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A Contribution to the Taxonomy of Aquatic and Humicolous Beetles of the Family Hydraenidae in Southern Africa

Philip D. Perkins

J. Ballantyne-Rowson

August 31, 1964

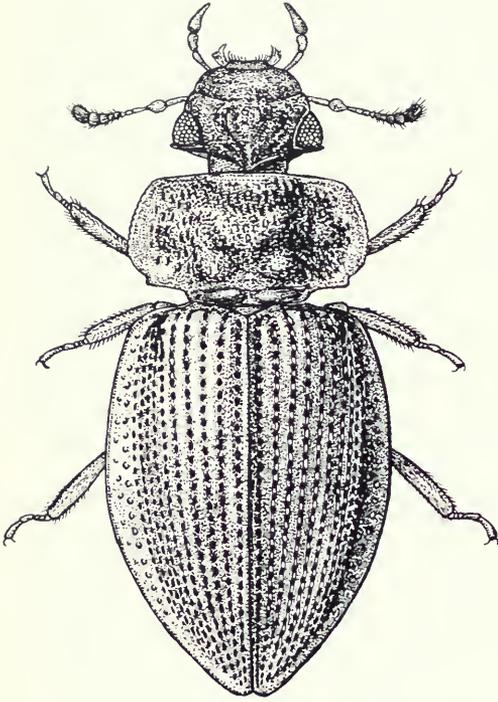
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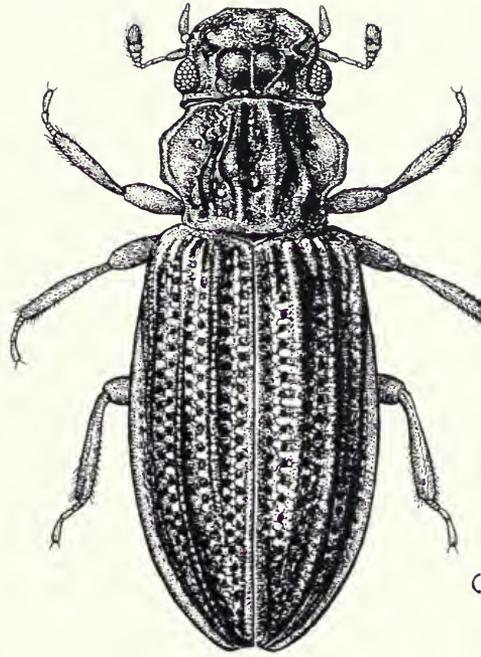
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**A Contribution to the Taxonomy of
Aquatic and Humicolous Beetles of the
Family Hydraenidae in Southern Africa**



Discozantaena genuvela



Nucleotops nimbiceps

FIELDIANA

Zoology

NEW SERIES, NO. 77

A Contribution to the Taxonomy of Aquatic and Humicolous Beetles of the Family Hydraenidae in Southern Africa

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A Contribution to the Taxonomy of Aquatic and Humicolous Beetles of the Family Hydraenidae in Southern Africa

Philip D. Perkins

J. Balfour-Browne

Abstract

The taxonomy of 8 of the 11 genera of the beetle family Hydraenidae in southern Africa is presented. This fauna, previously virtually unknown to science, includes both aquatic and humicolous forms, the latter morphologically and ecologically very unusual in the family. The fragile habitats of endemic forms, especially those of the southwestern Cape, are discussed relative to the biodiversity crisis. A highly endemic and highly morphodiverse lineage, the Prosthetopinae (with related species in Madagascar) is indicative of an afromontane biogeographical region comprised (in part) of Gondwanaland relicts.

One subfamily, 5 tribes, 5 genera, and 38 species are described as new. Taxonomically and phylogenetically significant structures are illustrated with line drawings or scanning electron micrographs, and geographical distributions are mapped. Natural history data are noted for genera and, when available, species. Diagnostic keys to tribes, genera, species groups, and species are given. Morphological features unique to the subfamily Prosthetopinae are discussed and illustrated.

The following supraspecific taxa are proposed and described. Prosthetopinae Perkins new subfamily (type genus *Protosthetops* Waterhouse) with the following new tribes and genera: Protosthetopini Perkins (type genus *Protosthetops* Perkins new genus; type species *Prosthetops kenyensis* Orchymont); Nucleotopini Perkins (type genus *Nucleotops* Perkins and Balfour-Browne new genus); Pterosthetopini Perkins (type genus *Pterosthetops* Perkins new genus); Prosthetopini Perkins (type genus *Prosthetops* Waterhouse); Parasthetopini Perkins for the genera *Sicilicula* Balfour-Browne, *Mesoceration* Janssens, and *Parasthetops* Perkins and Balfour-Browne new genus (type genus). *Discozantaena* Perkins and Balfour-Browne new genus.

The following taxa are (re)described. *Nucleotops nimbaseps* n. sp. *Pterosthetops brincki*, *P. equestrius*, *P. harrisoni*, and *P. impressus* (type species), n. spp. *Prosthetops* Waterhouse: *P. megacephalus* (Boheman), *P. nitens* (Péringuey), *P. grandiceps*, *P. pronotus*, and *P. setosus*, n. spp. *Parasthetops aeneus*, *P. andreaei*, *P. camurus*, *P. curidius*, *P. nigritus* (type species), *P. reflexus*, *P. rufulus*, and *P. spinipes*, n. spp.

Mesoceration Janssens: *M. capense* Janssens, *M. transvaalense* Janssens, *M. abstrictum*, *M. apicalum*, *M. brevigranum*, *M. concessum*, *M. dissonum*, *M. distinctum*, *M. endroedyi*, *M. fusciceps*, *M. jucundum*, *M. languidum*, *M. pallidum*, *M. rivulare*, *M. rubidum*, *M. rufescens*, *M. splendorum*, *M. sulcatulum*, and *M. truncatum*, n. spp.

Discozantaena genuvela n. sp. *Parhydraena* d'Orchymont: *P. seriata* J. Balfour-Browne and *P. lancicula* n. sp. *Ochthebius* Leach: *O. andronius* d'Orchymont (new status), *O. capicola* (Péringuey), *O. extremus* (Péringuey), *O. pedalis* J. Balfour-Browne, *O. rubripes* Boheman, *O. salinarius* J. Balfour-Browne, *O. spatulus* J. Balfour-Browne, *O. namibiensis*, *O. pagotrichus*, and *O. spinasus*, n. spp.

Introduction

Of the world hydraenid fauna, that of southern Africa is morphologically and ecologically among

the most diverse. In other geographical areas hydraenid beetles live in many types of aquatic habitats, including streams, ponds, hygropetric zones such as the margins of waterfalls, intertidal splash

zones, and hot springs (Perkins, 1981). The microhabitat type having the greatest concentration of hydraenid species is the sandy-gravelly shoreline of undisturbed streams, where these beetles interact with other psammophilous aquatic beetles (Perkins, 1976). Geographical areas having primarily stagnant water species generally lack streams with appropriate velocity (Cuppen, 1993). Velocity and substrate type are the primary parameters determining the stability and composition of shoreline microhabitats (Perkins, 1976).

The remarkably diverse southern African hydraenid fauna utilizes all of these microhabitat types. In addition, there are specialized lineages that utilize habitats in the two different ecological "directions" from the common shoreline habitat: (i) more restrictedly aquatic habitats in the benthos environment, where respiration requires a plastron and selection favors long appendages, and (ii) less strictly aquatic habitats in the wet humus environment, where selection favors shortening of appendages and loss of hydrofuge pubescence.

The fauna is of even greater interest because of the phylogenetic distribution of these ecological shifts. In one lineage, the Prosthetopinae, both of these shifts have occurred, with *Nucleotops* humicolous and *Parasthetops* and *Mesoceration* benthic. In another distantly related lineage the shift to wet humus appears to have occurred twice, in the genera *Discozantaena* and *Parhydraena*, but the benthos shift has not occurred.

The question of whether the ancestral hydraenid microhabitat was dry humus, wet humus, or "fully" aquatic is of course far from being resolved. Based on some morphological data for the aquatic forms (Perkins, in prep.), there is evidence that certain morphological features which are apparently basic to aquatic habitats differ markedly and divergently among genera. It is therefore probable that the "successful" aquatic lineages in the family are each derived from a different (probably wet) ancestral humicolous lineage.

However, the humicolous forms in southern Africa are perhaps secondarily so, being derived from aquatic or at least more nearly aquatic ancestors. The interrelationships of the following lines of evidence seem to support this conclusion: (i) in each of the two lineages under consideration, the aquatic and humicolous members have the same basic body form, including the head/prothoracic interface area (in other words, aquatic members do not have modifications of basic form that would indicate a derived condition); (ii) some aquatic members retain less derived features of antennae

and vestiture; (iii) certain morphological features of the humicolous forms are derivable from the aquatic forms by processes of reduction and fusion, not new basic structural relationships; and (iv) the humicolous forms of both lineages have low species numbers and low morphodiversity, whereas the aquatic forms of both lineages are more speciose and more morphodiverse.

Biodiversity, Endangered Habitats, and Species

The hydraenid fauna of southern Africa is a timely example of the biodiversity crisis (Wilson, 1992). The fauna is highly endemic, highly diverse, and has many morphologically unique forms. The endemic forms exist in habitats that, despite great age, turn quickly fragile under the advancing foot of mankind. Taxonomically and morphologically, this unique fauna was virtually unknown to science.

The cutting edge of the biodiversity crisis and species extinction dialogue has centered on the devastation of the tropical rain forests. However, the biodiversity of south temperate areas of the world is much greater than is generally recognized. In many invertebrate groups it is much higher than that of north temperate or tropical areas. A model for the world's biodiversity is probably shaped more like a pear than an egg (Platnick, 1992).

The hydraenid fauna of the Cape Region, especially the fynbos biome, is very rich in species and diversity (Table 1). As is seen in a great number of plant and animal groups (Taylor, 1978), this is particularly true for the southwestern part of the Cape, where 34 of the 50 species covered in this contribution are found. Of these 34 species, a total of 17 species are endemic to, or at least restricted to, the southwestern Cape (fig. 6).

The fynbos possesses a rich and unique invertebrate fauna. However, the systematics and distributions of most groups are so poorly known that the authors of a recent important paper on the conservation status of the fynbos and karoo biomes (Hilton-Taylor & le Roux, 1989) were not able to include invertebrates, the group with the greatest biodiversity.

Highly endemic hydraenid species live in headwater environments, such as creeks, small streams, small waterfalls, and hygropetric habitats such as slow trickles over rock faces. Species restricted to headwaters are subject to pressures arising from

TABLE 1. Hydraenidae distributions in southern Africa.

Taxon	Geographical area					
	CW	CE	DL	DT	EC	NA
Endemics	17	2	3	2	0	3
Total	34	19	10	8	2	9
<i>Nucleotops</i>						
<i>nimbiceps</i>	×	—	—	—	—	—
<i>Pterosthetops</i>						
<i>impressus</i>	×	—	—	—	—	—
<i>harrisoni</i>	×	—	—	—	—	—
<i>brincki</i>	—	×	—	—	—	—
<i>equestrius</i>	×	—	—	—	—	—
<i>Prosthetops</i>						
<i>pronotus</i>	×	×	—	—	—	—
<i>megacephalus</i>	×	—	—	—	—	—
<i>setosus</i>	×	×	—	—	—	—
<i>nitens</i>	×	—	—	—	—	—
<i>grandiceps</i>	—	—	×	—	—	—
<i>Parasthetops</i>						
<i>nigritus</i>	×	×	—	—	—	—
<i>spinipes</i>	—	—	×	×	—	—
<i>curidius</i>	—	×	×	—	—	—
<i>aeneus</i>	×	—	×	×	—	×
<i>rufulus</i>	×	×	—	—	—	—
<i>camurus</i>	—	—	×	×	—	—
<i>reflexus</i>	—	—	×	×	—	—
<i>andreaei</i>	—	—	×	—	—	—
<i>Mesoceration</i>						
<i>distinctum</i>	×	×	—	—	—	—
<i>rubidum</i>	—	—	—	×	—	—
<i>fusciceps</i>	×	—	—	—	—	—
<i>transvaalense</i>	—	—	—	×	—	—
<i>rivulare</i>	×	—	—	—	—	—
<i>jucundum</i>	×	×	—	—	—	—
<i>splendorum</i>	×	×	—	—	—	—
<i>truncatum</i>	×	—	—	—	—	—
<i>rufescens</i>	×	×	—	—	—	—
<i>brevigranum</i>	×	—	—	—	—	—
<i>endoedyi</i>	×	—	—	—	—	—
<i>languidum</i>	×	×	—	—	—	—
<i>concessum</i>	×	—	—	—	—	—
<i>dissonum</i>	×	×	—	—	—	—
<i>capense</i>	×	—	—	—	—	—
<i>apicalum</i>	—	×	—	—	—	—
<i>pallidum</i>	×	—	—	—	—	—
<i>sulcatulum</i>	×	—	—	—	—	—
<i>abstrictum</i>	×	×	—	—	—	—
<i>Discozantaena</i>						
<i>genuvela</i>	×	—	—	—	—	—
<i>Parhydraena</i>						
<i>lancicula</i>	—	—	×	—	—	—
<i>seriata</i>	—	—	×	×	—	—
<i>Ochthebius</i>						
<i>extremus</i>	×	—	—	—	—	—
<i>pedalis</i>	×	—	—	—	—	×
<i>specularius</i>	×	×	—	—	—	×

TABLE 1. Hydraenidae distributions in southern Africa (continued).

Taxon	Geographical area					
	CW	CE	DL	DT	EC	NA
<i>salinarius</i>	×	×	—	—	×	—
<i>spatulus</i>	—	×	—	—	—	×
<i>namibiensis</i>	—	—	—	—	—	×
<i>pagotrichus</i>	—	—	—	—	—	×
<i>andronius</i>	×	×	×	×	×	×
<i>capicola</i>	×	×	—	—	—	×
<i>rubripes</i>	—	—	—	—	—	×

Abbreviations: CW = Cape (western); CE = Cape (eastern); DL = Drakensburg/Lesotho; DT = Drakensburg/Transvaal; EC = Eastern Coastal; NA = Namibia.

water-use patterns. The extraction of water from small streams could have a great impact on the unique southern African hydraenid fauna. According to Davies and Day (1986), the main threats to the aquatic habitats in southern Africa result from water extraction.

Some areas of the Cape Region are in a conservation (protected!) status. However, it must be stressed that, although these areas coincide with the highly endemic fynbos flora, they do not include mountain catchment areas (27% of the mountain fynbos). According to Hilton-Taylor and le Roux (1989, p. 206) the mountain catchment areas are in a nonprotected status: "Mountain catchment areas are privately owned, but are managed integrally with the adjacent state areas for purposes of water conservation. . . . No assessment of these areas has been published and they are therefore not included in the final totals of area conserved."

Table Mountain Hydraenid Fauna

Table Mountain, near Cape Town (fig. 6), is well known for its unusual, rare, and in some cases endangered species.

Among the unique fauna of Table Mountain is the Table Mountain ghost frog (*Heleophryne rosei* Hewitt), which is listed as endangered (Branch, ed., 1988). The habitat of this frog is described as follows: "The adults and, perhaps more so, the tadpoles are adapted for life in fast-flowing mountain streams. Characteristically the streams are steep with many waterfalls and cascades and they are often bordered by vertical, moss-covered, rock-

TABLE 2. Table Mountain Hydraenidae.

Taxon	Distribution		Microhabitat			
	CW	CE	FS	HP	RP	HU
<i>Prosthetops nitens</i> *	—	—	—	—	×	—
<i>Prosthetops megacephalus</i>	×	—	×	—	—	—
<i>Pterosthetops equestrius</i>	×	—	×	×	—	—
<i>Pterosthetops impressus</i>	×	—	×	—	—	—
<i>Parasthetops aeneus</i>	×	×	×	—	—	—
<i>Parasthetops nigritus</i>	×	×	×	—	—	—
<i>Mesoceration concessum</i> *	—	—	×	—	—	—
<i>Mesoceration languidum</i>	×	×	×	—	—	—
<i>Discozantaena genuvela</i>	×	×	—	—	—	×

* Table Mountain endemic.

Abbreviations: CW = western Cape Region site records in addition to Table Mountain; CE = eastern Cape Region site records; FS = fast streams; HP = hygropteric; RP = rock pools; HU = humicolous

faces—all constituting prime *Heleophryne* habitat" (p. 36).

The fast streams, rock pools, and hygropteric surfaces also constitute prime habitats for several species of extremely rare hydraenids. According to presently available distribution data, two species of hydraenids are restricted to Table Mountain, viz., *Prosthetops nitens* in rock pools and *Mesoceration concessum* in streams. Two additional species, *Prosthetops megacephalus* and *Pterosthetops equestrius*, are only known from Table Mountain and from Kommetje, a locality south of Table Mountain. Any consideration of the endangered status of aquatic habitats of Table Mountain should include these species.

The richness of the Table Mountain hydraenid fauna (Table 2) is further indicated by the presence of an additional five species that are known to have wider distributions: *Parasthetops aeneus*, *Parasthetops nigritus*, *Mesoceration languidum*, *Pterosthetops impressus*, and *Discozantaena genuvela*.

Even Table Mountain, a paradigm example of unique biodiversity worthy of protection, is not immune from danger close at hand. According to Branch (1989, p. 198), the "gravest danger is the thoughtless construction of small dams on the Table top which retain the life-giving water of the streams during the long, rainless summer."

Biogeography

The hydraenid fauna of southern Africa is still very incompletely known (see Studies in Progress). Therefore, only a very general and preliminary discussion of biogeography will be presented here.

Two contrasting elements of the fauna are immediately apparent. One element can be represented by the distribution and phylogenetic relationships of *Ochthebius andronius* (fig. 5). This species is an example of a lowland element with well-developed powers of dispersal. It lives in ponds and streams, being able to utilize ephemeral aquatic habitats. As expected from this ecology, *O. andronius* has a wide lowland distribution pattern and perhaps can be described as a savanna species.

Phylogenetically, *O. andronius* is a member of a cluster of closely related species (species complex); these species can only be diagnosed by differences in the male genitalia. The other species in this complex are found in east Africa, north to Kenya and Ethiopia. *Ochthebius andronius* is an example of a (relatively) recent member of the southern African fauna, probably advancing southward coincident with the advance of the habitat to which it is adapted. This species should not be viewed as more competitive or more "successful," but it probably will have a greater chance of survival in habitats disturbed by humans.

Several other species and species groups of the genus *Ochthebius* probably have a biogeographic history similar to that of *O. andronius*, at least with respect to precursors in east Africa.

A second very different element of the southern African hydraenid fauna is represented by the Prosthetopinae. This subfamily has a characteristic Afromontane distribution pattern (White, 1978). In addition to the highly endemic taxa of the Cape and Drakensburg mountains, only two other genera are known: *Protosthetops* (one species) is found in montane Kenya, and *Sicilicula* (two species) in montane Madagascar and Re-

union. Several additional undescribed species are found in Madagascar (Perkins, unpubl.).

On the basis of several less derived morphological features, including hydrofuge vestiture, *Prosthetops* is considered more primitive than any of the southern African taxa. This corresponds with findings by botanists that more primitive members of many Cape plants are found on mountain outliers within the afrotropics (Taylor, 1978).

However, this pattern should not necessarily be interpreted as suggesting that the Prosthetopinae originated in the east African mountains.

An alternative (and preferred) explanation could be that the Afromontane hydraenid fauna represents a relict (at the subfamily level) of a temperate montane Antarctic fauna. The east African element may be plesiomorphic not because it resides in the area of origin of the subfamily, but because the fauna occupying what is now the Cape Region has undergone great specialization.

According to Wyke (1990), the distribution patterns of the fynbos flora are best explained by vicariance of once widespread floras. These highly endemic fynbos plants are sandstone adapted. Wyke suggests that populations became "trapped" on sandstone outcrops which act as "edaphic islands."

Likewise, the Prosthetopinae of montane southern Africa, especially that of what is now the Cape, have undergone much evolution in situ. These specializations have occurred via an incredibly complex and finely partitioned area, a multiple-layered, three-dimensional matrix with varying (in ecological time) temperature and rainfall, both toward the restrictive extreme. It is a geographical area isolated (in geological time) by hostile sea and dry lowlands, but with the contingent luck (as yet) of no effectively catastrophic events such as glaciation, total aridity, flooding by epicontinental seas, meteor impacts, or destruction by *Homo sapiens*.

Geographical Distributions

In a taxonomic study such as this, where a large percentage of the species represent new taxa, the question naturally arises as to what level of confidence can be attached to the geographical distributions. The possible insufficiency of available data, perhaps reflecting activities of collectors more than actual species distributions, is a valid point.

This concern can only be addressed by negative data, that is, knowledge of sites where appropriate collecting techniques were used but no specimens were found. Fortunately we have such data for some southern African localities. Sebastian Endrödy-Younga (Transvaal Museum), whose methods have resulted in the collection of over 35,600 specimens, has provided records for localities where either aquatic habitats or wet humus habitats were sampled, but no Hydraenidae were found. In Figure 5 all known hydraenid locality records are plotted, together with these negative records.

Of course, specimens are not always absent when we fail to find them, but the negative sites recorded by Endrödy-Younga provide a measure of confidence in the geographical limits of the eastern distributions (east of the Kalahari Desert) and the northwest distributions (north of the Drakensburgs). The records also reveal two large areas in the south for which data is needed. The easternmost of these two areas principally constitutes the Greater Karoo, an arid area with relatively few and widely separated aquatic habitats. The other area with no hydraenid data, principally a grassland area in the eastern part of the Cape, is perhaps a more likely candidate for additional hydraenid populations.

Studies in Progress

Eleven genera are currently known from southern Africa. The present contribution comprises eight of these genera. Revisions of the genera *Hydraena*, *Limnebius*, and *Coelometopon* and descriptions of additional new taxa in seven of the genera presented here are in preparation by Perkins, based on a continuing flow of newly collected material.

J. Balfour-Browne, who collected hydraenids in South Africa in 1954, began preparation of a manuscript on his material and some material from other collections. Because of health problems, including failing eyesight, he was unable to complete his studies. The specimens he studied, plus his manuscript descriptions of species, were conveyed to Perkins in 1985.

These specimens were added to material that had become available in museums during the intervening years (over 40,000 specimens) and that had been independently under study by Perkins.

In this contribution, the introductory sections, biogeography, morphological discussions, keys, supraspecific classification, and figures (except habitus figures) are by Perkins. Authorship of all new species described herein is Perkins and Bal-four-Browne.

