z. alba* and *Z. buddleiae*, except as follows—head more or less quadrate (see measurements); labium noticeably surpassing metacoxae; posterior margin of pronotum broadly excavated across mesoscutum.

MEASUREMENTS: Total length 3.48, maximum width 1.10, length head .30, width head .60, interocular space .24, length pronotum .28, width pronotum .70, length scutellum .52, width scutellum .64, length corium 1.84, length clavus 1.14, length cuneus .70, width cuneus .30, length claval commissure .70, distance apex commissure-apex membrane 1.80, length metatibia 2.34, length antennal segments 1—.38, 2—1.36, 3—.84, 4—.42, length labial segments 1—.26, 2—.32, 3—.58, 4—.42.

MALE GENITALIA: Not illustrated. See generic discussion.

HOLOTYPE: Macropterous ♂, SOUTH AFRICA: Natal, Sani Pass, 6200 ft., 10 Mar. 1968, T. Schuh, S. Slater, M. Sweet (SANC).

PARATYPES: Natal—1 macropterous ♂, same data as holotype; 1 macropterous ♂, Sani Pass, 6000 ft., 10 Mar. 1968. Orange Free State—2 macropterous ♀♀, 5 mi. N. Golden Gate Park, 17 Oct. 1967 (SANC, RTS).

This species is named for the host plant genus, *Leucosidea*.

Zanchius leucosideae resembles *alba* and *buddleiae*, but can be separated from the former by its more quadrate head and from the latter by its uniformly pale green coloration.

Zanchius leucosideae is known to occur only on *Leucosidea sericea* Eckl. and Zeyh. (Rosaceae), which is endemic to South Africa (Phillips, 1951).

Zanchius nigrolineatus, new species

Figure 22

MACROPTEROUS MALE: Basic coloration very light green or yellow green, hemelytra hyaline; veins of membrane greenish, membrane yellowish; antennae yellowish, segment 1 with broad black stripe laterally, extending entire length of segment, except for extreme distal end, segment 2 black proximally; tibiae yellowish; dull gray spot present at middle of inner vein of large cell and near apex of small cell; black spot present on vein at inner apical angle of large cell.

Entire body and appendages smooth, shining; dorsum with light, moderately long (about length of greatest diameter of antennal segment 1), semierect hairs; antennae with short decumbent pubes-

cence, segment 1 with some longer semierect hairs; abdominal venter with moderately long, semierect hairs; legs with fine light hairs; tibiae with a few very fine, light spines about length of tibial diameter.

Head quadrate, eyes set far forward, distance from posterior margin of eye to posterior margin of head slightly less than longitudinal diameter of an eye; vertex flat; frons convexly rounded between antennal bases, clypeus just visible from above; eyes distinctly protuberant, granular, with short hairs (visible at 50 \times); antennae inserted just above ventral margin of eyes, fossae contiguous with eyes; antennal segment 1 moderately enlarged, greatest diameter near base, segment 2 about two-thirds diameter of segment 1, segments 3 and 4 subequal in diameter, about two-thirds diameter of segment 2; bucculae moderately developed; labium reaching distal end of metacoxae; pronotum flat, depressed behind weakly elevated calli; anterior, lateral, and posterior margins of pronotum nearly straight; mesoscutum exposed, about one-third length of scutellum, separated from scutellum by medially interrupted, weak, transverse impression; scutellum flat; lateral margins of hemelytra weakly convexly rounded; cuneal incisure obsolete, fracture at right angles to lateral corial margin; veins of membrane heavy, inner vein nearly parallel to mesial margin of cuneus; apex of abdomen not quite attaining cuneus; metatarsal segment 1 about one-half length of segment 2, segment 2 about 1½ times length of segment 1.