Methods and Conventions

MEASUREMENTS—Measurements are given as whole numbers that are equal to the actual size in mm \times 100; for example, "TL 191" translates to "total length 1.91 mm."

ABBREVIATIONS—The following two-letter designations are used in the keys and species descriptions:

- TL total length (to elytral apices when AE is given)
- EL length of elytra
- EW greatest width of elytra
- HW width of head at eyes
- PL length of pronotum
- PW greatest width of pronotum
- PA width of pronotum at apex
- PB width of pronotum at base
- AE abdomen exposed beyond elytral apices

The following descriptive words and phrases occur repeatedly in the generic and species descriptions. Therefore, for economy, the following conventions are adopted:

- mcp. micropunctulate, micropunctulation
- mcr. microreticulate, microreticulation
- \times pd times puncture diameter (e.g., "interstices $4 \times$ pd" translates to "interstices four times puncture diameter")
- \times ef times eye facet diameter

LOCALITY DATA—At the end of each locality data citation, the number of specimens are given parenthetically together with the depository ab-

breivation; when known, the numbers of males and females are separated by a diagonal line. For example, "(7/11 TMP)" translates to "(7 males and 11 females deposited in the Transvaal Museum, Pretoria)." If only one number is given, genders were not recorded.

Latitude-longitude coordinates are given in an abbreviated form, with degrees and minutes separated by a period (e.g., 34.03S-19.14E).

MICROSCULPTURE—Some microsculptural features of dry specimens, such as granules on the elytra, will be difficult to see when using fiber optics illuminators (used by most taxonomists who must work with specimens in fluids as well as dry material). This is especially so when these features are surrounded by a strongly shining but irregular surface. These features are much more clearly observed by placing an opaque sheet, such as a small piece of tracing paper, between the light source and the specimen, positioning the opaque sheet very close to the specimen. The intense but diffuse lighting produced by this method is also more effective in revealing punctures and associated setae. The opaque sheet can be attached to a standard specimen holder such that one can quickly switch between regular and diffuse lighting by moving the opaque sheet.

It should be noted, however, that using this method will result in some microsculptural features, such as punctures with very gradually sloping sides, appearing slightly smaller than they appear with normal lighting. Since the opaque lighting method has been used in preparing the species descriptions and keys, this method should be used when comparing the relative sizes of microsculptural details.

ILLUSTRATIONS—Male genitalia figures were prepared with the aid of a drawing tube attached to a compound microscope, using temporary transparency mounts of the aedeagi. For storage, each aedeagus is in a glass microvial, which is affixed to the pin of the specimen. The habitus drawings are by C. O'Brien. All other line drawings are by Perkins.

Systematics

Key to Taxa of Southern African Hydraenidae

1. Penultimate maxillary palpomere more robust and longer than ultimate. Pronotum usually with a lateral hyaline border (fig. 13b) (Ochthebiinae) *Ochthebius* Leach

- Penultimate maxillary palpomere never longer than and never markedly more robust than ultimate. Pronotum never with a lateral hyaline border 2
- 2. Head with frons concave between protuberant and elevated eyes. Dorsum granulate and tuberculate *Coelometopon* Janssens
- Head and dorsum not as above 3
- 3. Sides evenly arcuate, base of pronotum as wide as base of elytra. Dorsal surface even, without depressions. Maxillary palpi never elongate *Limnebius* Leach
- Sides not evenly arcuate, base of pronotum narrower than base of elytra. Maxillary palpi various ... 4
- 4. Prosternal intercoxal process expanded laterally behind procoxae, closing procoxal cavities. Maxillary palpi always elongate, palpomere 2 (pseudobasal) slender, slightly sinuate, much longer than 3. Ocelli absent *Hydraena* Kugelann
- Prosternal intercoxal process not expanded behind procoxae, procoxal cavities open posteriorly (figs. 35a, 43a, 113b). Maxillary palpi various. Ocelli present 5
- 5. Hypomer on anterolaterally on each side with large, shallow pocket in which antennal club is held in repose. Antennal club articles always loosely articulated (fig. 113b). Mesosternum lacking plaques ... 6
- Hypomer on anterolaterally without large, shallow depressions. Mesosternum with pair of submedian plaques, sometimes confluent (figs. 35a, 43a). Antennal club compact, connate (figs. 7, 8a) Prosthetopinae Perkins new subfamily
- 6. Hypomer al antennal pocket bordered posteriorly with long, stiff, arcuate setae (fig. 113b). Pronotum widest near midlength, posterolaterally subrectangulate (fig. 113a). Maxillary palpi and tarsi of various lengths. Aquatic or humicolous species *Parhydraena* d'Orchymont
- Pronotum explanate, widest slightly behind middle, then markedly attenuate to posterolateral angles, each of which is produced in small acute point. Explanate margin of elytron very wide, in habitus view concealing tibiofemoral articulation ("knee"). Hypomer al antennal pocket bordered posteriorly with very sparse, indistinct, flexible setae, which lie on cuticle in dry specimens. Maxillary palpi and tarsi very short. Humicolous species (figs. 1, 112) *Discozantaena* new genus

Prosthetopinae Perkins New Subfamily

Members of the subfamily Prosthetopinae Perkins are recognized by the combination of the following characteristics: (1) ventral surface of prothorax lacking distinct antenna-holding cavities (antennal club usually held in small depression on anterior surface); (2) hypomer on (= inflexed margin of pronotum) always well developed, always delimited mesially by well-developed sinuate hypomer al ridge, anterior to level of procoxae the hypomer al ridge is contiguous with the suture marking the lateral limit of the prosternum; (3) procoxal cavities open behind, procoxae separated one from the other by a median lamina; (4) antenna primitively with 11 articles (6 + 5), but club with articles tightly articulated, often with loss of some articulating membranes (see below); (5) head with ocelli; (6) maxillary palpi of varying length, with last article longer than penultimate; (7) mesosternum with submedian pair of "plaques" (usually lacking vestiture), plaques sometimes joined to form inverted Y-shape, or rarely conjointly raised in humicolous forms (see below); (8) ventral vestiture primitively hydrofuge, but often modi-

fied to form very dense, appressed, plastron vestiture, or, rarely, lost in humicolous forms; and (9) first abdominal sternum often with small basal longitudinal carina or cuticular thickening located midway between midline and lateral margin, rarely with additional well-developed carina issuing from margin of coxal cavity. Type genus: *Prosthetops* Waterhouse.

To accommodate the high morphodiversity of this subfamily, and to reflect the presumed lineages, the following new tribes are proposed: Protosthetopini Perkins (type genus *Protosthetops* Perkins new genus; type species *Prosthetops kenyensis* Orchymont); Nucleotopini Perkins (type genus *Nucleotops* Perkins and Balfour-Browne new genus); Pterosthetopini Perkins (type genus *Pterosthetops* Perkins new genus); Prosthetopini Perkins (type genus *Prosthetops* Waterhouse); and Parasthetopini Perkins for the genera *Sicilicula* Balfour-Browne, *Mesoceration* Janssens, and *Parasthetops* Perkins and Balfour-Browne new genus (type genus).

Diagnostic features of these new taxa are given in the following key. A more complete discussion of the characteristics of the two genera that are not

found in southern Africa, viz., *Protosthetops* Perkins (Kenya) and *Sicilicula* Balfour-Browne (Madagascar and Reunion), will be presented separately. A discussion of the phylogenetic relationships

within the Hydraenidae must await descriptions of new genera from Africa, Madagascar, India, Australia, and South America (Perkins in prep.).

Key to Tribes and Genera of Prosthetopinae

1. Pronotum with strong admedian longitudinal reliefs (fig. 18a). Elytral intervals 3, 5, and 7 costate (fig. 17a). Frons gibbose (fig. 2). Mentum fringed laterally with long setae (fig. 19). Venter without hydrofuge or plastron vestiture (figs. 18b–c). Maxillary palpi and tarsi very short. Humicolous species (Nucleotopini Perkins new tribe) *Nucleotops* new genus
- Pronotum without strong longitudinal reliefs, frons without gibbosity, and mentum not fringed laterally with setae (figs. 11a, 35a, 43a). Venter, at least in part, clothed with dense hydrofuge or plastron vestiture (figs. 8, 9, 12). Maxillary palpi and tarsi more elongate. Aquatic species 2
2. Maxillary palpus robust and short, length equal to or less than width of anterior margin of clypeus; palpus, when extended backward, not reaching beyond posterior border of eye, or only very slightly so (figs. 11a, 21a, 34b). First four abdominal sterna posteriorly fringed with unilinear row of flattened setae (setae reflect light, are more shining compared with surrounding vestiture) (figs. 8b, 10). Vestiture of metasternal disc flattened or squamiform. Metacoxa lacking plastron vestiture, at least medially (fig. 10b) 6
- Maxillary palpus less robust, short or long. First four abdominal sterna with irregular or unilinear row of nonflattened setae submarginally on posterior border, setae similar in form to setae on other parts of sterna (border setae overlapping adjacent sternum reflect light similar to other vestiture) (fig. 9b). Metacoxa entirely clothed with vestiture, except small area (“metacoxal sensillum”) opposite trochanter (fig. 9a) 3
3. Maxillary palpus short, about as long as anterior margin of clypeus. Ventral vestiture comprised of short erect setae, 5th sternum with large glabrous posterior area. Spiniform setae of legs (except apicoventral group of protibia) very small and few in number. Kenya (Protosthetopini Perkins new tribe) *Protosthetops* Perkins new genus
- Maxillary palpus short or long. Ventral vestiture of metasternum and abdomen comprised of appressed shining plastron setae, 5th sternum sometimes totally clothed (figs. 12, 43b). Spiniform setae of legs larger and greater in number. Southern Africa, Madagascar, and Reunion (Parasthetopini Perkins new tribe) 4
4. Maxillary palpi short, length about equal anterior width of clypeus. Spermatheca and setae on internal face of labrum of characteristic shapes. Madagascar and Reunion *Sicilicula* Balfour-Browne
- Maxillary palpi longer, always much longer than anterior border of clypeus; palpus, when extended backward, always reaching beyond posterior border of eye (figs. 43a, 77a). Setae on internal face of labrum large and characteristically shaped. Southern Africa 5
5. Elytron with 8th interval noncarinate (fig. 14a). 5th abdominal sternum totally clothed with plastron vestiture, or rarely with very narrow glabrous posterior border (figs. 43b, 50b). Pronotum anteriorly with well-defined narrow hyaline border. Elytral series 5–6 never represented by a single series, usually well separated by 6th interval, very rarely (*aeneus*) 6th interval consisting of narrow walls in area behind humeral umbo *Parasthetops* new genus
- Elytron with 8th interval carinate, costate, or tectiform (except some specimens of *rubidum*); 7th and 8th series not interdigitating or confluent basally (figs. 15, 16). 5th abdominal sternum not totally clothed with plastron vestiture, posteriorly glabrous and shining (figs. 70, 91). Pronotum often without anterior hyaline border. In many members, 5th and 6th elytral series confluent in small area near base, 6th interval absent in this area *Mesoceration* Janssens
6. Eyes enlarged, in habitus view length of eye greater than its separation from anterolateral angle of clypeus. Labrum very large and strongly produced, at least 1.5× as long as clypeus. Pronotum at most only very slightly wider than head, feebly cordiform, each lateral depression not strongly produced or flattened, each about same size as dorsal surface of eye (figs. 8a, 34b, 38, 40). Maxillary palpomere 2 about 0.5× length of stipes. Elytra with 9 or 10 series of punctures, rarely virtually

- impunctate. Abdominal sternum 6 microspiculate, at least in part. Legs elongate. (Prosthetopini Perkins new tribe) *Prosthetops* Waterhouse
- Eyes not enlarged, in habitus view length of eye about equal to or less than its separation from anterolateral angle of clypeus. Labrum not particularly large, not strongly produced, never longer than clypeus. Pronotum distinctly wider than head, distinctly cordiform, lateral depressions each with very flat surface and strongly produced laterally, distinctly larger than dorsal surface of eye (figs. 21a, 24a, 28). Maxillary palpomere 2 about as long as stipes. Elytra with 10 distinct series of punctures, at least in anterior 0.5 (figs. 14b, 21b, 24b). Abdominal sternum 6 with variable microreticulation, not microspiculate. Legs relatively short (Pterosthetopini Perkins new tribe) *Pterosthetops* Perkins new genus

Morphodiversity of the Prosthetopinae

ANTENNA—Primitively, the hydraenid antenna is comprised of 11 meres, 6 basal and 5 in the pubescent club. This is true also for the Prosthetopinae, but a characteristic derived feature of this subfamily is a connate antennal club that is tightly joined to the “cupule” mere (fig. 8a).

Among the known Prosthetopinae, the ancestral condition of five meres separated by four complete articulating membranes is seen in *Sicilicula borbonica* (fig. 7a), *Nucleotops nimbiceps* (fig. 7e), *Parasthetops aeneus*, and four species of *Mesoceration* (see below). These species appear to be, on the basis of other characters, relatively basal within their respective lineages.

In many members of the Prosthetopinae there is loss of articulating membranes between the club meres, resulting in the fusion of meres and consequently a reduction in the number of meres. Transparency mounts are necessary to clearly see the club configurations.

The process of mere fusion has occurred independently in several lineages and is apparently ongoing. In some taxa a particular articulating membrane may be one-half lost, and the remaining vestige merely visible as a thin line. This partial loss of a membrane is often seen when the club is comprised of three meres: the first and second membranes are complete and well marked, but the third is only indicated by a faint vestige, and the fourth is lost without a trace. Clubs of all species judged to be comprised of three meres have a trace of a membrane on the last “mere.”

Membrane loss apparently always proceeds from distal to proximal, based on a comparison of the shapes of the meres of nonreduced clubs with those of clubs with intermediate stages in membrane loss.

Mesoceration has great diversity in the configuration of the antennal club. Among currently

known species are the following numbers of club antennomeres:

- five *distinctum*, *rufescens*, *rivulare* (fig. 7g), *juvendum*
- four *splendorum*, *truncatum* (fig. 7h), *brevigranum*, *endroedyi*, *languidum*
- three *dissonum*
- two *rubidum*, *fusciceps*, *transvaalense* (fig. 7i)
- one *sulcatulum*, *abstrictum* (fig. 7j)

Parasthetops likewise is quite diverse in the degree of membrane loss among extant species. Among currently known species are the following numbers of club antennomeres:

- five *aeneus*
- three *nigrinus* (fig. 7d), *curidius*, *spinipes*
- two *camurus*, *reflexus*
- one *rufulus*

All known species in the genera *Pterosthetops* and *Prosthetops* have an antennal club comprised of two meres, a small basal and a much larger apical mere (figs. 7c,f). In most of these forms the last three articulating membranes have been lost without a trace; an exception is *Pterosthetops brincki*, which appears to have “2.5” meres.

The club of *Protosthetops* (fig. 7b) has four meres, the last articulating membrane lost without a trace (one specimen examined).

The club of *Nucleotops* (fig. 7e), although having the ancestral number of five meres, has the derived condition of the penultimate mere larger than the ultimate.

EYES—The diversity of eye size in the Prosthetopinae exceeds that of any other group in the family. Eyes vary from the greatly enlarged and protuberant eyes of *Prosthetops* species to the greatly reduced eyes of *Mesoceration abstrictum*.

Primitively, the eyes are moderately large, perhaps similar to those of *Parasthetops aeneus* (fig. 54a); in dorsal aspect one can count about eight

weakly convex facets in the longest series. In *Prosthetops setosus* (figs. 8a, 34b), about 14 convex facets can be counted in the longest series. Contrastingly, in *Mesoceration abstrictum* (fig. 107b) the eyes are very small and coarsely faceted, with three to four facets in the longest series.

Intermediate-sized eyes are represented by *Prosthetops megacephalus* with about 12 facets in the longest series, *Parasthetops nigrinus* (fig. 42a) with about 10, *Pterosthetops impressus* (fig. 21a) with about 8, and *Mesoceration sulcatulum* (fig. 104b) with about 5 facets.

HYDROFUGE AND PLASTRON VENTRAL VESTITURE—In most members of the Prosthetopinae at least some of the ventral vestiture is comprised of very dense, appressed setae that overlap one another (figs. 9, 12). The tips of these setae often are flattened. This kind of vestiture probably functions as a plastron. If so, this type of respiration would allow these beetles to remain submerged for long periods of time. Plastron respiration is consistent with the microhabitat "river stones," which is commonly cited on locality data for *Mesoceration*, *Parasthetops*, and *Prosthetops*. This may also at least partially explain the reduction in the antennal club, which appears to have occurred repeatedly in this group. Plastron respiration would obviate the need to use the antennae to break the surface film, or at least decrease the number of times this must be done.

In *Protosthetops* (Kenya) the plesiomorphic condition, consisting of a simple, rather sparse hydrofuge vestiture, is retained.

In other genera of the subfamily, the plastron type of vestiture is generally found on the metasternum and most of the abdominal sterna, whereas the vestiture on the prosternum and mesosternum is erect or suberect, short and dense, and probably hydrofuge instead of plastron. This arrangement is seen in *Parasthetops* (figs. 9, 12, 43) and *Mesoceration*. In *Parasthetops* the abdominal (plastron) vestiture covers a microreticulate cuticle, whereas the abdominal cuticle in *Mesoceration* is nonmicroreticulate. The cuticle of the metasternum is microreticulate in *Parasthetops* but variable in *Mesoceration*.

In *Pterosthetops* (figs. 10, 11b, 13a) the setae on the metasternal disc are squamiform and appressed, whereas the setae laterally are simple. The first four abdominal sterna have a distinctive fringe of elongate flattened setae; other setae are greatly reduced in location and simple in form. The cuticle of these areas is smooth or microreticulate.

In *Prosthetops* apparently the entire metasternum

is clothed with squamiform (plastron) setae (fig. 35). A distinctive fringe of specialized flattened setae is present on the posterior margins of the first four abdominal sterna (fig. 8b). The cuticle is strongly microreticulate on both the metasternum and basal abdominal sterna.

In *Nucleotops*, a humicolous species, neither hydrofuge nor plastron vestiture is present, and the cuticle of the sternal areas is microreticulate (figs. 18b-c).

MESOSTERNUM—The presence of admedian "plaques" (nonpubescent areas) on the mesosternum is unique in the family (e.g., figs. 35a, 43a). These plaques are diverse in shape and development. In *Protosthetops* they are very weakly developed, small oval areas on each side of the midline. In *Sicilicula* they are more markedly developed. In *Nucleotops* they are confluent anteriorly and prominently raised.

In some species of *Parasthetops* and *Mesoceration* the plaques are confluent one with the other anteriorly, conjointly forming an inverted Y-shape. The shapes of the mesosternal plaques are sometimes group specific, but they have not been used herein as group characters because transparency mounts are often necessary to clearly see the configurations. The plaques have been secondarily lost in *Prosthetops grandiceps*.

METASTERNUM—With a few notable exceptions, the diversity of the metasternal form is low. Primitively, a very weakly developed midlongitudinal impression is probably present, such as that of *Parasthetops nigrinus* (fig. 43b). This type is seen in *Protosthetops* (which also has a shallow basomedian impression), *Sicilicula*, *Parasthetops*, *Prosthetops*, and most *Mesoceration*.

An exception is *M. abstrictum*, which has a large inverted V-shaped glabrous area on the metasternum (fig. 108b).

In *Pterosthetops* a shallow basomedian fovea is present (figs. 10b, 13a), and *Nucleotops* has a very profound fovea.

ELYTRA—The elytra of the Prosthetopinae have a great diversity of form, greater perhaps than any other hydraenid group. Several kinds of modifications are unique in the family. Some examples include the box-like form of *Mesoceration pallidum* (figs. 16c, 103b), the greatly modified epipleura of *Mesoceration abstrictum* (figs. 15d, 108), the lateral "stirrups" of *Pterosthetops equestrius* (figs. 14b, 28a), the highly sexually dimorphic elytra of *Prosthetops* species (figs. 34a, 38a-b, 40a,c), and the strongly carinate elytra of *Nucleotops nimbaseps* (figs. 17a, 18a).

By outgroup comparison, the plesiomorphic condition for both the family (Berthélemy, 1986; Perkins, 1989) and subfamily is 10 series of punctures. This condition (with various degrees of reduction of the 10th series) is seen in *Protosthetops*, *Sicilicula*, *Parasthetops* (figs. 14a, 42b), and some species of *Pterosthetops* (figs. 21b, 24b) and *Prosthetops*.

The genus *Mesoceration* shows great diversity in the modification of the pattern of elytral series, in addition to variation in form of the carina between the 7th and 8th series. Some species, such as *M. distinctum* and *M. rubidum* (figs. 15a,c), retain the ancestral condition of 10 complete series of punctures. In other species of the genus, modifications usually involve the coalescence of basal portions of the 5th and 6th elytral series—for example, in *M. truncatum* and *M. endroedyi* (figs. 16b,d). In some species, such as *M. rivulare* (fig. 16a), additionally there is a coalescence of the apical portions of the 1st and 2nd series. In *M. abstrictum* (fig. 15d) there is a coalescence of the 5th, 6th, and 7th series.

The carina of *Mesoceration* varies from virtually absent (*rubidum*, fig. 15c), to sharp and strongly developed (*truncatum*, fig. 16b), to quite thickened (*sulcatulum*, fig. 15b).

WING REDUCTION—Reduction in the size of the flight wings is very rare in the family Hydraenidae, usually found in insular or some intertidal forms such as *Meropathus*, *Neochthebius*, and rarely *Hydraena*. In the genus *Mesoceration* are seven species with reduced wings. This reduction varies in degree. In *capense*, *concessum*, *dissonum*, *endroedyi*, and *pallidum* the wings are about one-half as long as the elytra. Further reduction is seen in *sulcatulum*, and in *abstrictum*, in which the wings are tiny lobes about one-third as long as the elytra. The latter two species also have highly modified elytra and highly reduced antennal clubs.

SEXUAL DIMORPHISM—As in all other Hydraenidae, members of the Prosthetopinae exhibit sexual dimorphism in shapes and structures of the apical abdominal segments. Some features are unique in the family, such as the extreme modifications seen in females of the *endroedyi* group (figs. 91b,d).

Many other kinds of sexual dimorphisms occur in various species and species groups, including microsculpture, vestiture, maxillary palpal form, and elytral form. These characteristics are detailed in the species descriptions. The genus *Prosthetops* is especially rich in sexual dimorphisms.