MEASUREMENTS: Total length 3.56, maximum width 1.16, length head .30, width head .56, interocular space .24, length pronotum .39, width pronotum .84, length scutellum .50, width scutellum .60, length corium 1.76, length clavus 1.24, length cuneus .64, width cuneus .28, length claval commissure .70, distance apex commissure-apex membrane 1.55, length metatibia 1.96; length antennal segments 1—.36, 2—1.34, 3—.64, 4—approx. .70; length labial segments 1—.22, 2—.26, 3—.36, 4—.38.

MALE GENITALIA: Not illustrated. See generic discussion.

HOLOTYPE: Macropterous δ , SOUTH AFRICA: *Transvaal*, Kruger Nat. Park, 3 mi. E. Skukuza Camp, 25 Apr. 1968, T. Schuh, J. A. & S. Slater, M. Sweet (SANC).

PARATYPES: *Transvaal*—3 macropterous $\delta\delta$, 6 macropterous ♀♀ , same data as holotype; 1 macropterous δ , Kruger Nat. Park, Oliphants River near Oliphants Camp, 30 Apr. 1968 (SANC, JAS, RTS).

This species is named for the black stripe on the first antennal segment.

Zanchius nigrolineatus is the most distinctive of the South Af-

rican species of the genus, especially in the structure of the head and pronotum. It can be easily separated from the other described species by the black stripe laterally on antennal segment 1.

The specimens from the type locality were taken on *Lantana* sp. (Verbenaceae).

SUBFAMILY PHYLINAE

TRIBE HALLODAPINI

Acrorrhinium Noualhier

Acrorrhinium Noualhier, 1895, p. 176.

Cinnamus Distant, 1909a, p. 441. **New Synonymy.**

Acrorrhinium can be characterized as follows—

MACROPTEROUS MALE: Very elongate, nearly parallel sided; coloration pattern either mottled or with one or two contrasting hemelytral maculae.

Body surface smooth, dull, or weakly shining; dorsum usually with short decumbent hairs, sometimes with erect peg-like hairs; antennae with short dense vestiture; abdominal venter with semi-decumbent shining hairs.

Eyes protuberant, nearly hemispherical, removed from anterior margin of pronotum by at least one-third diameter of eye; head neck-like behind eyes; vertex horizontal; frons strongly convex, produced into more or less attenuated spine above clypeus, with five anteromedially directed transverse rugosities posterior to spine; clypeus compressed laterally, nearly vertical; antennae inserted at or just below middle of anterior margin of eyes, fossae contiguous with or only slightly removed from anterior margins of eyes; antennal segment 1 somewhat enlarged, about equal to length of head, segment 2 about three-fourths diameter of segment 1, occasionally increasing in diameter distally, segments 3 and 4 subequal in diameter, about three-fourths diameter of segment 2; labium reaching or surpassing metacoxae; pronotum with distinct transverse impression demarcating narrowed anterior lobe with flat collar about as wide as diameter of antennal segment 1, and steeply inclined, strongly swollen, broad posterior lobe; mesoscutum exposed, separated from scutellum by well defined transverse impression, inclined anteriorly; scutellum distinctly convex; clavus more or less inclined mesially to form ridge along claval commissure; cuneal incisure usually distinct; membrane with two cells, the outer small, elongate, triangular, the inner large, rectangular, reaching to about apex of cuneus; legs long; tibiae with longitudinal rows of tiny, closely spaced, black

spines and scattered semierect spines about length of tibial diameter; tarsal claws long, smoothly curved; parempodia hair-like, parallel; pulvilli minute.

MALE GENITALIA: Figures 113–144. Genital capsule usually with a posteroventral spine; vesica strongly twisted, S-shaped; phalotheca L-shaped; left clasper trough-like, right clasper lanceolate.

BRACHYPTEROUS FEMALE: See *A. drakensbergensis* and *A. formicarium*.

FEMALE GENITALIA: Figures 145, 146. Sclerotized rings small, unusual in Hallodapini; posterior wall a simple sclerotized plate.

Acrorrhinium can be separated from all other members of the Phylinae by the spiniform frons.