It is common in other members of the family,

as in many other aquatic Coleoptera, for the protarsi of males to have the basal meres bearing flattened or suction setae. These setae certainly function to hold the female during copulation.

In contrast, instead of these suction setae on the basal meres, members of the Prosthetopinae have the setae of the last mere of the protarsi modified. This distal mere has four setae arrayed along its ventral surface. In all females these four setae are unmodified; that is, they are slender and lie against the cuticle. In many males of this group, some or all of these setae are enlarged and spiniform and stand at an angle to the cuticle. In males of larger species these sexually dimorphic setae are easily seen in dry specimens (e.g., *Prosthetops grandiceps*, fig. 40b), but in very small species they are difficult to see. The comparisons made here are based on transparency mounts.

For those genera with modified setae, there are often genus-specific patterns. For the sake of discussion, the setae can be numbered from 1 to 4, from proximal to distal. The patterns are as follows.

The plesiomorphic condition of similar setae in both sexes is found in the genera *Protosthetops* and *Sicilicula*, at least in the few specimens available for study. Likewise, all four setae are simple (unmodified) in both sexes in *Nucleotops nimbaceps* and in the four species of *Pterosthetops* currently known, except that seta 3 is slightly enlarged in *Pterosthetops impressus*.

In the majority of species of *Mesoceration* the males have setae 1 and 2 enlarged and spiniform, but there are several exceptions. In *M. rivulare* setae 1, 2, and 3 are spiniform, and in *M. endroedyi* and *M. sulcatulum* all four setae are spiniform. In contrast, none of the setae are spiniform in *M. rubidum*, which is the only species in the genus with distinctively sexually dimorphic protibiae.

In all species of *Parasthetops*, except *curidius*, setae 1, 2, and 3 are enlarged and spiniform. In *curidius*, a species with marked sexual dimorphism, setae 1 and 2 are enlarged, spiniform, and widely separated from setae 3 and 4, and the mere is arcuate.

In the five species of *Prosthetops* currently known, setae 2 and 4 are enlarged and spiniform.

In regard to other sexually dimorphic characteristics, in most species of the genus *Mesoceration* the anterior angles of the pronotum are more lobate in females than in males. Often the difference between the sexes is quite slight (seven species). The difference is marked in *concessum*, *dissonum*, *distinctum*, *sulcatulum*, and *truncatum*. Five spe-

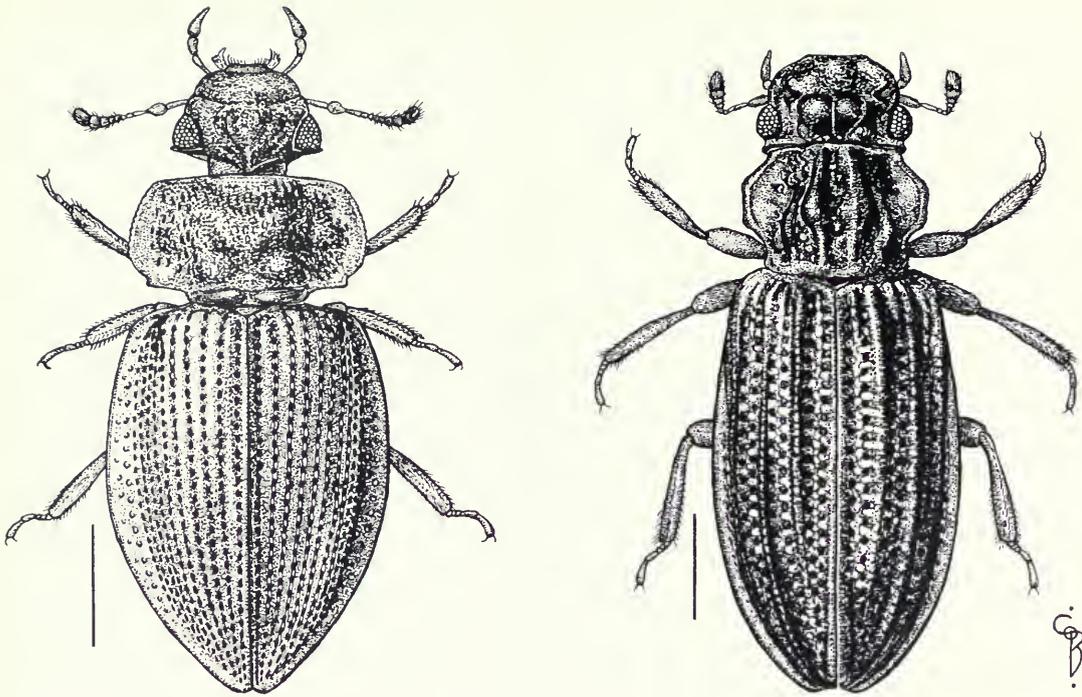


FIG. 1. Habitus of *Discozantaena genuvela* (left) and *Nucleotops nimbaseps*. Scale lines = 0.3 mm.

cies of the genus show no difference in the shapes of the pronotal anterior angles.

AEDEAGUS—The aedeagus of the Prosthetopinae shows considerable diversity of form but in general might be considered “conservative” compared to many other Hydraenidae. The plesiomorphic condition is herein assumed to be the form with the distal piece positioned subapically on the main-piece—for example, *Nucleotops nimbaseps*, *Parasthetops aeneus*, and *Mesoceration distinctum* (figs. 20a, 55, 67).

This interpretation is supported by a similar aedeagal form in the more basal genera *Protosthetops* (Kenya) and *Sicilicula* (Madagascar and Reunion). However, the aedeagus of *Protosthetops*, with a strongly sclerotized, convoluted distal tube (Perkins, unpubl.), is itself divergent.

This type of aedeagal form is similar to that of some genera in the Ochthebiinae, but based on the diversity within that subfamily (e.g., the form in *Gymnochthebius*) and on other characters this similarity may very well be convergent.

If this type of aedeagus is indeed the plesiomorphic condition for the subfamily, then it would appear that a process of reduction and coalescence of the apical part of the main-piece with the distal

piece has occurred independently in all of the southern African genera (except *Nucleotops*).

For example, the presumed plesiomorphic form is present in *Parasthetops aeneus* (fig. 55), *Mesoceration distinctum* (fig. 67), *Pterosthetops equestris* (fig. 29), and *Prosthetops pronotus* (fig. 30), among many others. In these same genera are many species with the apparently coalesced form, such as *Parasthetops nigrinus* (fig. 44), *Mesoceration languidum* (fig. 94), *Pterosthetops impressus* (fig. 22), and *Prosthetops nitens* (fig. 39).

The aedeagi of *Parasthetops* and *Mesoceration* differ from one another in configuration of the distal duct and the apical part of the main-piece. In *Parasthetops* the main-piece generally has the apical area produced on the right side and the distal duct issuing from the left side (e.g., *aeneus*, fig. 55). Contrastingly, in *Mesoceration* the apical area of the main-piece is generally produced on the left side and the distal duct issues from the right side (and angles toward the left) (e.g., *brevigranum*, fig. 90). However, there are exceptions from which to infer a rather plastic condition.

In other genera of the subfamily the distal duct appears to issue from the right side of the main-

piece (or the apical part of the main-piece is produced on the left side) (e.g., *Nucleotops*, fig. 20).

Nucleotops Perkins & Balfour-Browne New Genus

Type species: *Nucleotops nimbaseps* new species.

DIAGNOSIS—Recognized by the costate elytra (intervals 3, 5, and 7), the admedian longitudinal reliefs of the pronotum, the lateral fringe of setae on the mentum, the 11 articles of the antenna, the lack of hydrofuge pubescence on the venter, the short maxillary palpi and legs, and the gibbose frons (figs. 1, 7e, 17–19).

DESCRIPTION—Form oblong, transversely convex. Size about 1.90 mm long, 0.80 mm wide. Color brownish, appendages lighter, head darker. Eyes small. Frons gibbose. Margin of head angulate at frontoclypeal suture. Frontoclypeal suture bisinuate. Anterior margin of clypeus straight. Labrum set at angle to clypeus, margin with setal fringe. Maxillary palpus short, shorter than antennae, palpomeres 2–4 length ratios about 2:1:3, palpomere 3 subglobose, palpomere 4 penicillate. Mentum length slightly less than basal width; lateral border with row of arcuate setae; anterior margin arcuate. Genae rounded, separated by median longitudinal depression; a distinct lateral sulcus for reception of antenna. Antennomeres 11 (6 + 5); pubescent club articles tightly articulated. Thorax: Pronotum with well-developed lateral depressions, each with anterior and posterior pit; disc with submedian longitudinal costa on each side, smaller elevation lateral to each costa, on posterior 0.5 of disc; anterior margin with hyaline border in middle 0.33; lateral margins converging to base posterior to lateral depression; posterior margin slightly arcuate. Prosternum with procoxae contiguous; prosternum anterior to coxae with one carina on each side and a median carina; antennal cavity very small; a low carina separating pubescent sternal area from nonpubescent inflexed margin of pronotum, latter with two foveae; coxal cavities open behind. Mesosternum at base of intercoxal process with ridge in form of inverted U; mesosternum also with short basomedian carina and two low carinae on each side. Metasternum with sparse pubescence, a well-developed median fovea near base. Elytra with 10 rows of punctures. Intervals 3, 5, and 7 costate, at least in

part. Explanate margin thick, continuing virtually to apices. Hydrofuge pubescence lacking. First sternum with apicomedian fovea between metacoxae, on each side an oblique carina from margin of fovea to posterior margin of 1st sternum. Intersegmental impressions well developed. Intercoxal sternite small, triangular. Legs of moderate build and length, each femur slightly excavate to receive tibia; without apparent sexual dimorphism. Tarsi 5–5–5, claws simple. Metatrochanter small. Aedeagus with parameres attaching near base of and terminating near apex of main-piece.

ETYMOLOGY—Greek *nucleo* (kernel), plus *tops* (from *Prosthetops*). Named in reference to the compact body form and the sculptured dorsum.

Microhabitats

Nucleotops nimbaseps has been collected from various humus substrates, by the sifting method. These humus substrates include marsh shore debris (very large populations), leaf litter in a kloof, and humus under bushes and large stones.

Nucleotops nimbaseps new species Figures 1, 2, 17–20

HOLOTYPE—Male, South Africa: Cape-Cederberg, jeep track, 1130 m, 32.28S–19.14E, sifted, marsh shore, 7.XI.1983, Endrödy-Younga (#2055); deposited in TMP.

DIAGNOSIS—Immediately recognized by the markedly gibbose frons (fig. 2).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 191:124:77; HW 50; PL:PW:PA:PB 42: 61:49:41. **COLOR**: Piceo-castaneous, frontal gibbosity of head black, sides of pronotum and elytra pale rufo-testaceous; venter with head and prosternum rufescent, meso- and metathorax and abdomen piceous, elytral epipleura testaceous. **HEAD**: Eyes small, in dorsal aspect nine convex facets in longest series. Temples from above linear, seen from side about 0.25 length of eye, hind edge sharp, posterior face concave for reception of antennal club. Ocelli distinctively raised, each produced anteriorly in subcylindrical shape and joining side of gibbosity. Frons with strong median gibbosity divided by midlongitudinal impression, gibbosity anteriorly angulate and with sides undercut; area between gibbosity and eye concave, depressed below level of eye; sides behind frontoclypeal suture upturned and produced inward in

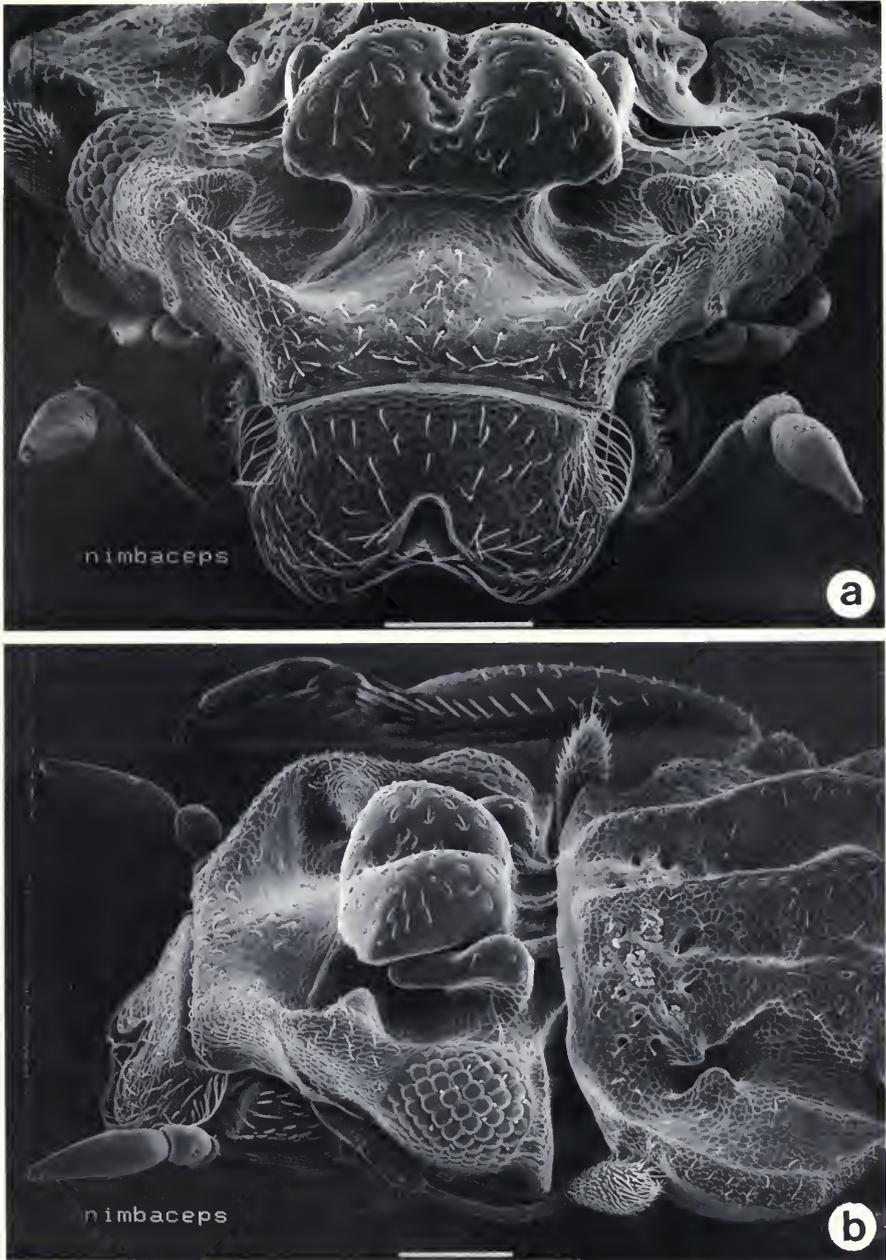


FIG. 2. *Nucleotops nimbaceps*. a. Head, frontal view. b. Head and pronotum, oblique view. Scale lines = 100 μ m.

form of strong tooth, apex of tooth only narrowly separated from angulately produced anterior side of gibbosity. Clypeus with sides upturned conjointly with sides of frons, shovel-shaped. Labrum deflexed sharply from plane of clypeus; sides emarginate and fringed with row of long setae, each of which curves toward anterior and lies against next

seta in row, anterior margin fringed with less apparent setae; U-shaped apicomedian emargination deep, nearly attaining 0.5 length of labrum, margin weakly upturned. Labrum, clypeus and nongibbose portion of frons mcr. and with very short sparse setae, gibbosity with distinct setigerous punctures. **PRONOTUM:** Cordiform, anterior

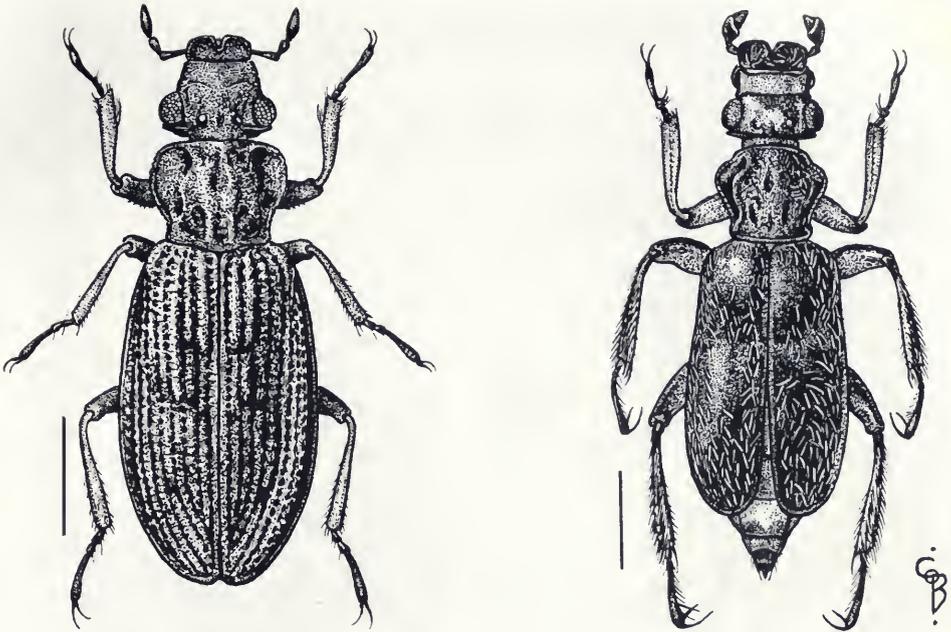


FIG. 3. Habitus of *Pterosthetops brincki* (left) and *Prosthetops grandiceps*. Scale lines = 0.5 mm.

margin very weakly bisinuate, median 0.4 with narrow hyaline border, anterior angle minutely rectangular then side markedly arcuate to middle where produced in weak tooth, then concavely attenuate to rectangular basal angle, posterior

margin nearly straight. Disc with median furrow deep with elongate anterior and short posterior foveae in furrow, admedian carinae sharp except weakly inflated just behind middle; posterior admedian foveae very deep, each bordered laterally

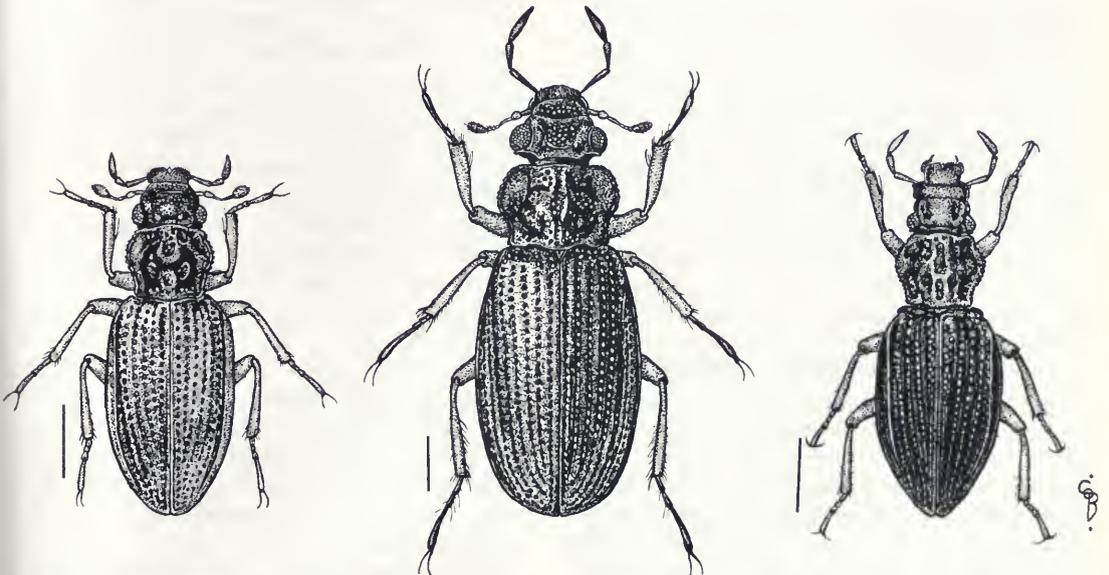


FIG. 4. Habitus of (from left) *Mesoceration jucundum*, *Parasthetops curidius*, and *Mesoceration apicalum*. Scale lines = 0.3 mm.