Wagner (1970b) felt that *Acrorrhinium* was closely related to *Aeolocoris* and created a new tribe, the Aeolorini, for these and other genera. I do not recognize this tribe, although as can be seen from the following discussion, *Acrorrhinium* and related genera do form a distinct group within the Hallodapini. Wagner based this relationship on the form of the male genitalia of *Aeolocoris vidali* (Wagner) and on external characters in *A. vidali* and *Acrorrhinium conspersum*, although he did not have access to the male genitalia of the latter species. The male genitalia of the *Acrorrhinium* species in South Africa show a specialized condition over those of *Aeolocoris*, at least as illustrated by Wagner (1970b), particularly in the apical region of the vesica which bears peculiar spine-like projections in *Acrorrhinium* and is simple in *Aeolocoris*. Other characters in *Acrorrhinium*, including the sclerotized rings in the female, and the spiniform frons, also suggest considerable specialization. Even though the genus does possess a number of specialized characters, it does show its closest relationship to *Aeolocoris* and allied genera, including *Azizus*, *Trichophorella*, and *Marmorodapus*, based on the coloration pattern (which is often marmorate), the peculiar peg-like hairs (although these are much less common in *Acrorrhinium* than in other genera), and the virtual absence of hemelytral fasciae (present in some species of *Acrorrhinium*).

Examination of the holotype female of *Cinnamus rhinocerus* Distant in the British Museum (Natural History), indicates that this species is not a member of the Cylapinae as indicated by Carvalho (1952a), but actually a species of *Acrorrhinium*, very closely related to *A. pusae* Ballard. The general body form, including the spiniform frons, and the pattern of coloration of *rhinocerus* are similar to *A. pusae* and *A. lupa*. I am therefore synonymizing *Cinnamus* Distant with *Acrorrhinium* Noualhier.

The South African species of *Acrorrhinium* can be divided into two rather distinct groups: the *A. brincki* group includes *A. brincki*, *A. drakensbergensis*, *A. capensis*, *A. oudtshoornensis*, and *A. monticola*, all of which have castaneous markings on the corium as well as contrasting white hemelytral maculae (except in *monticola*, which is nearly unicolorous dull gray, although this may be a secondary loss of the more distinct color pattern found in the other species), dark unicolorous femora (see however *brincki*), and a dark first antennal segment contrasting with the much lighter second segment; the *A. muntingi* group includes *A. muntingi* and *A. incrassata* (and possibly a third undescribed species represented by a single macropterous specimen, lacking the abdomen, from Matjiesfontein, Cape Province, deposited in the British Museum [Natural History]), which are larger than the species of the *brincki* group, have the hemelytra rounded in transverse cross section, forming a humped appearance, and have femora and first antennal segments that are relatively light colored with numerous contrasting spots. Also the head is much smaller relative to the total body size in the *muntingi* group than in the *brincki* group. In South Africa, *A. formicarium* forms what is probably a third group, based on the rather anomalous structure of the female. Until males are known it will be difficult to assess the exact relationship of *formicarium* within the genus. Of the species of *Acrorrhinium* occurring outside South Africa, *acutum* Odhiambo, *hebes* Odhiambo, *pauliana* Carvalho, *nilgiriensis* (Distant), *monoceros* (Distant), *lupa* (Delattre), and *spicatus* (Distant) are all probably related to the *brincki* group; *conspersus* Noualhier, *puae* (Ballard), and *rhinocerus* (Distant) seem to form another distinct group within the genus.

Most of the known species of *Acrorrhinium* are from light traps; the females are unknown for four of the eight South African species and of the four species where females are known, only *A. brincki* includes macropterous specimens, and in this case no brachypterous specimens are known. Odhiambo (1959c) records macropterous females for *A. acutum*. The large series of *A. muntingi* taken at light with no females may indicate that the females are only rarely macropterous in this species, if at all, or that they are not attracted to lights. All species are probably ground living judging from those that have been observed in the field. The macropterous forms do not appear particularly ant mimetic when alive, but behavior of the brachypterous forms is very ant-like (see species discussion for *A. oudtshoornensis*).