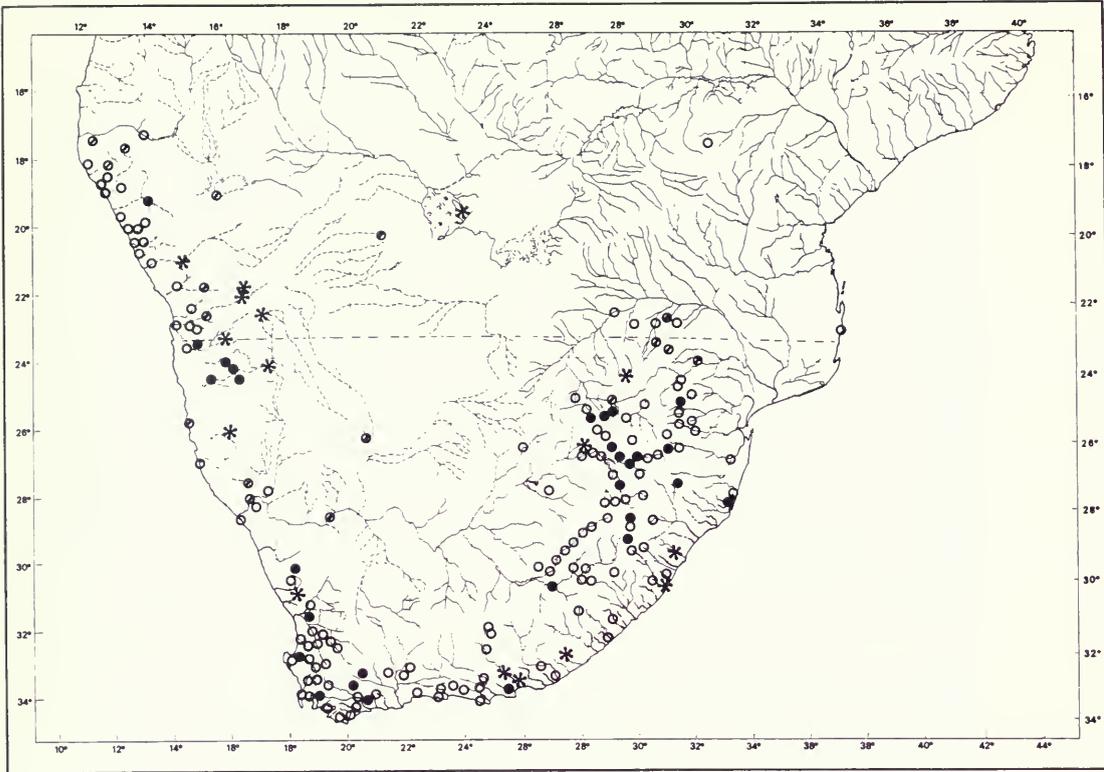


FIG. 5. Site records of Hydraenidae in southern Africa. ○ = hydraenid species other than *Ochthebius andronius*. ● = *O. andronius* plus at least one other hydraenid species. * = *O. andronius* solely found. ∅ = no Hydraenidae found.

by rounded elevation. Adlateral foveae small, each pit-like and bordered with two minute teeth opposite one another and with apices approximate. Lateral depressions nearly flat, only slightly longitudinally convex, sides thickened and weakly denticulate or microrugulose. Surface mcr., reliefs rather densely but finely punctate, each puncture with very short seta; anterior and posterior 0.25, except carinae, with deep dense large punctures, c. 1–2 × ef. **ELYTRA:** Ten-seriate punctate; series paired, 1–2, 3–4, and 5–6, punctures of each serial pair virtually contiguous; each puncture large, deeply impressed, with granule on each side. Intervals 3, 5, and 7 markedly costate as follow: 3rd high at base, decreasing in height posteriorly and disappearing at summit of apical declivity; 5th arising gradually well behind base and not quite attaining apex; 7th arising at shoulder, of equal height for most of length, then gradually decreasing in height and not quite attaining end of 5th costa. Surface of costae with short rather dense setae like pronotal reliefs. Suture moderately raised in distal 0.5. Sides moderately explanate. Apices

conjointly moderately sharply rounded. **VENTER:** Pubescence very short and very sparse except denser laterally on prosternum. Entirely mcr. and dull except shining around large, deep and quite thickly pubescent median subbasal metasternal fovea. Prosternum with well-developed mid-longitudinal carina, sublateral carina on each side short, attaining midlength of prosternum. Mesosternal median fovea and surrounding elevation well developed. Metasternum laterally sparsely but quite coarsely punctate. Abdominal sternum 1 with submedian oblique carina on each side attaining posterior margin; in male sterna 6–7 densely pubescent, apical margin of 6 weakly emarginate; in female sternum 6 shining in basal 0.3, apical 0.7 depressed and densely pubescent, apical margin markedly arcuate. Last tergum in male apicomediaally emarginate and bearing short fine setae; in female margin rounded and bearing row of very short and stout peg-like setae and few interspersed fine flagelliform setae. **LEGS:** Without obvious sexual dimorphism. **AEDEAGUS:** TL 38 (fig. 20a).

ETYMOLOGY—Latin, *nimbaceps* (*nimbus*, storm

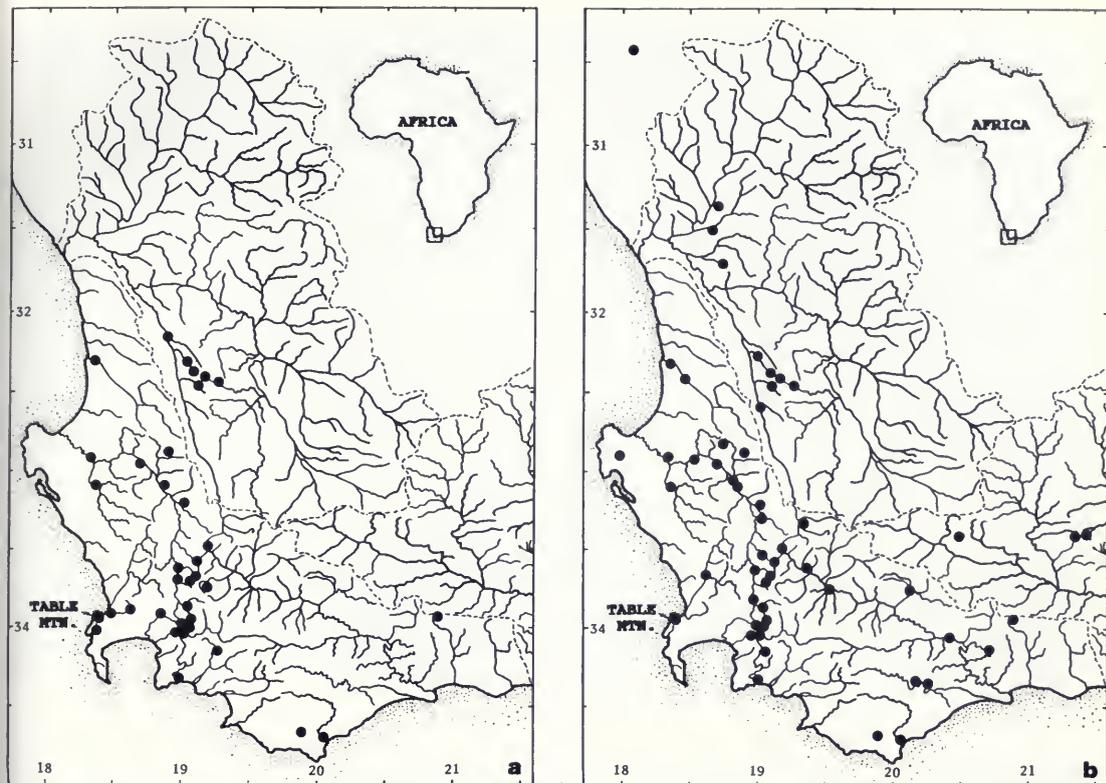


FIG. 6. Site records of Hydraenidae in the Western Cape region. a. Combined records of 17 endemic species. b. Combined records of 16 species not restricted to the Western Cape region.

cloud; *ceps*, head), in reference to the shape of the incredibly modified frons.

DISTRIBUTION—South Africa, western Cape Province (fig. 20b).

PARATYPES (144)—**South Africa:** Same data as holotype, (69 TMP). S.W. Cape Mts., Hawequas SE, 1100 m, 33.34S–19.08E, sifted, 5.XI.1973, Endrödy-Younga (#202), (12 TMP). S.W. Cape Mts., Hawequas SE, 1100 m, 33.41S–19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (2 TMP). S.W. Cape, Bainskloof, Breë R., 33.30S–19.10E, shore washing, 10.XI.1973, Endrödy-Younga (#227), (1 TMP). S.W. Cape, Devil's Kloof, 850 m, 32.28S–19.06E, sifted, 30.X.1981, Endrödy-Younga (#1909), (16 TMP). S.W. Cape, Devil's Kloof, 850 m, 32.28S–19.06E, sifted litter, 9.XI.1983, Endrödy-Younga (#2060), (4 TMP). W. Cape, Hawequas, 33.34S–19.08E, sifted humus, 5.XI.1973, Endrödy-Younga (#199), (1 TMP). Cape, Cederbg., Algeria forest st., 32.22S–19.03E, sifted, gallery bush, 3.XI.1981, Endrödy-Younga (#1916), (1 TMP). Seder Berg, 500–1100 m, Clanwilliam distr. C.P., c. 31.10S–18.52E, humus under bushes

and large stones, IV.1962, N. Leleup (ZA 99), (34 TMP). W. Cape, Hawequas, 33.34S–19.08E, sifted humus, 5.XI.1973, Endrödy-Younga (#200), (2 TMP). Paarl District, Upper Fransch Hoek Forest Reserve, 33.59S–19.03E, 16-IV-1952, A. D. Harrison, (GBG 554F), (2 AMG).

ADDITIONAL MATERIAL—**South Africa:** Same data as holotype, (1,028 TMP). S.W. Cape, Devil's Kloof, 850 m, 32.28S–19.06E, sifted, 30.X.1981, Endrödy-Younga (#1909), (256 TMP).

Pterosthetops Perkins New Genus

Type species: *Pterosthetops impressus* new species.

DIAGNOSIS—Recognized by the cordiform pronotum with large and flat-surfaced lateral depressions, each of which is larger than the dorsal surface of an eye, the deflexed and short labrum, not longer than the clypeus, the short and robust maxillary palpi, length about equal width of the an-

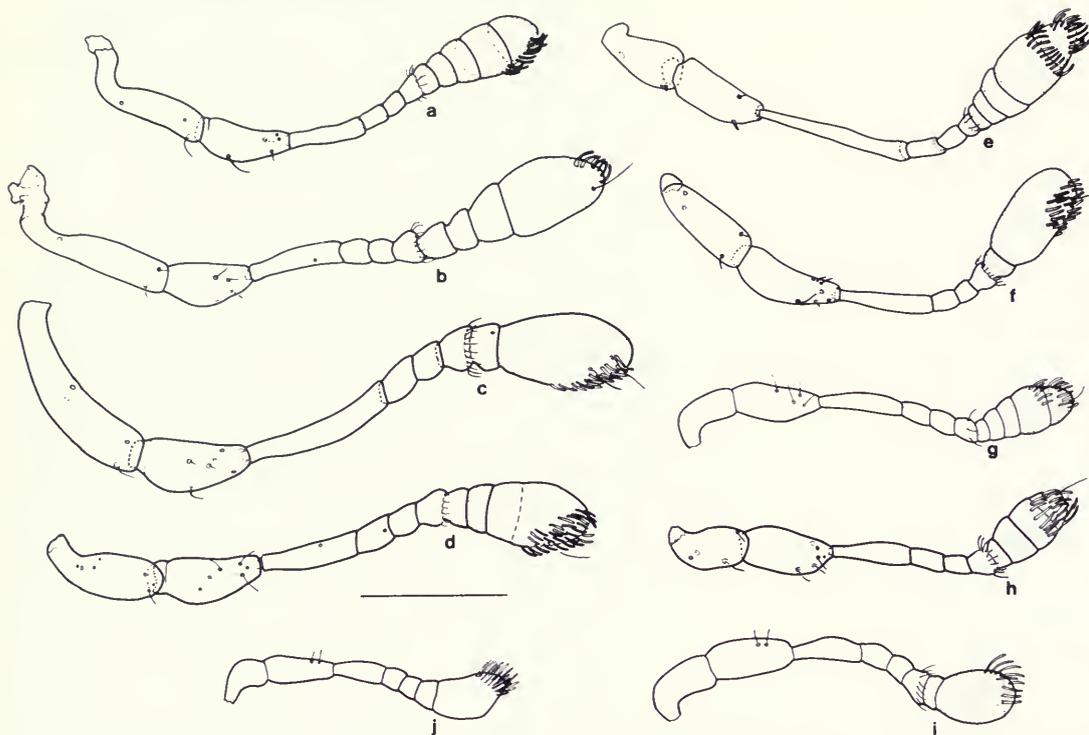


FIG. 7. Antennae of Prosthetopinae (stippled meres with hydrofuge pubescence). a. *Sicilicula borbonica*. b. *Prosthetops kenyensis*. c. *Prosthetops setosus*. d. *Parasthetops nigritus*. e. *Nucleotops nimbaceps*. f. *Pterosthetops impressus*. g. *Mesocerateron rivulare*. h. *M. truncatum*. i. *M. transvaalense*. j. *M. abstrictum*. Scale line = 0.1 mm.

terior margin of the clypeus (figs. 11, 21a, 24a), the basomedian fovea of the metasternum (figs. 10b, 13a), and the abdominal sternal 1-4 each fringed posteriorly with a unilinear row of closely set, large squamiform setae (fig. 10).

DESCRIPTION—Form moderately elongate and convex. Size about 1.80–2.40 mm. Color brown to black, sometimes with faint aeneus or greenish purpurescent sheen. Eyes moderately well developed. Frontoclypeal suture arcuate. Labrum set at angle to clypeus, apicomedian emargination small to moderately deep, U-shaped. Maxillary palpus about as long as antenna, length about equal width of anterior margin of clypeus, when extended backward barely reaching beyond posterior border of eye. Mentum trapezoidal, submental area subpentagonal. Antennomeres eight (6 + 2), but club sometimes with an articulation only partially lost, resulting in 6 + “2.5.” Pronotum with lateral depressions and six more or less developed discal foveae, median pair of foveae sometimes almost confluent to form interrupted median groove. Lateral depressions large, very flat-surfaced, and horizontal, larger than dorsal surface of eye. Elytron

with 10 series of punctures, sometimes serial punctures irregular in discal “saddle”; interval height and width variable, sometimes roundly costiform or subtuberculate; posterior longitudinal and transverse declivities rather well developed. Pro- and mesothoracic sterna with short moderately dense erect hydrofuge pubescence (except mesosternal plaques and sutures), metasternum laterally similarly but more densely clothed, on disc setae appressed and squamiform, except setae simple in midlongitudinal impression. Abdominal sterna 1-4 each fringed with row of closely set, long squamiform setae, laterally each sterna with small triangular area clothed similarly to that of lateral area of metasternum. Procoxal cavities separated by narrow lamina, open behind. Mesocoxal cavities separated by intercoxal processes of meso- and metasterna. Metasternum with midlongitudinal impression and small fovea in midline slightly behind midlength. Abdomen with six (some females) or seven (male) visible sterna. Intercostal sternite small, triangular. Legs and claws moderately elongate, length of metatibia equal to or only slightly greater than length of pronotum (e.g., 85:

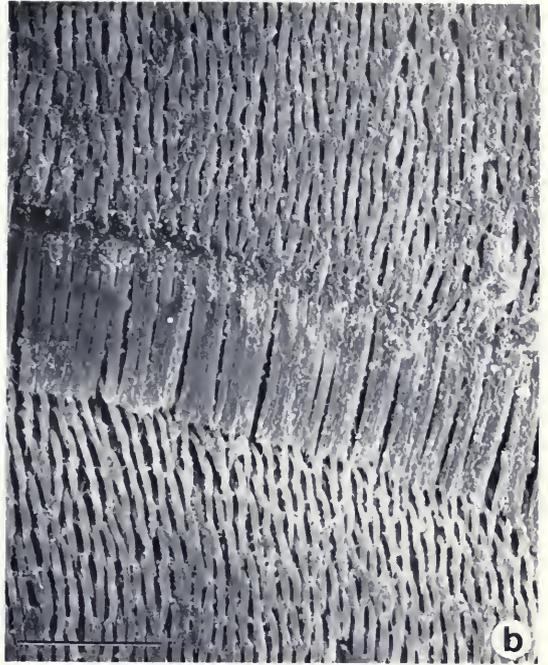


FIG. 8. *Prosthetops setosus*. a. Antenna and ventral surface of eye. b. Vestiture of 2nd and 3rd abdominal sterna. Scale lines = 60 μm .

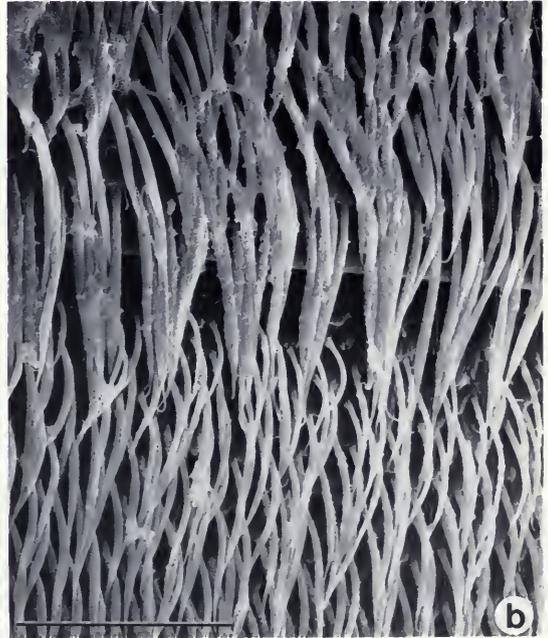


FIG. 9. *Parasthetops nigratus*. a. Left metacoxa and associated areas of metasternum and abdomen. b. Vestiture of 4th and 5th abdominal sterna. Scale lines = 30 μm .

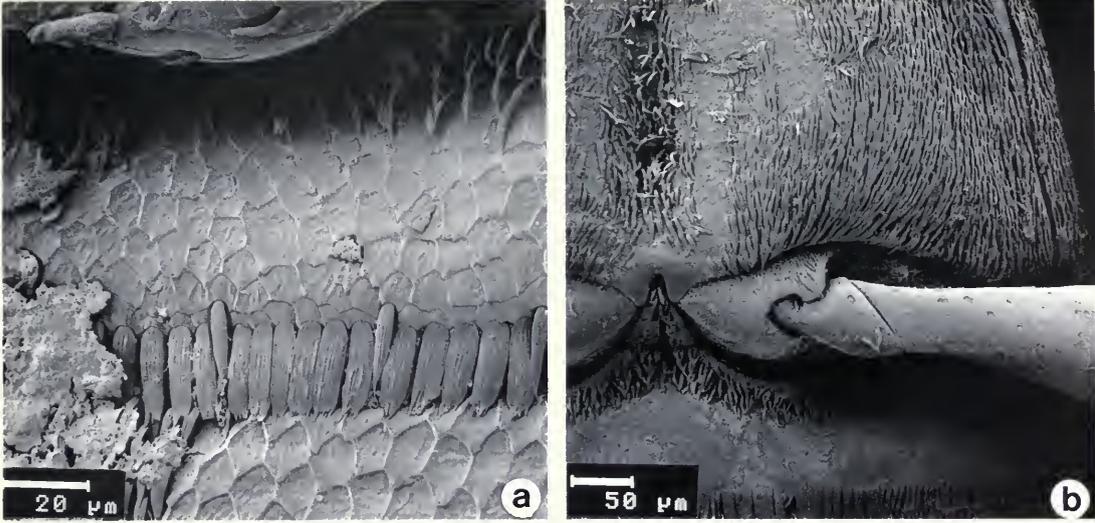


FIG. 10. *Pterosthetops* structures. a. *P. impressus*, 1st and 2nd abdominal sterna. b. *P. harrisoni*, metasternum, metacoxa, and 1st abdominal sternum.

85, 100:110); tarsi 5–5–5, ratios of lengths of articles and claw about as 2:1:1.5:2.5:12:6 (claw). Setae of last protarsomere generally not sexually dimorphic. Metatrochanter small. Aedeagus with parameres attached near base; main-piece variable, but generally with apical area produced on left side (if produced at all), and duct issuing from right side.

DISCUSSION—*Pterosthetops* and *Nucleotops* are

similar in the possession of a basomedian fovea on the metasternum (figs. 10b, 13a), of variable development in *Pterosthetops*, and much more developed in *Nucleotops*. They are also similar in the relatively small, deflexed labrum. Some species of *Pterosthetops* (i.e., *impressus*), based on the debris covering some specimens, perhaps are less strictly aquatic or even subhumicolous. *Nucleotops* species are always humicolous, and debris covered.

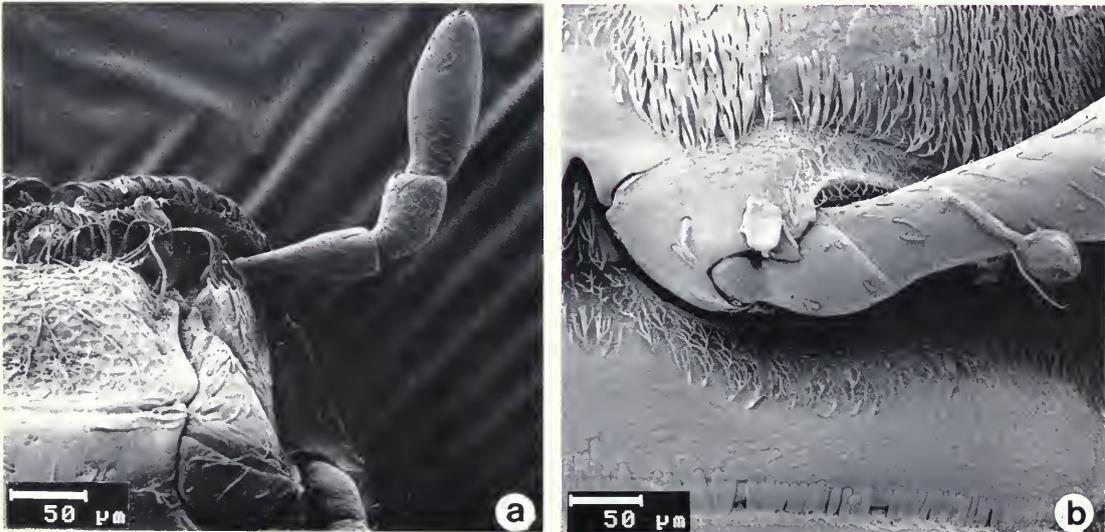


FIG. 11. *Pterosthetops equestris*. a. Head, left ventral aspect, maxillary palpus. b. Left metacoxa and associated areas of metasternum and abdomen.

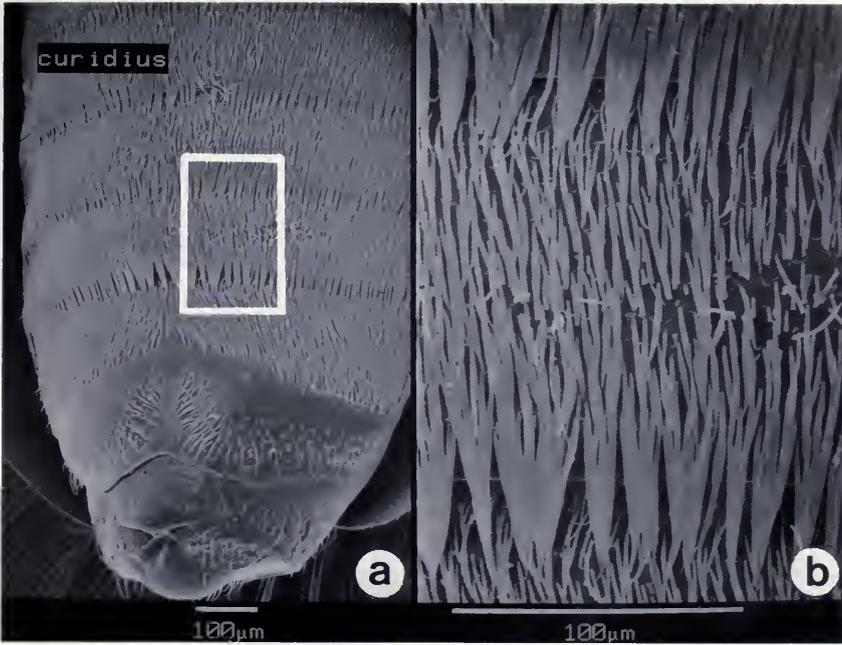


FIG. 12. *Parasthetops curidius*. a. Venter of abdomen, male. b. Detail of vestiture.

However, *Nucleotops* is clearly not derived from *Pterosthetops* based on the antennal club, being plesiomorphic (5-mered) in *Nucleotops* (fig. 7e) and derived (2-mered) in *Pterosthetops* (fig. 7f). It seems

quite possible that the metasternal fovea and the loss of ventral vestiture is convergent in these two genera, deriving from ecological convergence.

On the other hand, *Pterosthetops* could be placed

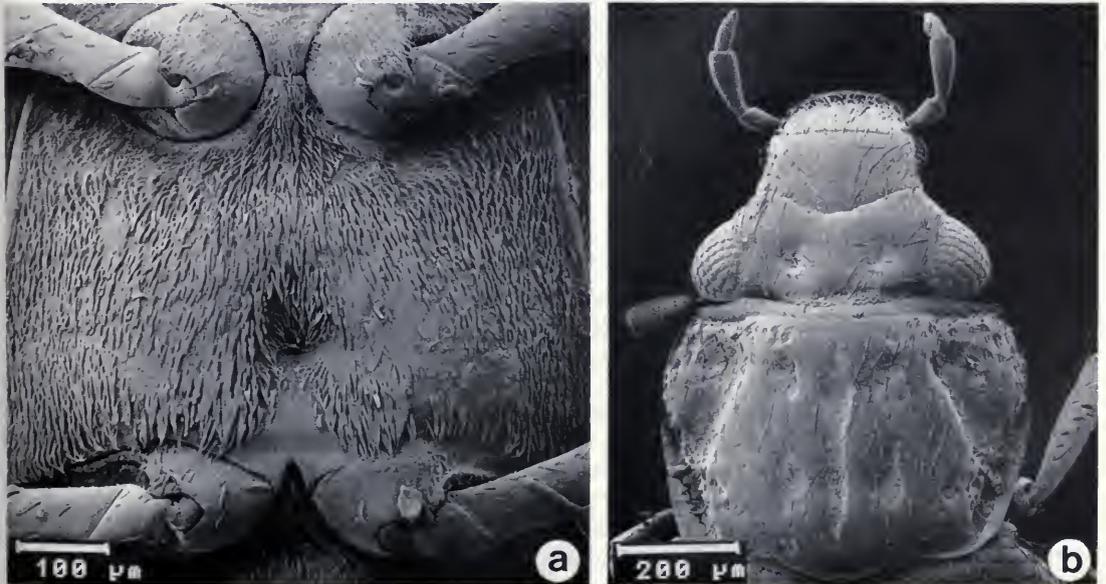


FIG. 13. a. *Pterosthetops impressus*, metasternum. b. *Ochthebius namibiensis*, head and pronotum.

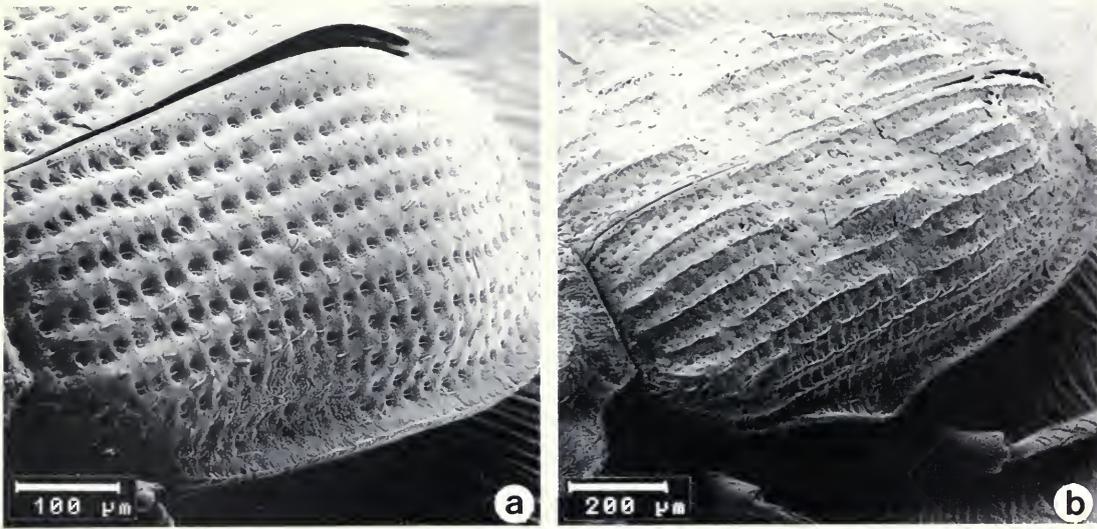


FIG. 14. Elytra, oblique view. a. *Parasthetops camurus*. b. *Pterosthetops equestris*, female.

with *Prosthetops* on the basis of the short and robust maxillary palpi, the (2-mered) antennal club, and the fringe setae of the abdominal sterna.

However, based on the clear evidence of a process of fusion of club antennomeres occurring independently and abundantly in the Prosthetopinae (not only in other genera, but within species groups), confidence is low that the 2-mered club is synapomorphic for *Pterosthetops* and *Prosthetops*.

Further, the specialized fringe setae of the abdominal sterna differ in details between the two genera (figs. 8b, 10), and both could be derived from the generalized condition of a row of simple setae, such as is present in *Parasthetops* (fig. 9b).

For these reasons, the tribe Pterosthetopini is established for *Pterosthetops*.

Microhabitats

Several *Pterosthetops* species have been collected from stones and roots in streams. Specimens are sometimes found in algae under stones (*impressus*), in trickles over cliff rocks (*brincki*), or on damp rock walls with algae (*equestris*). Only rarely (*impressus*) have individuals been collected from rock pools or from margins of streams by the shore washing method.

Key to Groups and Species of *Pterosthetops*

1. Frons on each side with strong oval impression abruptly ended anteriorly; lateral margins of frons and clypeus conjointly thickened; elytral interval 3 convex throughout, lacking flat or depressed areas; elytral series 9–10 confluent in distal 0.5 (fig. 21) (Impressus Group) *impressus*
- Frons not strongly ovately impressed; frons and clypeus on sides conjointly thickened or not; elytral interval 3 convex except flat or depressed in area behind midlength, sometimes also flat or depressed before middle (forming “saddle” that sometimes also includes portions of interval 4); elytral series 9–10 entirely separate or becoming confluent just before apices (Harrisoni Group) 2
2. Frons and pronotal reliefs coarsely densely punctate (fig. 24); elytral serial punctures deep and large, about as wide as intervals. striate impressed except series 1–3 random at posterior portion of saddle, anterior portion of saddle less developed; abdominal sterna with glabrous portion strongly shining, not microreticulate, part with plastron vestiture more extensive, at base extending mesad to 0.33 of segment (fig. 10b) *harrisoni*

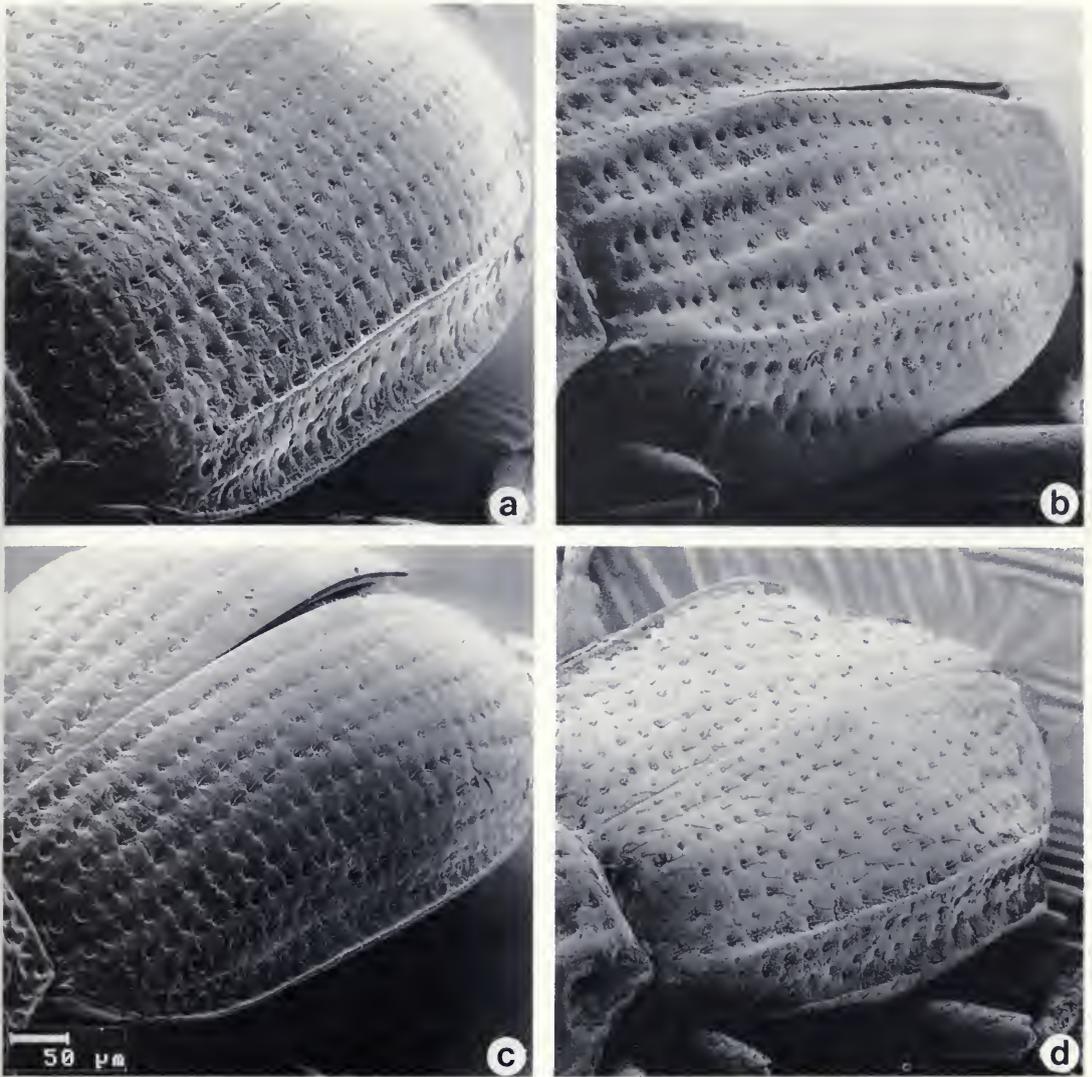


FIG. 15. Elytra of *Mesoceration*, oblique view. a. *M. distinctum*. b. *M. sulcatulum*. c. *M. rubidum*. d. *M. abstrictum*. To same scale.

- Punctuation finer; elytral serial punctures much narrower than intervals; abdominal sterna with glabrous portion microreticulate and dull, or effacedly microreticulate and only slightly shining, part with plastron vestiture less extensive, at base extending mesad about 0.15 width of segment or less 3
- 3. Dorsum entirely dull; elytral saddle smaller, interval 4 not forming part of saddle; costiform portion of interval 3 in saddle area clearly higher than adjacent portion of interval 4; raised portions of intervals with minute indistinct setae; series 1 with a few random punctures near base, punctures then serial to saddle; female unknown *brincki*
- Elytra much more shining than head and pronotum; elytral saddle larger, interval 4 forming part of saddle; raised portions of intervals with distinctive golden setae; costiform portion of interval 4 in saddle area at least as high as adjacent portion of interval 3; punctures of series 1 random or appearing as two irregular rows between base and saddle; females with explanate margin of elytron distinctively widened and dipping ventrad near basal 0.33, forming "stirrup" (figs. 14b, 28) *equestris*

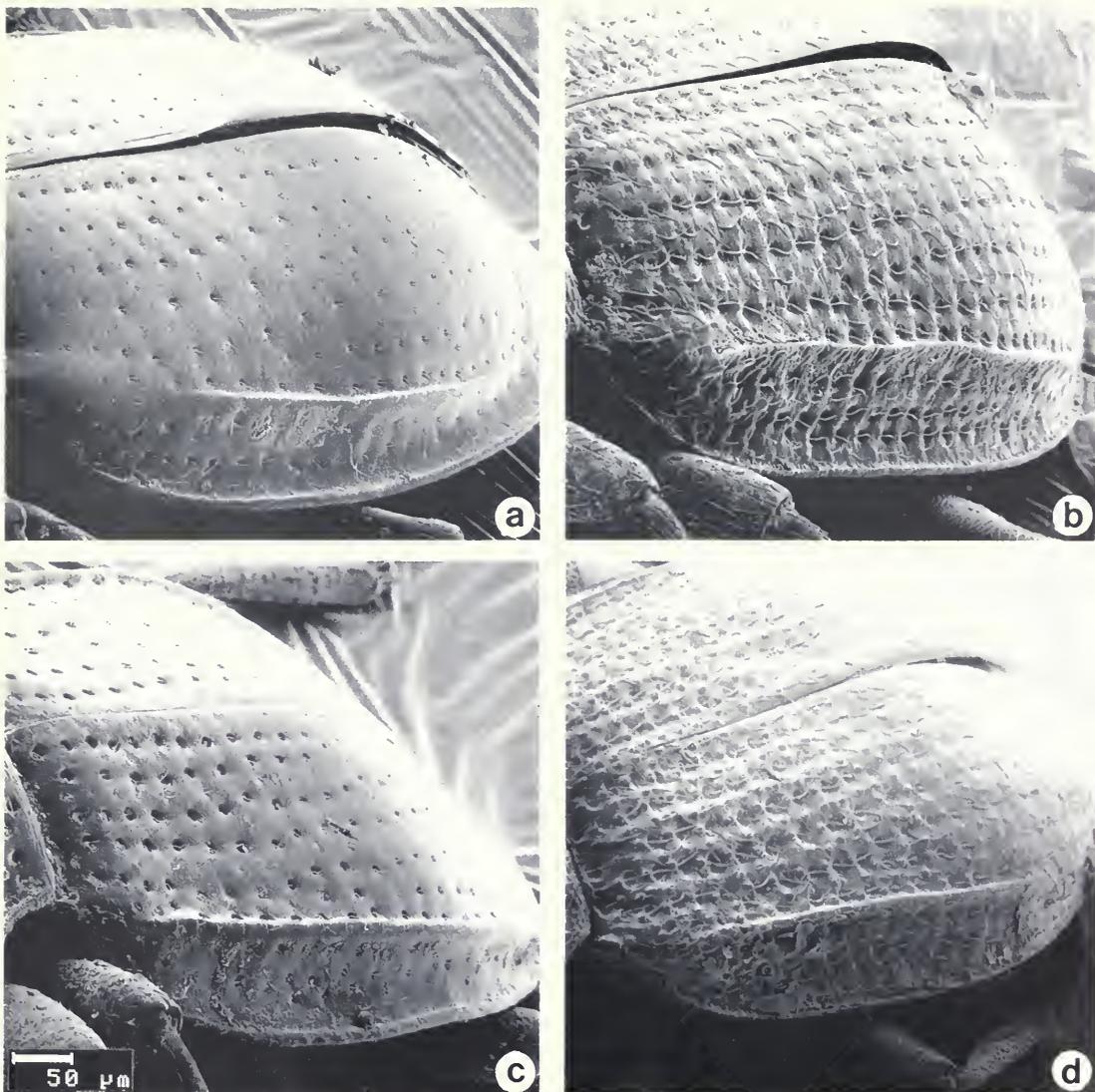


FIG. 16. Elytra of *Mesoceration*, oblique view. a. *M. rivulare*. b. *M. truncatum*. c. *M. pallidum*. d. *M. endroedyi*. To same scale.

Pterosthetops impressus Species Group

Recognized by the strong oval impressions of the frons, the thickened lateral margins of the frons and clypeus, the lack of an elytral saddle (interval 3 convex throughout), and the elytral series 9–10 confluent over the distal 0.5.

Pterosthetops impressus new species

Figures 7f, 10a, 13a, 21, 22, 23a

HOLOTYPE—Male, South Africa: Cape Province, Cape District, Table Mountain, Blinkwater

Falls, c. 33.58S–18.25E, on algae under stones, 21.XI.1949, B. Malkin; deposited in BMNH.

DIAGNOSIS—In addition to the group characteristics, this very distinct species is recognized by the entirely microreticulate dorsum, the small eyes, the deeply impressed pronotal foveae, the minutely rectangulate anterior pronotal angles, the pattern of elytral costae, and the minute basal thickening or tooth of the tarsal claws (fig. 21).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 191:117:73; HW 50; PL:PW:PA:PB 41: 55:47:40. **COLOR**: Dull black to brownish black without trace of aeneous reflections. **HEAD**: Length

from labroclypeal suture to posterior carina $1 \times$ width between eyes. Eyes small, in dorsal aspect eight convex facets in longest series. Dorsum entirely mcr., reliefs finely indistinctly punctulate. Frons on each side with large oval impression, sides of impression quite abrupt except posteriorly, sides in front of eye apparently raised; well-developed circular depression occupying entire area between ocelli. Clypeus with sides raised and thickened. Labrum as long as clypeus, quite flat with only slightest bend across apical 0.33, without thickened anterior margin, anterior angles rounded, apicomedian emargination narrow, shallow, attaining 0.33 length of labrum. **PRONOTUM:** Cordiform, strongly explanate, anterior angles obtuse, each minutely produced, sides very weakly arcuate to widest point about middle then concavely arcuate to rectangular posterior angles, sides at lateral depressions weakly crenulate. Anterior margin extremely shallow bisinuate, nearly straight, median 0.5 with very narrow hyaline border. Foveae and lateral depressions distinctly mcr., reliefs dull, effacedly mcr., punctulae fine and sparse, $0.5 \times$ ef or less. Transverse belt of large, $1-1.5 \times$ ef, deeply impressed punctures behind anterior margin and similar belt close to base. Disc transversely convex, midlongitudinal sulcus interrupted behind middle to form longer anterior and more circular posterior deep foveae, side of sulcus subcarinate; admedian foveae deep, anterior pair punctate and lacking distinct limits, posterior pair larger oval distinctly delimited and impunctate; adlateral foveae very small, deep. Lateral depressions almost flat, slightly transversely raised, mesially rather abruptly delimited. **ELYTRA:** Elongate, entirely dull, mcr. extremely effaced. Apices separately rounded, appearing slightly inflated between margin and last elytral series, inflated part confluent with convex distal 0.5 of suture. Ten longitudinal series of distinct punctures except series 9-10 confluent in posterior 0.5; posteriorly just before apices series 1-2 confluent and series 3-4 confluent; punctures deep, transversely oval, $c. 1 \times$ ef, each with short indistinct decumbent seta. Intervals as follow: 2nd convex and slightly wider in basal 0.33, 3rd convex throughout, 4th weakly convex in distal 0.5, 5th convex from basal 0.25 to apex, 6th convex except interrupted at mid-length, 7th flat, 8th more sharply convex than others, 9th and 10th flat. Intervals each with sparse unilinear row of minute punctulae, interstices $c. 1 \times$ pd of serial punctures, except absent or less developed on flat areas of intervals. **VENTER:** Head, propleura and elytral epipleura mcr., dull.

Sternal areas without vestiture: dull mesosternal plaques, shining mesosternal sublateral sutures, and strongly shining minute basomedian border on metasternum in front of intercoxal sternite. Metasternal disc very shallowly concave from side to side; midlongitudinal shallow depression extended from about 0.35 to 0.75 of metasternum length, terminated posteriorly in fovea (deeper in males than females). Abdominal sterna with glabrous areas mcr., dull; sterna 1-5 with broadly triangular lateral patches of plastron forming vestiture, sternum 1 also with narrow basal band of vestiture; sterna 1-4 each with straight apical fringe of contiguous flattened setae, fringe narrowly overlapping adjacent sternum, a very sparse narrow band of setae immediately anterior to each fringe. Male: apical 0.5 of 5th and 6th sterna each with transverse band of sparse setae; 6th with posterior margin transverse. Female: 5th with transverse band of sparse setae in apical 0.5; 6th entirely sparsely setigerous, posterior margin rounded. **LEGS:** Tibiae and femora mcr. Each tarsal claw thickened at base in form of minute tooth. One seta of last protarsomere sexually dimorphic, in male slightly larger, spiniform, lying against cuticle (microslide mount) **AEDEAGUS:** TL 44 (fig. 22).

ETYMOLOGY—Latin, *impressus*, in reference to the well-developed impressions of the frons, pronotum, and metasternum.

DISTRIBUTION—South Africa, western Cape Region (fig. 23a).

PARATYPES (75)—**South Africa:** Cape Province: Same data as holotype, (28 BMNH). Same data, but 6.XI.1949, (8 BMNH). Paarl District, Du Toit's Kloof, on stones and roots in stream through rotten granite, 2500 ft, 33.43S-19.11E, 5.III.1954, J. Balfour-Browne, (1/0 BMNH). Great Berg River, Franschoek Forest Reserve, 1 mi above Assaigaibos main stream, 33.59S-19.03E, marginal vegetation, 23.VI.1950, A. D. Harrison, (GBG Stn. 1: 18N), (2 AMG). Cape Dist., Table Mountain, c. 33.58S-18.25E, 22.X.1950, (Swedish Exped. Stn. 13), (4 LUM). Cape Dist., Table Mtn., Blinkwater Ravine, 5.VII.1951, (Swedish Exped. Stn. 351), (1 LUM). Table Mtn., Platteklip Gorge, 21.III.1954, H. Andreae, (1 SAM). S.W. Cape Mts., Hawequas SE, 1100 m, 33.41S-19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (11 TMP). W. Cape, Hawequas, 33.34S-19.08E, from rock pools, 6.XI.1973, Endrödy-Younga (#210), (1 TMP). S.W. Cape, Nuweberg For. Sta., 34.03S-19.04E, river stones, 14.XI.1973, Endrödy-Younga (#247), (1 TMP). S.W. Cape, Hawaquas rad. tower, 33.41S-

19.06E, shore washing, 27.X.1978, Endrödy-Younga (#1484), (17 TMP).

Pterosthetops harrisoni

Species Group

Recognized by the elytral saddle (occupying at least part of interval 3), the frons lacking strong oval impressions, and the elytral series 9–10 entirely separate or becoming confluent just before apices.