List of described species of *Acrorrhinium*

- acutum* Odhiambo (*Acrorrhinium*), 1959c, p. 673. Kenya.
brincki Carvalho and Becker (*Acrorrhinium*), 1960, p. 453. South Africa: Natal.
capensis, new species. South Africa: Cape Province.
conspersus Noualhier (*Acrorrhinium*), 1895, p. 176. Anatolia; Syria.
drakensbergensis, new species. South Africa: Natal; Transvaal; Lesotho.
formicarium Poppius (*Ectmetocranum*), 1914a, p. 36. South Africa: Cape Town.
hebes Odhiambo (*Acrorrhinium*), 1959c, p. 676. Kenya.
incrassata, new species. South Africa: Cape Province, Transvaal.
lupa Delattre (*Seversyia*), 1950, p. 152. Ivory Coast: Bouaké.
monoceros Distant (*Armachanus*), 1904c, p. 478. Ceylon.
monticola, new species. South Africa: Cape Province.
nilgiriensis Distant (*Armachanus*), 1909b, p. 60. South India: Nilgiri Hills.
oudtshoornensis, new species. South Africa: Cape Province.
pauliani Carvalho (*Acrorrhinium*), 1953a, p. 45. Madagascar.
pusae Ballard (*Armachanus*), 1927, p. 67. North India: Bihar.
rhinocerus Distant (*Cinnamus*), 1909a, p. 442. **New Combination.** Ceylon.
spicatus Distant (*Armachanus*), 1904b, p. 203. North-western Australia.

KEY TO SOUTH AFRICAN SPECIES OF *Acrorrhinium*

Macropterous specimens

1. Metafemora with light ground color and numerous small brownish or reddish spots 2
 Metafemora either entirely dark or dark distally and light proximally 3
2. Vertex and frons light with narrow, median, longitudinal reddish stripe; antennal segment 2 incrassate distally *incrassata*
 Vertex and frons mottled dorsally, without longitudinal reddish stripe; antennal segment 2 of uniform diameter *muntingi*
3. Metafemora light proximally and dark distally *brincki*
 Metafemora dark, unicolorous 4

4. Corium with reddish or castaneous areas strongly contrasting with white maculae; tibiae without dark dorsal stripe as below 5
 Corium generally dull grayish brown with only weakly contrasting light maculae; tibiae with dark brown longitudinal dorsal stripe
 *monticola*
5. Corium with at least part of lateral margin dark (castaneous) (Fig. 23) 6
 Corium with lateral margin (exocorium) light unicolorous
 *drakensbergensis*
6. Membrane with light halo-like areas between cunei; large species, length 6.40 mm.; ground color reddish brown *capensis*
 Membrane unicolorous, without halo-like area; small species, length 5.20 mm.; ground color dark castaneous
 *oudtshoornensis* (Fig. 23)

Brachypterous specimens

1. Hemelytra strongly upturned apically; entire dorsum and legs castaneous, polished, covered with long, erect, light hairs
 *formicarium*
 Hemelytra flat; dorsum and legs dull, if castaneous or partly so, with only short, decumbent hairs 2
2. All tarsal segments dark brown *oudtshoornensis*
 All tarsal segments tan *drakensbergensis* (Fig. 24)

***Acrorrhinium brincki* Carvalho and Becker**

Figures 113, 120–123

Acrorrhinium brincki Carvalho, Dutra, and Becker, 1960, pp. 453–454.

Acrorrhinium brincki is very similar to *A. drakensbergensis*, described below, but differs from it in having the metafemora light proximally and dark distally; no other species in South Africa has this type of metafemoral coloration. This species was originally described from a macropterous female. Male specimens are now available and it is apparent that the structure of the two sexes is very similar.

MEASUREMENTS: Macropterous ♂—Total length 5.92, greatest width 1.70.

MALE GENITALIA: Figures 113, 120–123.