Pterosthetops harrisoni

new species

Figures 10b, 23b, 24, 25

HOLOTYPE—Male, South Africa: Cape Province, Great Berg River, Franschoek Forest Reserve, 1 mi above Assegaibos main stream, 33.59S–19.03E, marginal vegetation, 23.VI.1950, A. D. Harrison, (GBG Stn. 1: 18N); deposited in AMG.

DIAGNOSIS—Distinguished from other members of the *harrisoni* group by the densely coarsely punctate pronotum, the deep and large elytral serial punctures that are striate-impressed except series 1–3 random at the posterior part of the saddle, the weakly developed anterior part of the saddle, the strongly shining glabrous portions of the abdominal sterna, and the relatively large lateral triangles of abdominal vestiture (figs. 10b, 24).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 196:131:82; HW 51; PL:PW:PA:PB 40:59:45:41. **COLOR**: Black to piceo-brunneous with feebly aeneous reflections; shining glabrous areas of abdominal sterna brunneous to rufo-brunneous; legs brunneo-testaceous, distal part of femur and proximal part of tibia piceous. **HEAD**: Eyes moderately large, in dorsal aspect 10 convex facets in longest series. Frons dull, anteriorly shagreened, posteriorly almost rugose-punctate, ante-ocellar impressions sharply delimited mesially; disc punctures dense, c. 1 × ef, interstices shining narrow walls; between ocelli with an arcuate impression, concavity posterior. Clypeus with sides rather inflated, widely shallowly impressed between middle and sides, impression continued backward onto frons up to ocelli, sides distinctly punctate, disc shagreened. Labrum shagreened, apicomediaally narrowly incised to 0.5 length of labrum, incision margin narrowly upturned, lobes almost semicircular and reflexed very slightly. **PRONOTUM**: Cordiform, sides in anterior half strongly explan-

ate and finely crenulate, behind middle at first abruptly then progressively less convergent to rect-angulate basal angles; anterior angles obtuse but apparent. Anterior margin shallowly bisinuate, median 0.5 with very narrow hyaline border. Disc transversely convex, surface microreticulate or weakly shagreened, rather densely and shallowly punctate except behind apex and in front of base where punctures are sharply impressed, c. 1 × ef. Foveae as follow: deep longer anterior shallowly confluent with deep basally widening posterior median; obsolete anterior and deep distinct oblique posterior admedian. Lateral depressions mcr., very shallowly indistinctly but rather coarsely punctate, each sharply delimited mesially, with deep anterior and posterior foveae. **ELYTRA**: Elongate, apices separately widely rounded. Ten longitudinal series, 2–4 uniting seriatim with sutural series posteriorly; punctures sharply impressed, on disc c. 1.5 × pd of largest pronotal punctures. Intervals strongly convex, except 1–4 behind middle depressed, forming one depression with strial punctures rather random; much less distinctly appressed areas on intervals 2–4 near basal 0.25 and on 7–8 near midlength; 8th interval more sharply convex than other intervals; on disc each interval with unilinear row of rather closely spaced very fine and short setae, each setal socket with anterior rim raised in form of small granule, granules less evident on 8–10. **VENTER**: Mentum dull, mcr. Submentum anteriorly shining, posteriorly effacedly mcr., less shining. Genae coarsely contiguously punctulate. Propleura shining. Sternal areas without vestiture: prosternal midlongitudinal ridge, dull mesosternal plaques, shining mesosternal sublateral sutures, and strongly shining minute basomedial triangular area on metasternum. Metasternum with well-developed midlongitudinal depression from basal 0.20 to about apical 0.80, basally with fovea. Abdominal sterna with glabrous areas strongly shining; sterna 1–5 with broadly triangular lateral patches of vestiture, sternum 1 also with narrow basal band of vestiture; sterna 1–4 each with straight apical fringe of flattened setae, fringe overlapping 0.25–0.33 length of adjacent sternum. Male: 5th sternum shining area with indistinct irregular transverse row of setigerous punctulae, interrupted in middle; 6th punctulate, posterior margin transverse. Female: 5th shining, 6th finely mcr., distal 0.5 of both finely punctulate, posterior margin of 6th rounded. **LEGS**: Femora and tibiae mcr., femora much more strongly shining. Setae of last protarsomere not sexually dimorphic. **AEDEAGUS**: TL 33 (fig. 25).

ETYMOLOGY—We are pleased to dedicate this new species to the collector, Dr. A. D. Harrison.

DISTRIBUTION—South Africa, the western Cape Region (fig. 23b).

PARATYPES (10)—Same data as holotype, (3/6 AMG). Cape Province, Paarl District, Du Toit's Kloof, on stones and roots in stream through rotten granite, 2500 ft, 33.43S–19.11E, 5.III.1954, J. Balfour-Browne, (1/0 BMNH).

Pterosthetops brincki new species

Figures 3, 26, 27

HOLOTYPE—Male, South Africa: Cape Province, Ladismith District, Klein Swartbergen, Seweweekspoort, 33.21S–21.25E, 5.I.1951, (Swedish Exped. Stn. 118), Brinck & Rudebeck; deposited in LUM.

DIAGNOSIS—Distinguished from other members of the *harrisoni* group by the dull, mcr., and finely punctate dorsum, and the elytral series 1 with a few random punctures near the base, from *harrisoni* by the elytral serial punctures much narrower than the intervals, from *equestris* by the small elytral saddle, which does not include interval 4, the costiform portion of interval 3 in the saddle area clearly higher than the adjacent portion of interval 4.

DESCRIPTION—SIZE (mm × 100): Holotype TL: EL:EW 238:144:93; HW 60; PL:PW:PA:PB 50:72:59:53. COLOR: Black with very faint aeneous reflections, maxillary palpi and legs piceo-brunneous. HEAD: Length from labroclypeal suture to posterior carina 1 × width between eyes. Eyes rather large and coarse faceted, in dorsal aspect 10 convex facets in longest series. Dorsum strongly mcr. and dull, mcr. gradually becoming finer on frons relief until at anteromedian area appearing as tiny punctulae; frons disc also with very short indistinct sparse setae, setal sockets with anterior rim raised extremely slightly and lacking punctulae mentioned above; ocelli shining. Frons with sides in front of eyes very weakly raised but not thickened, on each side of flat disc vaguely shallowly depressed but inner side of impression rather steep and with minute circular impression; posteriorly between ocelli an arcuate shallow impression, concavity posterior. Clypeus with sides at posterior very weakly raised conjointly with sides of frons, sides in dorsal aspect slightly arcuate. Labrum as long as clypeus, anterior margin of lobes distinctively upturned and thickened; apicomedian emargination V-shaped, greatest width al-

most 0.5 × length, attaining 0.5 length of labrum, margin upturned. PRONOTUM: Cordiform, strongly explanate, anterior angles roundly obtuse, sides weakly arcuate to rather sharply arcuate widest point about middle then concavely arcuate to rectangular posterior angles, lateral depressions flat, sides at lateral depressions weakly crenulate and very indistinctly margined. Anterior margin extremely shallowly bisinuate, nearly straight, median 0.5 with very narrow hyaline border. Surface strongly mcr. and dull except slightly more shining on reliefs where mcr. becomes reduced to minute punctulae. Reliefs with very short indistinct sparse setae, setal sockets with anterior rim raised extremely slightly and lacking punctulae mentioned above. Transverse belt of moderately large, c. 1 × ef, deep punctures behind anterior margin and similar belt close to base. Disc transversely convex, midlongitudinal sulcus virtually completely interrupted behind middle to form elongate subrhomboidal anterior and more circular posterior deep foveae, foveae joined by narrow band of mcr., sides of foveae raised slightly in anterior and posterior 0.25; anterior admedian foveae ill-defined oblique shallow impressions; posterior admedian foveae deep, oval, oblique, anterior extreme not delimited; adlateral foveae very small, deep, foveae of a side joined by narrow mcr. groove. ELYTRA: Elongate, apices, separately rounded, explanate margin narrow, not attaining apices. Ten longitudinal series of sharply impressed punctures not much larger than eye-facet, setae of serial punctures virtually imperceptible. Series 2–3 not attaining apex, not fusing posteriorly with sutural series, series 4–10 virtually attaining apices, cuticle slightly inflated between margin of apices and termination of series 5–7. Serial punctures unilinear except series 1 from base to 0.5 distance to saddle area with random punctures, some side by side, remainder of series straight except a few misplaced punctures in saddle area. Intervals not very strongly convex; costa of interval 2 clearly interrupted from 0.3 to 0.5 of length, costa of interval 3 interrupted at 0.3 and 0.5 the length producing a distinct "saddle"; costa of interval 6 and to a less extent 5 and 7 partially interrupted near mid-length. Each interval minutely transversely strigose and with unilinear row of very fine short indistinct decumbent setae, except setae random on intervals 2–3 between base and saddle, random on interval 3 callosity between saddles, and absent in saddles; in basal part of elytron, socket of each interval seta with anterior rim raised to form minute granule, otherwise sockets not granuliform.

VENTER: Mentum and propleura mcr., dull. Submentum effacedly mcr., sparsely punctulate. Genae effacedly mcr. Sternal areas without vestiture: dull mesosternal plaques, shining mesosternal sublateral sutures, and strongly shining minute basomedian triangular area on metasternum. (Prosternum in front of coxae collapsed on holotype.) Metasternum with midlongitudinal depression over basal 0.60, deepest in midlength. Abdominal sterna with glabrous areas moderately shining, mcr. laterally becoming gradually obsolete mcr. medially; sterna 1–5 with triangular lateral patches of short vestiture, sternum 1 also with band of vestiture covering basal 0.5; sterna 1–4 each with apical fringe setae contiguous, flattened, apically truncate, and frayed, fringe narrowly overlapping adjacent sternum; median 0.33 of sterna, immediately anterior to each fringe, with very sparse irregular row of flattened but pointed setae. Male: apical 0.5 of 5th and 6th sterna each with transverse band of sparse setae; 6th with posterior margin transverse; last tergum apically with brush of golden setae. Female unknown. **LEGS:** Femora effacedly mcr., shining, tibiae mcr., dull. Setae of last protarsomere not sexually dimorphic. **AE-DEAGUS:** TL 50 (fig. 26).

ETYMOLOGY—We are pleased to dedicate this new species to the collector, Dr. Per Brinck.

DISTRIBUTION—Currently known from two localities in the eastern Cape Region (fig. 27).

DISCUSSION—The aedeagus of the paratype differs very slightly from that of the holotype, having the situations of the main-piece slightly different and the parameres slightly widened near midlength. The elytral saddle of the paratype includes interval 4, whereas in the holotype only intervals 2 and 3 are depressed to form the saddle.

PARATYPE—**South Africa:** Swellendam District, Langeberge Mountains, Tradouw Pass, c. 33.57S–20.42E, 1400 ft, in trickle over cliff rocks, 13.III.1954, J. Balfour-Browne, (1/0 BMNH).

Pterosthetops equestris new species

Figures 11, 14b, 23b, 28

HOLOTYPE—Male, South Africa: Cape Province, Cape District, Table Mountain, Blinkwater Falls, c. 33.58S–18.25E, on algae under stones, 21.XI.1949, B. Malkin; deposited in BMNH.

DIAGNOSIS—Distinguished from other members of the *harrisoni* group by the strongly mcr. head and pronotum contrasting with the shining elytra, the golden dorsal pubescence, especially that of the raised portions of the elytral intervals, the

more extensive elytral “saddle,” which includes parts of interval 4; females are immediately recognized by the elytral “stirrups,” a widened and ventrad dipping portion of each explanate margin (figs. 14b, 28).

DESCRIPTION—**SIZE (mm × 100):** Holotype TL: EL:EW 230:148:90; HW 57; PL:PW:PA:PB 50:72:54:50. **COLOR:** Black or brownish black, often with a greenish purpurescent sheen on elytra; legs piceous, tibiae paler. **HEAD:** Length from labro-clypeal suture to posterior carina 1 × width between eyes. Eyes rather large, in dorsal aspect 11 convex facets in longest series. Dorsum nonpunctulate, strongly mcr. and dull except shining ocelli. Sparse golden setae along anterior part of clypeus, on frons disc, and encircling each ocellus. Frons with sides in front of eyes weakly raised but not thickened, on either side of disc vaguely shallowly depressed but inner side of impression rather steep; posteriorly between ocelli an arcuate impression, concavity posterior. Clypeus with sides at posterior raised conjointly with sides of frons, sides in dorsal aspect slightly emarginate. Labrum as long as clypeus, without thickened anterior margin, apicomedian emargination narrow, shallow, attaining 0.33 length of labrum, anterior margin of lobes upturned very slightly in males. **PRONOTUM:** Cordiform, strongly explanate, anterior angles roundly obtuse, sides weakly arcuate to rather sharply arcuate widest point about middle then concavely arcuate to rectangular posterior angles, sides distinctly margined and at lateral depressions weakly crenulate. Anterior margin extremely shallowly bisinuate, nearly straight, median 0.5 with very narrow hyaline border. Entire surface strongly mcr., reliefs on disc with sparse golden recumbent setae, anterior rim of each setal socket raised in form of minute granule. Transverse belt of moderately large, c. 1 × ef, punctures behind anterior margin and similar belt close to base, punctures obscured by strong mcr. Disc transversely convex, midlongitudinal sulcus interrupted behind middle to form longer anterior and more circular posterior deep foveae, sides of sulcus raised very slightly in anterior and posterior 0.25; anterior admedian foveae deep, subsulciform, open ended; posterior admedian foveae larger, oval, oblique, anterior extreme not delimited; adlateral foveae very small, deep, foveae of a side joined by narrow shining groove. Lateral depressions virtually flat. **ELYTRA:** Explanate margin in both sexes continuing to apices, apical 0.20 thickened and appearing slightly inflated. Apices separately rather sharply rounded in both sexes. Sides in male weakly emar-

ginate near midlength, in female at about 0.33 from base characteristically more widely explanate and dipping ventrad and recovering to form distinct angle in lateral aspect ("stirrups"). Distinctly 10-seriate punctate, but punctures of series 1 very random from base to saddle area, some side by side; series 2-4 posteriorly fusing seriatim with sutural series, remainder attaining apex; series 2 and 3 each forming sinuate line around costiform part of interval 4; punctures 1-1.5 × ef. Each elytron with three distinct depressions ("saddles") as follows: in front of middle occupying intervals 2-5, behind middle occupying intervals 2-4, and shallower depression at midlength occupying intervals 6 and, to a less extent, 5 and 7; anterior and posterior depressions joined by flat 2nd interval. Intervals subcostiform, each with unilinear row of distinctive golden recumbent setae, socket of each seta with anterior rim raised to form minute granule, except setae and granules absent from depressions; 4th interval between saddles slightly more raised and slightly wider than other intervals, with golden setae and socket granules randomly arranged. **VENTER:** Mentum dull, strongly mcr. Submentum effacedly mcr., sparsely punctulate. Genae effacedly mcr. Propleura mcr., moderately dull. Sternal areas without vestiture: dull mesosternal plaques, shining mesosternal sublateral sutures, and strongly shining minute basomedian triangular area on metasternum. Metasternum with well-developed midlongitudinal depression over basal 0.70, fovea near midlength of depression. Abdominal sterna with glabrous areas moderately shining, obsoletely finely transversely mcr.; sterna 1-5 laterally very narrowly clothed with short vestiture, sternum 1 also with narrow basal band of vestiture; sterna 1-4 each with straight apical fringe of contiguous flattened apically truncate and frayed setae, fringe narrowly overlapping adjacent sternum; median 0.33 of sterna, immediately anterior to each fringe, with very sparse irregular row of flattened but pointed setae. Male: apical 0.5 of 5th and 6th sterna each with transverse band of sparse setae; 6th with posterior margin transverse; last tergum apically with brush of golden setae slightly greater than 0.5 × length of tergum. Female: 5th with transverse band of sparse setae over medial 0.33; 6th sparsely setigerous in narrow marginal band, posterior margin rounded, disc flat subapically. **LEGS:** Femora and tibiae with sparse short golden setae, femora effacedly, tibiae strongly mcr. Setae of last protarsomere not sexually dimorphic. **AEDEAGUS:** TL 55 (fig. 29).

ETYMOLOGY—Latin, *equestrius* (having the nature of riding horses), in reference to the golden dorsal pubescence, the well-developed elytral "saddle," and the distinctive "stirrups" of the elytral margin of the female.

DISTRIBUTION—Presently known only from Table Mountain and one locality (Kommetje) south of Table Mountain (fig. 23b).

DISCUSSION—One male from the type locality has the anterolateral angles of the pronotum rather distinctively rectangulate instead of roundly oblique; other structures of this specimen, including the aedeagus, do not differ significantly from those of the holotype. One specimen from Blinkwater Falls (SAM) has the aedeagus bearing nine major setae on the main-piece, whereas the aedeagus of the holotype has seven major setae. The aedeagus of the male from near Kommetje is slightly more slender than that of the holotype.

PARATYPES (14)—Same data as holotype (1/2 BMNH). Same locality but 6.XI.1949, under stones at base of falls, B. Malkin, (0/2 BMNH). Cape District, Table Mountain, Blinkwater Ravine, 5.VII.1951, (Swedish Exped. Stn. 351), (2/2 LUM). Blinkwater, 6.XI.1949, (2/0 SAM). Damp wall with algae, 30.VII.1954, (0/1 SAM). Kommetje (near), c. 34.09S-18.20E, 200 ft, in running stream with *Glyceria* sp., 30.VII.1954, J. Balfour-Browne, (1/1 BMNH).

Prosthetops Waterhouse

Type species: *Prosthetops capensis* Waterhouse, a synonym of *Ochthebius megacephalus* Boheman.

Prosthetops Waterhouse, 1879: 533 (n. gen., desc.).—d'Orchymont, 1913: 315 (desc., disc.).

Eccoptomtopus Péringuey, 1892: 104 (n. gen., desc.; type species: *Eccoptomtopus nitens* Péringuey, designated by Hansen, 1991: 12).—(syn. by d'Orchymont, 1913: 315).

DIAGNOSIS—Recognized by the enlarged eyes, length of eye greater than distance between eye and anterolateral angle of the clypeus, dorsal surface of eye about equal in area to that of lateral depression of the pronotum, the large and strongly produced labrum, longer than the clypeus, the robust and short maxillary palpi, length of each palpus about equal to width of anterior margin of clypeus (figs. 8a, 34), the first four abdominal sterna each with an apical fringe of closely set, long setae (fig. 8b), and the microspiculate 6th abdominal sternum. Often markedly sexually dimorphic.

DESCRIPTION—Form moderately elongate and

convex. Size about 2.30–3.00 mm. Color brown to black, sometimes with aeneous sheen. Eyes enlarged, length greater than distance separating eye and anterolateral angle of clypeus. Frontoclypeal suture arcuate. Labrum markedly produced, longer than clypeus, set at angle to clypeus, apico-median emargination rather large, V-shaped. Maxillary palpus robust and short, about as long as antenna, about as wide as anterior margin of clypeus, when extended backward not attaining posterior border of eye. Mentum trapezoidal, submental area irregularly pentagonal. Antennomeres eight (6 + 2). Pronotum with lateral depressions and six more or less developed discal foveae, median pair of foveae sometimes confluent to form median groove. Lateral depressions relatively small, inclined, about equal in area to dorsal surface of eye. Elytron with 9 or 10 series of punctures, rarely virtually impunctate; transverse declivities rather well developed, posterior declivity weakly developed. Pro- and mesothoracic sterna with short dense erect hydrofuge pubescence (except mesosternal plaques and sutures), metasternum clothed with dense appressed setae on strongly mcr. cuticle. Abdominal sterna 1–4 each fringed with row of closely set, long setae, otherwise clothed similar to metasternum, either totally or with shining glabrous areas posteromedially. Procoxal cavities separated by narrow lamina, open behind. Mesocoxal cavities separated by intercoxal processes of meso- and metasterna. Metasternum at most with shallow midlongitudinal impression. Abdomen with six (some females) or seven (male) visible sterna. Intercostal sternite small, triangular. Legs and claws elongate, length of metatibia greater than length of pronotum (e.g., 110:130, 115:155); tarsi 5–5–5, ratios of lengths of articles and claw about 5:2:6:9:35:18 (claw). Some setae of last

protarsomere sexually dimorphic. Metacoxae lacking hydrofuge pubescence on medial surface. Sexually dimorphic spiniform setae on meso- and metacoxae; femora and tibiae also often with sexually dimorphic setae. Metatrochanter small. Aedeagus with parameres attached near base; main-piece variable, but generally with apical area produced dorsomedially (if produced at all), and duct issuing ventromedially. With marked sexual dimorphism of many sorts, including dorsal sculpture, elytral form, and maxillary palpi form.

DISCUSSION—This genus was erected by Waterhouse (1879) for a single species, *capensis* Waterhouse, which is, therefore, the type species by monotypy. d’Orchymont (1913), after examining the holotype of *Prosthetops capensis* Waterhouse 1879, and some of the syntypes of *Ochthebius megacephalus* Boheman 1851 and of *Eccoptomtopus sculpticollis* Péringuey 1892, reported that these three names all applied to one and the same species, which must be known as *Prosthetops megacephalus* (Boheman) by priority. Lectotypes for the latter two names, which were not designated by d’Orchymont (1913), are designated below.

Microhabitats

Specimens of three species of *Prosthetops* have been collected from mountain rock pools (*megacephalus*, *setosus*, and *nitens*). Members of two species were found under stones in a tiny spring or among algae in the bottom gravel (*pronotus* and *setosus*). The river stone habitat has yielded a few specimens of three species (*pronotus*, *megacephalus*, and *setosus*). No specimens have been collected by the shore washing technique.

Key to Groups and Species of *Prosthetops*

1. Head nearly parallel-sided, each side nearly straight from margin of eye to anterolateral angle of labrum; elytra without explanate margin, at least in anterior one-half; mesosternum without plaques; apical two maxillary palpomeres of male strongly incrassate and concavely flattened; elytra of male virtually impunctate, of female distinctly 10-seriate punctate (fig. 40) (Grandiceps Group) *grandiceps*
- Head sinuate on sides, clypeus with sides convergent anteriorly and labrum with sides arcuate; elytra with explanate margin; mesosternum with plaques; maxillary palpi simple 2
2. Prothoracic hypomeron not medially delimited by ridge; abdominal sterna 1–5 each with median broad apical glabrous area, strongly shining; elytra markedly sexually dimorphic, in male explanate margin very narrow and apices transversely truncate, in female explanate margin broad and appearing inflated and apices obliquely truncate; head shining in both sexes, very finely very sparsely punctulate and with minute punctulate ground sculpture (fig. 38) (Nitens Group) *nitens*

- Prothoracic hypomerion medially delimited from antennal pocket and postcoxal projection by ridge; abdominal sterna 1-5 dull, or at most each with shining glabrous transverse line at base of apical fringe (fig. 35b); elytral apices separately rounded in both sexes, sides in female widely explanate but not appearing inflated; females much more strongly microreticulate on head and pronotum than males (Megacephalus Group) 3
- 3. Head slightly narrower than pronotum (HW:PW c. 76:81). Male: discal areas of clypeus and labrum finely microreticulate, pronotal reliefs subrugosely punctate, mesotibia without brush of setae on ventral aspect. Larger, TL c. 299 *pronotus*
- Head equal to or slightly wider than pronotum. Male: discal areas of clypeus and labrum not microreticulate, pronotal reliefs finely punctulate, mesotibia with distinctive brush of golden setae on ventral aspect. Smaller, TC c. 244-285 4
- 4. Male (head and pronotum not microreticulate): pronotum and head more distinctly shining, punctuation less dense; golden setae on metatrochanter less dense, shorter, not joining at apices to form brush; aedeagus as illustrated (fig. 32). Smaller, TL c. 250 in males *megacephalus*
- Male (head and pronotum not microreticulate): pronotum and head less distinctly shining, punctuation slightly denser; golden setae on metatrochanter longer, denser, forming brush; aedeagus as illustrated (fig. 36). Larger, TL c. 280 in males (fig. 34) *setosus*

Prosthetops megacephalus

Species Group

Recognized, in both sexes, by the well-developed pronotal foveae, the separately rounded elytral apices, the sinuate sides of the head, and the dull abdominal sterna 1-6; in females, by the strongly microreticulate head and pronotum and the well-developed explanate margin of the elytron (fig. 34).

***Prosthetops pronotus* new species**

Figures 30, 31

HOLOTYPE—Male, South Africa: Cape-Swartberg, Seweweekspoort Kloof, 33.24S-21.21E, river stones, 18.XI.1973, Endrödy-Younga (#269); deposited in TMP.

DIAGNOSIS—Recognized by the head slightly narrower than the pronotum (HW:PW c. 76:81), and the sides of the pronotum slightly sinuate behind the anterior angles. Males additionally by the finely mcr. discal areas of the clypeus and labrum, the subrugosely punctate pronotal reliefs, and the absence of a brush of setae on the mesotibiae (females unknown).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 299:193:119; HW 76; PL:PW:PA:PB 67:81:67:63; AE 13. **COLOR**: Dorsum black with aeneous reflections, raised intervals in front of and behind elytral saddle less aeneous and darker than remainder of elytron; legs brown, “knees” and tarsi darker. **HEAD**: Length from labroclypeal suture to posterior carina 1 × width between eyes. Eyes large and protuberant, in dorsal aspect 14 convex

facets in longest series. Frons weakly inflated at middle, at each side from ocellus to anterior angle an arcuate sulcus, concavity posterior, disc only moderately shining, vertex and sides between sulcus and inner edge of eye finely mcr. and subrugose, disc quite densely punctate, punctures varying in size from moderately coarse to very fine. Frontoclypeal suture bisinuate, deeply impressed. Clypeus strongly transverse, twice as wide as greatest length, mcr., very finely sparsely punctulate. Labrum strongly produced, 1 × width and 2 × least length of clypeus, sides arcuate, anterolateral edges strongly reflexed, anterior angles rounded rectangular, apicomedian emargination V-shaped, attaining 0.4 length of labrum. **PRONOTUM**: Anterior margin weakly bisinuate, medial 0.33 with narrow hyaline border. Posterior margin bisinuate, medial 0.33 narrowly margined. Sides margined, weakly denticulate. Lateral depressions wide, longitudinally and transversely weakly convex. Moderately shining, rather coarsely densely punctate, subrugulose, more coarsely densely so in anterior and posterior 0.25. Median groove interrupted at posterior 0.66. Posteroadmedian foveae deep, oblique, open anteriorly. **ELYTRA**: Elongate, sides weakly explanate in males, not serrate; apices separately widely rounded and slightly thickened. Ten-seriate punctate, series 9-10 in same groove and becoming confluent posteriorly; external series entirely, internal series posteriorly, less so anteriorly, striate-impressed; series 2-3 irregular at middle where elytra are distinctly depressed or “saddled.” Intervals 2-3 feebly roundly elevated in front of and behind saddle, intervals 4-5 widened and likewise feebly elevated near dis-

tal 0.33 adjacent to area where intervals 2–3 terminate; intervals 7–8 near midlength extremely obsoletely depressed; interval 3 rather distinctively roundly widened behind saddle; intervals each very finely irregularly linearly punctulate. **VENTER:** Mentum finely obsoletely mcr., submentum sparsely punctulate, genae rugulose. Areas without vestiture: dull mesosternal plaques, shining mesosternal sublateral carina, and small shining basomedian area on metasternum. Abdominal sterna 1–4 each entirely covered with vestiture except narrow line glabrous at base of apical fringe of longer, flattened setae that overlap almost 0.25 of adjacent sternum; sternum 5 with vestiture in basal 0.66, apical 0.33 lacking vestiture, extremely dull, very finely sparsely pubescent; sternum 6 entirely dull (microspiculate); sternum 7 shining, densely punctulate. **LEGS:** Male: mesocoxae, metacoxae, and metatrochanters with golden setae; distal protarsomere of male on ventral surface at midlength slightly enlarged at base of each of two prominent curved spiniform setae. Claws elongate. **WINGS:** Fully developed. **AEDEAGUS:** TL 100 (fig. 30). Females unknown.

ETYMOLOGY—Named in reference to the male pronotum, which is relatively large and coarsely sculptured compared to other members of the *megacephalus* group.

DISTRIBUTION—Known from two localities in the western and one locality in the central Cape Region, South Africa (fig. 31).

PARATYPES (3)—**South Africa:** Cape Province: Same data as holotype, (1/0 TMP). Cape District, Du Toit's Kloof, 33.43S–19.11E, under stones in tiny spring and among algae in bottom gravel, 8.XI.1949, B. Malkin, (1/0 BMNH). Swellendam District, Langeberge Mountains, Tradouw Pass, c. 33.57S–20.42E, 1500 ft, on waterfall and in stoney stream below, 13.III.1954, J. Balfour-Browne, (1/0 BMNH).

Prosthetops megacephalus (Boheman)

Figures 32, 33

Ochthebius megacephalus Boheman, 1851: 587 (n. sp., desc.).—Péringuey, 1892: 105 (note).

Prosthetops capensis Waterhouse, 1879: 533 (n. sp., desc.).—(syn. by d'Orchymont, 1913: 319).

Eccoptometopus sculpticollis Péringuey, 1892: 105 (n. sp., desc.).—(syn. by d'Orchymont, 1913: 319).

Prosthetops megacephalus d'Orchymont, 1913: 319 (n. comb., desc.).—Janssens, 1967: 8 (disc., fig.).

LECTOTYPE (herein designated)—Male, South Africa: “Limpoponis”; deposited in NRS.

HOLOTYPE AND LECTOTYPE OF SYNONYMS—*Prosthetops capensis* Waterhouse (holotype by monotypy): Female, South Africa: Cape Province, Cape of Good Hope; deposited in BMNH. *Eccoptometopus sculpticollis* Péringuey (lectotype herein designated): Male, South Africa: Cape Province, Cape Town, Table Mountain; deposited in SAM.

DIAGNOSIS—Distinguished from *pronotus* by the head as wide as or wider than the pronotum (HW:PW c. 68:68); males additionally distinguished by the strongly shining non-mcr. discal areas of the clypeus and labrum, the finely sparsely punctate pronotal reliefs, and the distinctive brush of golden setae on the mesotibiae.

DESCRIPTION—**SIZE (mm × 100):** Male TL:EL:EW 248:155:99; HW 68; PL:PW:PA:PB 51:68:57:48; AE 18. **COLOR:** Black with aeneous reflections, raised intervals in front of and behind elytral saddle less aeneous and darker than remainder of elytron; legs brown, “knees” and tarsi piceous. **HEAD:** Length from labroclypeal suture to posterior carina slightly less than width between eyes (43:48). Eyes large and protuberant, in dorsal aspect 12 convex facets in longest series. Dorsum smooth, shining, finely sparsely punctulate, except frons depressions distinctly rugulose. Frons weakly inflated at middle, at each side from ocellus to anterior angle an arcuate sulcus, concavity lateral; deeply concave between ocelli. Frontoclypeal suture bisinuate, deeply impressed. Clypeus strongly transverse, length to width as 8:25, sides emarginate, punctulate and duller than remainder. Labrum strongly produced, slightly wider than and 2× least length of clypeus, sides arcuate, anterolateral edges strongly reflexed, anterior angles rounded rectangulate, apicomedian emargination V-shaped, attaining 0.33 length of labrum. **PRONOTUM:** Anterior margin weakly bisinuate, medial 0.33 with narrow hyaline border. Posterior margin bisinuate, medial 0.5 narrowly bordered with band of transverse mcr. Lateral depressions longitudinally slightly transversely not convex, sides minutely denticulate, not margined. Shining, punctures on reliefs fine, about 1×pd of frons; punctures in anterior and posterior 0.25 much coarser and denser, almost 2×ef, interstices 0.5×pd. Median groove interrupted or constricted at posterior 0.66. Posteroadmedian foveae deep, oblique, subsulciform, open anteriorly; posterior side quite convex. **ELYTRA:** Elongate, sides weakly explanate in males, not serrate; apices separately widely rounded and slightly thickened. Ten-

seriate punctate but series 9–10 in same groove and confluent posteriorly; external series entirely, internal series posteriorly, less so anteriorly, striate-impressed; series 2–3 irregular at middle where elytra are distinctly depressed or “saddled.” Intervals 2–3 feebly roundly elevated in front of and behind saddle, intervals 4–5 widened and likewise feebly elevated near distal 0.33 adjacent to area where intervals 2–3 terminate; interval 5 near basal 0.25 and interval 7 near midlength obsoletely depressed; intervals, except at saddle, very finely irregularly linearly punctulate, each puncture with fine recumbent seta. **VENTER:** Mentum finely obsoletely mcr., submentum sparsely punctulate, genae rugulose. Areas without vestiture: dull mesosternal plaques, shining mesosternal sublateral carinae, and small shining basomedian area on metasternum. Abdominal sterna 1–4 each entirely covered with vestiture except narrow line glabrous at base of apical fringe of longer, flattened setae that overlap almost 0.25 of adjacent sternum; sternum 5 with vestiture in basal 0.66, apical 0.33 lacking vestiture, extremely dull, very finely sparsely pubescent; sternum 6 entirely dull (microspiculate); sternum 7 shining, densely punctulate. **LEGS:** Male: mesocoxae, metacoxae, and metatrochanters with golden setae; last protarsomere in male with two large spiniform setae near midlength. Claws elongate. **WINGS:** Fully developed. **AEDEAGUS:** TL 69 (fig. 32).

DISTRIBUTION—Presently known from Table Mountain and two localities south of Table Mountain: Hout Bay and Kommetje (fig. 33a).

DISCUSSION—The sexual dimorphism of this species is strongly marked, the head and pronotum of the male non-mcr., shining, the epipleura narrower, whereas in the female the head and pronotum are strongly mcr., dull, the elytral epipleura strongly explanate from the basal one-third.

Males of *megacephalus* and *setosus* are very similar, but in *megacephalus* the dorsum is usually more strongly shining and the golden setae of the metatrochanters are less dense and shorter and do not join together to form a brush as is present in *setosus*; for reliable determinations, referral should also be made to the quite diagnostic aedeagi (figs. 32, 36). Consistent differences (visible via reflected light) between females of the two species have not been found, although certain details of leg chaetotaxy do differ and will be presented elsewhere (Perkins, unpubl.).

Through the kindness of Dr. Per Lindskod of the Naturhistoriska Riksmuseet, Stockholm, we were able to examine the two syntype specimens

of Boheman, a male and a female, the former bearing a white “Type” and a red “Typus” label of the museum. The male specimen bearing the “Type” label is hereby selected to be the lectotype; a label indicating such has been attached. The female is designated paralectotype and is so labeled. A previous worker has dissected the male and slide-mounted the aedeagus. The aedeagus is broken near the base, the base is flattened, and air bubbles have formed under the coverslip. For these reasons the aedeagus of the lectotype of *Eccoptymoptopus sculpticollis* has been used for the aedeagus illustration.

Waterhouse’s monotype of *capensis*, a single female, is deposited in BMNH and agrees with Boheman’s female.

Péringuey’s syntype specimens of *sculpticollis*, which we have examined through the kindness of Dr. V. B. Whitehead of the South African Museum, Cape Town, consist of four complete specimens and one very fragmentary specimen. One male, a single mount (SAM Type No. 3607), is hereby selected as lectotype and has been labeled as such; we have dissected this specimen to remove the aedeagus, which is herein illustrated (fig. 32); the aedeagus is in a microvial attached to the pin. Four additional syntypes are mounted on a single pin (SAM Type No. 3608) and consist of the following: two males, the aedeagi of which compare favorably with that of the lectotype; one female; and one very fragmentary specimen.

The locality data of the type specimen of *megacephalus*, “Limpoponis,” must be incorrect. All other specimens of this species have been collected in the western Cape Region, far south of the Limpopo River.

MATERIAL EXAMINED—**South Africa:** C. Good Hope, 87-42, C. DARWIN, (0/1 BMNH). Hout Bay, 100 ft, on stones in small stream, 8.III.1954, J. Balfour-Browne, (7/2 BMNH). Kommetje (near), 200 ft, in running stream with *Glyceria* sp., 30.VII.1954, J. Balfour-Browne, (1/0 BMNH). Cape Town, Table Mountain, c. 33.58S–18.25E, 2800 ft, 15.XII.1950, Brinck & Rudebeck, (Swedish Exped. Stn. 83), (13/18 LUM). Cape Town, Purcell, (0/1 SAM). Cape Town, VI.1892, (3/3 SAM). Hout Bay, c. 34.03S–18.21E, tierbos in streamlet, 3.VIII.(18?)54, (3/2 SAM). Hout Bay, I.1907, (4/1 SAM). Table Mount., Orange Kloof, humus, XI.1960, N. Leleup (ZA45), (2/1 TMP). Cape Town, Table Mountain, (3/3 SANC). Cape Province, Table Mountain, rock pools, size (inches) 6 × 6 × 3 deep and 12 × 6 × 2–6 deep, on giant rock out-

crop, 24.IV.1989, G. W. Wolfe, W. Wolfe, & J. Tribe, (2/2 PDF).

Prosthetops setosus new species

Figures 7c, 8, 34–37

HOLOTYPE—Male, South Africa: S. Cape Mt., Helderfontein, 1150 m, 33.55S–20.52E, river stones, 31.X.1978, Endrödy-Younga (#1497); deposited in TMP.

DIAGNOSIS—Distinguished from *pronotus* by the head as wide as or wider than the pronotum (HW:PW c. 74:70); males additionally distinguished by the shining non-mcr. discal areas of the clypeus and labrum, the finely sparsely punctate pronotal reliefs, and the distinctive brush of golden setae on the mesotibiae. Very similar to *megacephalus*; refer to that species.

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 281:176:108; HW 76; PL:PW:PA:PB 59:70:58:54; AE 40. **COLOR**: Black with aeneus reflections, raised intervals in front of and behind elytral saddle less aeneus and darker than remainder of elytron; legs piceous, tibiae slightly lighter. **HEAD**: Length from labroclypeal suture to posterior carina 1 × width between eyes. Eyes large and protuberant, in dorsal aspect 14 convex facets in longest series. Dorsum smooth, dull (but not mcr. in males), very finely sparsely punctate, except frons depressions distinctly rugulose. Frons weakly inflated at middle, at each side from ocellus to anterior angle an arcuate sulcus, concavity lateral; deeply concave between ocelli. Clypeus slightly shining, strongly transverse, length to width as 8:26, sides emarginate. Frontoclypeal suture bisinuate, deeply impressed. Labrum strongly produced, slightly wider than and 2 × least length of clypeus, sides arcuate, anterolateral edges strongly reflexed, anterior angles rounded rectangulate, apicomedian emargination V-shaped, attaining 0.4 length of labrum. **PRONOTUM**: Anterior margin weakly bisinuate, nearly arcuate, medial 0.33 with nearly imperceptible hyaline border. Posterior margin bisinuate, medial 0.66 narrowly bordered with band of transverse mcr. Lateral depressions longitudinally but not transversely convex, sides weakly denticulate, not margined. Slightly shining, punctures on reliefs slightly larger than those of frons, punctures in anterior and posterior 0.25 much coarser and denser. Median groove interrupted or constricted at posterior 0.66. Posteroadmedian foveae deep, oblique, subsulciform, open anteriorly; posterior side quite convex. **ELYTRA**:

Elongate, sides weakly explanate in males, very faintly serrate posteriorly; apices separately widely rounded and slightly thickened. Ten-seriate punctate but series 9–10 subconfluent; external series entirely, internal series posteriorly, less so anteriorly, striate-impressed; series 2–3 irregular at middle where elytra are distinctly depressed or “saddled.” Intervals 2–3 feebly roundly elevated in front of and behind saddle, intervals 4–5 widened and likewise feebly elevated near distal 0.33 adjacent to area where intervals 2–3 terminate; interval 5 near basal 0.25 and 6 near midlength extremely obsoletely depressed; intervals, except at saddle, very finely irregularly linearly punctulate, each puncture with fine recumbent seta. **VENTER**: Mentum finely obsoletely mcr., submentum sparsely punctulate, genae rugulose. Areas without vestiture: dull mesosternal plaques, mesosternal sublateral carina, and small basomedian area on metasternum. Abdominal sterna 1–4 each entirely covered with vestiture and with apical fringe of longer, flattened setae that overlap almost 0.25 of adjacent sternum; sternum 5 with vestiture in basal 0.66, apical 0.33 lacking vestiture, extremely dull, very finely sparsely pubescent; sternum 6 entirely dull (microspiculate). **LEGS**: Male: mesocoxae, metacoxae, and metatrochanters with golden setae; last protarsomere with two large spiniform setae, one near midlength and one about halfway between this seta and apex of mere. Claws elongate. **WINGS**: Fully developed. **AEDEAGUS**: TL 68 (fig. 36).

ETYMOLOGY—Named in reference to the well-developed setae of the aedeagus and the metatrochanters.

DISTRIBUTION—Presently known from localities in the western, central, and eastern Cape Region, South Africa (fig. 37).

PARATYPES (34)—Same data as holotype, (1/0 TMP). **South Africa**: Cape Province: S.W. Cape Mts., Hawequas SE, 1100 m, 33.41S–19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (1/4 TMP). W. Cape, Hawequas, 33.34S–19.08E, from rock pools, 6.XI.1973, Endrödy-Younga (#210), (1/4 TMP). S.W. Cape, Limiet Berge, 33.33S–19.07E, water collection at 950 m, 7.XI.1973, Endrödy-Younga (#215), (1/1 TMP). S.W. Cape, Nuweberg For. Sta., 34.03S–19.04E, river stones, 14.XI.1973, Endrödy-Younga (#247), (1/2 TMP). S.W. Cape, Hawaquas rad. tower, 33.41S–19.05E, shore washing, 27.X.1978, Endrödy-Younga (#1484), (0/5 TMP). Cape District, Du Toit's Kloof, 33.43S–19.11E, under stones in tiny spring, among algae in bottom gravel, 8.XI.1949, B. Malkin, (1/0

BMNH). Assegaibos stream, cold trib. of Great Berg River, 33.58S–19.04E, stones in current, 21.XI.1950, (GBG Stn. 2: 136D), (1/0 AMG). S. Cape Province, Outeniqua Mts., near George, c. 33.57S–22.28E, 4.VI.1988, C. D. Quickelberge, (1/0 SANC).

Prosthetops nitens Species Group

Recognized by the lack of a ridge delimiting the hypomeron, the strongly shining glabrous areas on abdominal sterna 1–5, the transversely or obliquely truncate elytral apices, and the dual dorsal punctation.

Prosthetops nitens (Péringuey)

Figures 33b, 38, 39

Eccoptomtopus nitens Péringuey, 1892: 105 (n. sp., desc.).

Eccoptomtopus proximus Péringuey, 1892: 106 (n. sp., desc.).—(syn. by d'Orchymont, 1913: 318).

Prosthetops nitens d'Orchymont, 1913: 318 (n. comb., desc.).

LECTOTYPE (hereby designated)—Male, South Africa: Cape Town; deposited in SAM.

HOLOTYPE OF SYNONYM—*Eccoptomtopus proximus* Péringuey (holotype by monotypy): Male, South Africa: "Cape Colony"; deposited in SAM.

DIAGNOSIS—An attractive shining black aeneous species, recognized among all members of the genus by the lack of a ridge on the prothoracic hypomeron, which, in other species, forms a line of demarcation between the hypomeron and the antennal pocket and between the hypomeron and the postcoxal projection. Also recognized by the large glabrous shining areas of the abdominal sterna (fig. 38).

A markedly sexually dimorphic species. Males are recognized by the transversely truncate elytral apices, the markedly arcuate distal mere of the pro- and especially mesotarsi, the distinctive pads of suction setae on the basal meres of the pro- and mesotarsi, and the four or five spiniform setae on the posteroventral margin of the metafemora. Females are recognized by the distinctive elytra with widely rounded sides, wide explanate elytral margin, which appears inflated in dorsal aspect, and the obliquely truncate apices; the bilobed, bitumid 7th abdominal sternum of females is unique in the genus.