This species is known from relatively high elevations along the Drakensberg Escarpment (circa 1875 meters; 6000 feet) and from the high veld of the Transvaal. No biological information is available. Moderate numbers of male and female specimens were collected at an UV light in a light rain at Giants Castle Park, Natal, in early March, 1968. This is an area with a high proportion of macchia-related plants.

SPECIMENS EXAMINED: *Natal*—1 macropterous ♀, Royal Natal National Park, The Hostel, 3.IV.51, at light in evening (Brinck and Rudebeck) (holotype); 1 macropterous ♂, Royal Natal National Park, Tendele Camp, 5400 ft., 4–5 Mar. 1968, UV light; 1 macropterous ♀, Natal National Park, iii.1932 (Ogilvie); 1 macropterous ♂, Mont-aux-Sources, 4–6.IV.1954 (Vari); 1 macropterous ♂, 11 macropterous ♀♀, Giants Castle Park, 5800 ft. elevation, 6 Mar. 1968, UV light. *Transvaal*—1 macropterous ♂, Lake Chrissie, 6 Nov. 1967; 1 macropterous ♀, Pretoria, 6.IV.1954, at light in evening (Rudebeck) (paratype) (SANC, TM, LU, BM [NH], JAS, RTS).

***Acrorrhinium capensis*, new species**

Figures 116, 131–133

MACROPTEROUS MALE: Basic coloration light mahogany; antennal segments 2 and 3 and all tibiae yellow; ostiolar peritreme, anterior half of corium, and quadrate macula at apex of corium adjacent to cuneal fracture white; elongate rectangular macula on endocorium just posterior to middle and contiguous with anterior white macula castaneous; membrane smoky brown with round, white, halo-like area between cunei; costal vein on corium at cuneal fracture orange; tarsi brown.

Dorsal surface with scattered, short, decumbent, sericeous hairs; antennal segment 1 with decumbent dark hairs; antennal segments 2, 3, and 4 with dense, short vestiture; femora with scattered, short, dark, decumbent hairs.

Eyes removed from anterior margin of pronotum by distance equal to one-third diameter of eye; vertex with weak transverse impression at level of posterior margin of eyes; spiniform frons not obscuring clypeus from above; antennal segment 1 moderately enlarged with several erect black spines on interior surface; antennal segments 3 and 4 slightly smaller in diameter than segment 2, segment 2 about one-half diameter of segment 1; labium reaching to about abdominal sternite 3; posterior margin of pronotum evenly concave; tibiae with dark spines; metatarsal segments 1 and 2 subequal in length; segment 3 one-and-a-half times length of segment 2.

MEASUREMENTS: Total length 6.40, maximum width 1.84, length head .76, width head .82, interocular space .36, length pronotum .62, width pronotum 1.32, length scutellum 1.04, width scutellum 1.08, length corium 3.04, length clavus 2.56, length cuneus 1.00, width cuneus .62, length claval commissure 1.46, distance apex commissure-apex membrane 2.76, length metatibia 4.12; length

antennal segments 1—.78, 2—2.76, 3—2.08, 4—.96; length labial segments 1—.74, 2—.72, 3—?, 4—?.

MALE GENITALIA: Figures 116, 131–133.

Female unknown.

HOLOTYPE: Macropterous δ , SOUTH AFRICA: *Cape Province*, Knysna, Garden of Eden, 16–20.I.1955, A. J. T. Janse (TM).

PARATYPE: *Cape Province*—1 macropterous δ , Cape Town, Kirstenbosch, 5–29.XII.1954 (Janse) (RTS).

See key and *A. oudtshoornensis* discussion for separation of *capensis* from other South African species.

Acrorrhinium drakensbergensis, new species

Figures 24, 114, 124–127, 145, 146

MACROPTEROUS MALE: General coloration dull brown; antennal segment 1, entire cuneus, procoxae and mesocoxae, and genital segment castaneous; elongate streak medially on clavus near claval suture and heavy quadrate macula submedially on endocorium deep mahogany; vertex between and behind eyes, anterior two-thirds of pronotum on either side of midline, antennal segment 1 proximally, distal two-thirds of antennal segment 4, area around antennal fossae, streaked area above and below eyes posteriorly extending onto pronotum, and distal margin of mesotrochanters and metatrochanters suffused with red; midline of pronotum, anterior half endocorium (anterior to large castaneous macula), exocorium generally, antennal segments 2 and 3 and proximal third of segment 4, all tibiae and tarsi, and basal 2 segments of abdomen yellowish white; metacoxae gray to whitish; labium and profemora light brown; membrane with a round, halo-like, white suffused area between cunei.

Entire body smooth, dull or only weakly shining; dorsum and thorax ventrally with scattered, short, decumbent, silvery hairs; antennae with very short, dense, shining hairs; coxae and femora with a few, scattered, semidecumbent hairs.

Eyes removed from anterior margin of pronotum by distance equal to about one-third diameter of eye; vertex shallowly transversely sulcate at level of anterior margin of eyes; spiniform frons not obscuring clypeus from above; antennal segment 1 moderately enlarged, almost twice diameter of segment 2, segment 2 slightly greater in diameter than segments 3 and 4; labium reaching onto anterior third of abdomen; tibiae with a few very fine, light hairs and a few light spines mostly on ventral surfaces, about the length of tibial diameter; metatarsal segments subequal in length.

MEASUREMENTS: Total length 4.96, maximum width ?, length head .66, width head .70, interocular space .30, length pronotum .56, width pronotum 1.20, length scutellum .72, width scutellum .90, length corium 2.34, length clavus 1.74, length cuneus .68, width cuneus .26, length claval commissure 1.00, distance apex commissure-apex membrane 2.18, length metatibia 3.40; length antennal segments 1—.70, 2—2.32, 3—1.70, 4—1.00; length labial segments 1—.58, 2—.62, 3—.56, 4—.66.

MALE GENITALIA: Figures 114, 124—127.

BRACHYPTEROUS FEMALE: Head, thorax, and scutellum mostly yellowish; abdomen, procoxae and mesocoxae, all femora and labium deep brown with reddish suffusion; antennal segments 2 and 3 (and basal quarter of 4—from paratype), metacoxae, and all tibiae and tarsi light yellowish; posterior portion of vertex, collar area of pronotum (and remainder of pronotum faintly), and most of scutellum on either side of light longitudinal midline (and distal three-fourths of antennal segment 4—from paratype) reddish (also longitudinal reddish stripes at level of antennal fossae on genae, at dorsal and ventral margins of eyes on posterior portion of head and extending onto pronotum, and 2 longitudinal stripes on proepimeron); hemelytra mostly light translucent, broadly suffused with brown along scutellum and claval commissure; small roundish mark at level of apex of scutellum on corium and large trapezoidal macula (with long extension from the anterior mesial corner) at level of claval commissure medially on corium, very dark brown; antennal segment 1 light brown.

Body surface and vestiture similar to male; eyes with a few very short hairs.

Structure of head similar to male, eyes smaller and vertex relatively wider than in male; labium reaching posterior margin of abdominal sternite 3; pronotum not strongly constricted anteriorly, nearly flat longitudinally; pronotal collar about as wide as diameter of antennal segment 1, well defined laterally, indistinct dorsally; posterior margin of pronotum shallowly and evenly concave; scutellum flattened longitudinally, weakly convex transversely; hemelytra greatly reduced, undifferentiated, reaching middle of abdominal tergite 4; posterior margin of hemelytra evenly rounded beginning at claval commissure, slightly upturned; abdomen broad medially (no gravid specimens examined but the abdomen presumably becomes swollen and bulbous), pointed at anus; tibiae as in male.

MEASUREMENTS: Total length 4.40, maximum width ?, length head .76, width head .70, interocular space .40, length pronotum