DESCRIPTION—SIZE (mm × 100): TL:EL:EW

238:153:104; HW 68; PL:PW:PA:PB 50:68:56:56; AE 9. COLOR: Black with aeneous reflections, legs brunneous, distal part of femur and proximal part of tibia piceous, ocelli brunneous. HEAD: Dorsum slightly shining, punctation very fine and sparse, also with very faint ground sculpture of extremely fine punctulae more developed at sides of head where frontoclypeal suture is less impressed. Setae of larger punctures very fine short if perceptible. Length from labroclypeal suture to posterior carina less than width between eyes. Eyes moderately large, in dorsal aspect 10 convex facets in longest series. Sides convergent but not strongly so in front of eyes. Frons disc weakly raised, on each side very shallowly impressed from ocelli to anterior angle; between sulcus and eye sculpture more developed in female than male. Frontoclypeal suture bisinuate, much more deeply impressed over medial 0.5 than laterally. Clypeus strongly transverse, width 4 × length, sides weakly emarginate and weakly convergent; anterior margin in habitus view very slightly arcuate toward anterior; in each sex sculptured as frons. Labrum strongly produced, length about 2.5 × least length of clypeus, wider than anterior margin of clypeus (45:50), sides rounded, entire free margin upturned, in male more strongly so anteriorly; V-shaped apicomedian emargination large, extended to about 0.5 length of labrum, anteriorly as wide as protibial apex. PRONOTUM: Anterior margin very shallowly bisinuate, medial 0.5 with narrow hyaline border. Posterior margin very weakly bisinuate, nearly straight. Punctuation dual as on frons, also with anterior and posterior band of much larger deeper punctures, c. 1.5 × ef. Weakly cordiform, sides behind roundly rectangular anterior angles roundly protruding in small declivous lateral depression; sides denticulate, not margined; basal angles almost rectangular. Strongly convex, very shallow anterior median sulcus and very shallow posterior admedian on each side, sulci clearly seen in female, almost obsolete in male. Hypomeron lacking ridge delimiting antennal pocket and postcoxal projection. ELYTRA: In male sides arcuate to transversely truncate apices, explanate margin very narrow, not as wide as metatibia; in female sides very markedly arcuate to obliquely truncate apices, explanate margin very wide, much wider than metatibia, transversely convex, appearing inflated. Elytral epipleuron in male gradually ended, in female much wider and abruptly ended at posterior angles. Disc slightly depressed at anterior 0.33 near suture (saddle). Shining, intervals with unilinear row of very widely separated very short

arching setae, setae of serial punctures not visible in dry specimens. Ten-seriate punctate, lateral series weakly striate-impressed, more faintly so if at all impressed in saddle, series 9–10 subconfluent, punctures slightly more developed in female than in male. **VENTER:** Mentum slightly shining, very obsoletely mcr., submentum sparsely finely punctulate, genae with very weakly impressed transverse lines. Areas without vestiture: dull mesosternal plaques, shining mesosternal sublateral carinae and rather large basomedian area on metasternum occupying almost 0.33 of disc and including weakly impressed midlongitudinal sulcus. Abdominal sterna 1–5 each with strongly shining median broad apical glabrous patch, narrowly attaining posterior angles, otherwise with vestiture; sterna 1–4 each also with apical fringe of longer, flattened setae that overlap 0.2 of adjacent sternum; sternum 6 basally and laterally dull (microspiculate), otherwise shining and sparsely pubescent; sternum 7 shining, in male posterior margin sharply rounded, in female bilobed, each lobe distinctively tumid. **LEGS:** Male pro- and mesotarsi: meres 1–3 bearing pad of large oval-tipped suction setae (apex of protibia also bearing two or three similarly shaped suction setae), mere 4 bearing two prominent spiniform setae, mere 5 distinctively arcuate, more strongly so in mesotarsi, near midlength bearing two (protarsi) or one (mesotarsi) prominent spiniform seta(e); metafemur bearing four or five spiniform setae on posteroventral margin. Female tarsi without suction setae, mere 5 not as markedly arcuate as in male. **WINGS:** Fully developed. **AEDEAGUS:** TL 44 (fig. 39).

DISTRIBUTION—South Africa, Cape Region. Presently known only from Table Mountain and one locality in the Steenberg Mountains south of Table Mountain (fig. 33b).

MATERIAL EXAMINED—**South Africa:** Cape Town, VI.1892, (3 SAM). Cape Province, Table Mountain, c. 33.58S–18.25E, rock pools, size (inches) 6 × 6 × 3 deep and 12 × 6 × 2–6 deep, on giant rock outcrop, 24.IV.1989, W. & W. Wolfe, J. Tribe, (25 PDP). Cape Province, Muizenberg, Steenberg Mts., 1500 ft, rock pool 1 in. deep, nearest water half-mile away, but dry stream 100 yd, c. 34.07S–18.28E, 17.II.1946, Crudgington, (3/1 BMNH).

DISCUSSION—Through the kindness of Dr. V. B. Whitehead, we have seen the three syntypes of *nitens* in the South African Museum. Two of these specimens are on one pin (SAM Type Nos. 3603 and 3604), one of each sex. We have dissected the

male to remove the aedeagus (fig. 39) and hereby designate this male specimen as lectotype. The female on the same pin is designated paralectotype. One additional syntype (SAM Type No. 3605), on a separate pin, is a female. The type of *proximus* is a unique male, a monotype; a comparison of this specimen with the lectotype of *nitens*, including a comparison of the aedeagi, reveals that the type of *proximus* is conspecific with the type of *nitens* and confirms the synonymy proposed by d'Orchymont (1913).

Prosthetops grandiceps Species Group

Recognized by the straight and parallel-sided clypeus and labrum, the absence of an explanate margin of the elytron, at least in the anterior one-half, and the absence of mesosternal plaques.

Prosthetops grandiceps new species

Figures 3, 40, 41, 53

HOLOTYPE—Male, South Africa: Matatiele District, Drakensbergen, 16 mi N of Matatiele, c. 30.10S–28.49E, 8.III.1951, (Swedish Exped. Stn. 215), deposited in LUM.

DIAGNOSIS—A strongly sexually dimorphic species, abundantly distinct from all other members of the genus. Males are recognized by the strongly incrassate and flattened distal articles of the maxillary palpi, the extremely shining dorsum, the obsolete discal pronotal foveae, the absence of distinct seriate elytral punctures, the absence of an explanate margin of the elytron, and the presence of two very strong setae at the base of the distal protarsomere. Females are recognized by the densely punctate and mcr. head and pronotum, the well-developed discal pronotal foveae, the absence of an explanate margin on the anterior 0.5 of the elytron, and the presence of distinct elytral serial punctures (figs. 3, 40).

DESCRIPTION—**SIZE (mm × 100):** Holotype TL: EL:EW 281:166:108; HW 72; PL:PW:PA:PB 63:74:56:56; AE 18. **COLOR:** Black, strongly micant, legs brunno-testaceous, distal part of femur and proximal part of tibia piceous, maxillary palpi brunneous. **HEAD:** Dorsum of male very strongly shining, not mcr., with very sparse fine straight decumbent golden setae, interstices and setal length both about 3 × ef. Dorsum of female dull, distinctly mcr. Maxillary palpomeres 3–4 in male strongly incrassate, flattened, ventral face of each concave.

Length from labroclypeal suture to posterior carina $1 \times$ width between eyes. Eyes moderately large, in dorsal aspect 11 convex facets in longest series. Sides nearly straight and parallel between eyes and anterior angles of labrum. Frons almost flat, on each side very shallowly impressed from obscure ocelli to anterior angle. Frontoclypeal suture very weakly bisinuate. Clypeus strongly transverse, width $4 \times$ length, sides weakly emarginate, almost parallel; anterior margin only slightly narrower than posterior, in habitus view weakly arcuate, concavity posterior; in each sex sculptured as frons. Labrum strongly produced, about twice as long as clypeus, anterolateral edges slightly raised; apicomedian emargination V-shaped, extended to about 0.28 length of labrum. **PRONOTUM:** Anterior margin arcuate, medial 0.5 with narrow hyaline border. Posterior margin very weakly bisinuate, narrowly margined. Male very strongly shining throughout, anteriorly and posteriorly rather sparingly but quite distinctly, in middle less distinctly punctate, in female evenly mcr. throughout, uniformly quite strongly and quite densely punctate; both sexes with rather long, stiff, decumbent golden setae like head, very sparse on disc, denser and forming irregular submarginal line on sides and forming patch behind anterior angles. Weakly cordiform, sides behind almost rectangular anterior angles roundly protruding in small declivous lateral depression; sides finely margined; basal angles almost rectangular. Strongly convex, with very shallow anterior median sulcus and very shallow posterior admedian on each side, sulci clearly seen only in female, almost entirely obsolete in male. **ELYTRA:** In both sexes with distinctive but sparse golden decumbent setae like on pronotal disc, distinctly depressed at anterior 0.33 near suture (saddle), subparallel-sided, sides not explanate, apices separately rounded, more sharply so in male. Male strongly shining, scarcely visibly seriate punctate, not more distinctly so at sides. Female distinctly and strongly seriate-punctate, series 8–10 faintly striate-impressed over medial 0.5, series 1–3 not becoming random in saddle. **VENTER:** Mentum and submentum shining in male, finely obsolete mcr. in female, genae mcr. Areas without vestiture: widened and strongly shining mesosternal sublateral carinae and small basomedian area on metasternum. Mesosternal plaques absent. Abdominal sterna 1–4 in males each entirely covered with vestiture and with apical fringe of longer, flattened setae that overlap 0.2 of adjacent sternum, in females similar except narrow shining nonvestiture border at base of fringe;

sternum 5 with vestiture in basal 0.66, apical 0.33 lacking vestiture, extremely dull (microspiculate), very finely sparsely pubescent; sternum 6 entirely dull (microspiculate); sternum 7 in male shining, on each side dense patch of short setae. **LEGS:** Male: tibiae widened, protibia flattened, meso- and metatibiae bearing fringe of long stout setae on outer margin; protarsus with meres 1–3 bearing short flattened suction setae with truncate apices (apex of protibia with about nine similarly shaped setae), mere 4 with one short flattened seta and one stout spiniform seta; mere 5 strongly arcuate, base thickened and bearing four adjacent spiniform setae, two small and two very large and strong. Female protarsomere 5 weakly arcuate and bearing only short fine decumbent setae. **WINGS:** Fully developed. **AEDEAGUS:** TL 68 (fig. 41).

ETYMOLOGY—Latin, *grandiceps*, in reference to the large and unusually shaped head.

DISTRIBUTION—Currently known only from the type locality in the Drakensburg Mountains near the southeastern border of Lesotho (fig. 53).

PARATYPES (6)—Same data as holotype, (2/4 LUM).

DISCUSSION—This species shows some relationship to *nitens* based on the smooth dorsum and weakly sinuate labroclypeal suture. This relationship is also suggested by leg chaetotaxy (Perkins, unpubl.).

Parasthetops Perkins & Balfour-Browne New Genus

Type species: *Parasthetops nigrinus* new species.

DIAGNOSIS—Recognized by the ventral appressed plastron vestiture covering abdominal sterna 1–5, the absence of an elytral carina, the absence of modified fringe setae on the abdominal sterna, and the elongate maxillary palpi and legs.

DESCRIPTION—Form moderately elongate and convex. Size about 1.60–2.80 mm. Color black to brown to reddish. Eyes moderately well developed. Frontoclypeal suture weakly to strongly arcuate. Labrum set at angle to clypeus, apicomedian emargination varying from nearly absent to moderately deep and U-shaped, not V-shaped deep and narrow. Maxillary palpus longer than antenna, length greater than width of anterior margin of clypeus, when extended backward reaching beyond posterior border of eye. Mentum trapezoidal,

glabrous smooth submental area triangular. Antennomeres primitively 11 (6 + 5), but sometimes with loss of articulations between meres of compact pubescent club, hence club varying from one (e.g., *rufulus*) to five (e.g., *aeneus*) "meres." Pronotum with lateral depressions and six more or less developed discal foveae, median pair of foveae sometimes entirely confluent to form median groove. Elytron with 10 series of punctures; intervals flat or at most roundly raised, not carinate; posterior longitudinal and transverse declivities moderately to very weakly developed. Thoracic sterna, abdominal sterna 1–5, and all coxae clothed with vestiture, except glabrous prosternal midlongitudinal ridge, glabrous mesosternal plaque on each side of midline, and glabrous strongly shining minute basomedian triangular area on metasternum. Vestiture of prosternum, disc of mesosternum, midlongitudinal depression of metasternum, and coxae less dense, shorter, and erect or suberect (probably hydrofuge). Vestiture of metasternum (except midlongitudinal depression) and abdominal sterna 1–5 denser, longer, and decumbent, setae overlapping one another (probably plastron). Procoxal cavities separated by narrow lamina, widely open behind. Mesocoxal cavities separated by intercoxal processes of meso- and metasterna.

Abdomen with six (female) or seven (male) visible sterna. Intercoxal sternite small, triangular. Legs and claws elongate; tarsi 5–5–5, ratios of lengths of articles and claw about as 1:1:1.5:2:6:3 (claw). Setae of last protarsomere sexually dimorphic: in females with four simple setae, in males basal three setae on ventral margin enlarged and spiniform, apical seta simple (except *curidius*; see species description). Metatrochanter small. Aedeagus with parameres attached near base; main-piece variable, but generally with apical area produced on right side and duct issuing from left side.

Microhabitats

Individuals of all *Parasthetops* species have been collected from stones in the current of streams or rivers. Specimens of two species were found on wet rock walls (*aeneus* and *spinipes*). Four species were taken from marginal vegetation of streams (*spinipes*, *rufulus*, *camurus*, and *reflexus*); preliminary data indicate that perhaps two of these species (*spinipes* and *reflexus*) prefer this microhabitat type. The shore washing technique produced individuals of two species (*spinipes* and *camurus*).

Key to Groups and Species of *Parasthetops*

- 1. Elytral intervals 2–4 in basal 0.5 wide, about 3× puncture diameter, each interval randomly punctulate, some punctulae side by side (fig. 50a); females with rather dense, short spines on 6th abdominal sternum (fig. 43b); relatively large (TL c. 200–260), black or piceous species . . . (Nigritus Group) 2
- Elytral intervals narrower, each with punctulae forming unilinear or, at most, slightly irregular row; size smaller, coloration various 4
- 2. Frons entirely dull, disc densely punctate and microreticulate similar to lateral areas (fig. 42) *nigritus*
- Frons more shining on disc than laterally, interstices on disc non-microreticulate, or only effacedly so, lateral areas dull, microreticulate 3
- 3. Pronotum relatively wide at base, wider than head (HW:PB c. 60:66), sides convergent toward base, then slightly divergent before posterior angles (fig. 49a); last abdominal tergum, in males, distinctively tumid (fig. 51a); elytron, in both sexes, with explanate margin weakly developed, obsolete at posterolateral angles; larger species (TL c. 252 vs. 202) *curidius*
- Pronotum at base narrower than head (HW:PB c. 52:50), sides not divergent before posterior angles (fig. 46a); last abdominal tergum, in males, flat and apicomediaally sharply emarginate; elytron, in females, with explanate margin well developed, especially at posterolateral angles where width is greater than width of metatibia (fig. 46b); explanate margin, in males, weakly developed *spinipes*
- 4. Pronotal antero- and posteromedian foveae at most very shallowly confluent, sometimes clearly separated, posteromedian sometimes very weakly developed; labrum weakly apicomediaally emarginate, maxillary palpus relatively short, length of 2nd (pseudobasal) palpomere distinctly less than midline length of labrum (fig. 54); female 5th sternum submarginally concave; dorsal coloration black or aeneus (Aeneus Group) *aeneus*
- Pronotal antero- and posteromedial foveae confluent, sometimes shallowly, sometimes broadly con-

- fluent to form deep median sulcus; labral emargination more developed, maxillary palpi longer, length of 2nd (pseudobasal) palpomere equal to or greater than midline length of labrum; dorsal coloration various 5
5. Elytral series strongly striate-impressed, intervals transversely roundly raised, cuticle effacedly microreticulate, dull; elytra, lateral areas of pronotum, and legs rufous, head and disc of pronotum micropiceous (Rufulus Group) *rufulus*
- Elytral series not or only very weakly striate-impressed, intervals weakly rounded, cuticle non-microreticulate, shining; coloration various 6
6. Elytral punctures large and deeply impressed, especially on disc, intervals less than puncture width (fig. 14a); not distinctly parallel-sided; posterior declivity moderately well developed, summit slightly past midlength; pronotal antero- and posteromedial foveae broadly confluent to form median sulcus (Camurus Group) 7
- Elytral punctures not large, intervals equal to or greater than puncture width; parallel-sided; posterior declivity virtually obsolete medially, summit, if discernible, closer to apices than to midlength; apices conjointly truncate or broadly separately rounded (Andreaei Group) *andreaei*
7. Frons punctures on disc dense and coarse, some punctures confluent and microreticulate within, larger than eye-facet, interstices shining but usually smaller than puncture diameter; clypeus punctures distinctly finer and sparser than those of frons (figs. 14a, 59) *camurus*
- Frons and clypeal discal areas similarly finely sparsely punctate, punctures smaller than eye-facet, interstices strongly shining, 2–4× puncture diameter or more *reflexus*

***Parasthetops nigritus* Species Group**

Recognized by the large size (TL c. 200–270), the black or piceous dorsal coloration, the elytral intervals, which, in the basal 0.5, are wide, c. 3× diameter of serial punctures, and have random setigerous punctulae; females with rather dense, short spines on the 6th abdominal sternum (figs. 43, 50).

***Parasthetops nigritus* new species**

Figures 7d, 9, 42–45, 50b

HOLOTYPE—Male, South Africa: S. Cape Mt., Helderfontein, 1150 m, 33.55S–20.52E, river stones, 31.X.1978, Endrödy-Younga (#1497); deposited in TMP.

DIAGNOSIS—Recognized among members of the *nigritus* group by the mcr., punctate, and completely dull frons. The habitus is most similar to that of *spinipes* but differs additionally therefrom by the larger size (TL c. 228 vs. 202), the more striate-impressed elytral series, the duller sides of the pronotum, and the aedeagus (figs. 42, 44).

DESCRIPTION—**SIZE** (mm × 100): Holotype TL: EL:EW 228:144:96; HW:PL:PW:PB 55:46:68:55; AE 24. **COLOR**: Head and pronotum black; elytra black to castaneous; legs and maxillary palpi fusco-testaceous to piceo-brunneous. Venter black, propleura and elytral epipleura piceo-brunneous. **HEAD**: Eyes large, in dorsal aspect 10 convex

facets in longest series. Ocelli distinct. Frons dull, mcr., slightly more densely punctate than clypeus, anteocellar furrows shallow, not very distinct and with sides of frons and vertex quite dull, distinctly rugose. Clypeus dull, mcr., rather strongly and fairly densely punctate, punctures 1×ef, interstices c. 1.5×pd. Labrum dull, quite finely and rather rugosely punctate, apicomediaally roundly rather widely shallowly emarginate to 0.16 length of labrum; in male entire anterior margin, in female only apicomedian emargination, narrowly upturned. **PRONOTUM**: Widest before middle, from widest point to base weakly sinuate-attenuate; sides denticulate, very finely margined; anterior margin weakly trisinate, arc occupying median 0.6 consisting of narrow hyaline border. Disc with reliefs moderately shining, finely effacedly mcr., punctate as frons, an anterior and posterior belt of stronger deeper punctures, largest at posterior c. 3× size of punctures on reliefs. Foveae dull, mcr., shapes as follow: midlongitudinal sulcus partially interrupted behind middle, anterior part deeper and slightly larger, not attaining base or apex; small round anterior and larger deeper reniform posterior admedian; large shallow anterior and very small deeper posterior adlateral on each side. **ELYTRA**: Sides almost straight, markedly more explanate, particularly posteriorly, in female than in male. Apices rounded in male, truncate in female but sutural angle slightly rounded. Series moderately striate-impressed, 2nd and 3rd shortened behind, 4th not confluent with sutural at apex. Punctures

on disc $2 \times$ ef, serial interstices c. $1 \times$ pd, distally becoming finer and more widely separated. Intervals in basal 0.5 of disc flat and wide, $3 \times$ pd, becoming narrower and more raised distally; each with unilinear row of fine, widely spaced feebly impressed punctures, except punctures random on intervals 2–4 in basal 0.5. **VENTER:** Mentum and submentum dull, strongly mcr. Propleura mcr., dull. Male: 6th sternum finely mcr., with submarginal transverse band of mixed short fine and short stout setae, band interrupted at middle, posterior margin of sternum weakly emarginate; 10th tergum apicomediaally angulately emarginate, acute apices on each side of emargination with short stout setae. Female: 6th sternum finely mcr., distal 0.5 with short stout golden setae, posterior margin sharply rounded, distal 0.5 slightly depressed at middle; 10th tergum posterior margin sharply rounded, bearing short stout setae. **LEGS:** Femora and tibiae mcr., femora much more strongly shining. **AEDEAGUS:** TL 51 (fig. 44).

ETYMOLOGY—Latin, *nigritus* (black), in reference to the dorsal coloration.

DISTRIBUTION—South Africa, the western and central Cape Region (fig. 45).

PARATYPES (731)—**South Africa:** Cape Province: Same data as holotype, (45 TMP). Cape, Cederberg, Eikenboom, 900 m, 32.27S–19.10E, river stones, 29.X.1981, Endrödy-Younga (#1906), (236 TMP). W. Cape, Cederberg Pass, 32.23S–19.06E, from river bed, 2.IX.1979, Endrödy-Younga (#1629), (91 TMP). S.W. Cape, Hawequas rad. tower, 33.41S–19.06E, shore washing, 27.X.1978, Endrödy-Younga (#1484), (6 TMP). S.W. Cape, Robertson, 30 km W., 33.47S–19.31E, flowering meadow, 19.IX.1985, Endrödy-Younga (#2252), (2 TMP). Langeberge, Helderfont, 1150 m, 33.56S–20.52E, river stones, 8.III.1979, Endrödy-Younga (#1565), (50 TMP). Langeberge, Helderfont, 1150 m, 33.56S–20.52E, river stones, 9.III.1979, Endrödy-Younga (#1564), (23 TMP). S.W. Cape, Elands Bay forestry, 32.18S–18.21E, groundtraps, 60 days, groundtrap with meat bait, 28.VIII.1981, Endrödy-Younga (#1853), (1 TMP). S.W. Cape Mts., Hawequas SE, 1100 m, 33.41S–19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (117 TMP). S.W. Cape, Nuweberg For. Sta., 34.03S–19.04E, river stones, 14.XI.1973, Endrödy-Younga (#247), (29 TMP). Cape-Swartberg, Seweweekspoort Klif, 33.24S–21.21E, river stones, 18.XI.1973, Endrödy-Younga (#269), (7 TMP). W. Cape, Dwarsberge, 34.02S–19.01E, river stones, 15.XI.1973, Endrödy-Younga (#256), (12 TMP). S.W. Cape, Langrivier, c. 33.59S–18.59E, site L1,

671 m, XI.1983, J. M. King, (15 UCT). As above, site L4, IV.1983, (9 UCT). Great Berg River, Assegaibos cold stream (Stn. 2), 33.58S–19.05E, (GBG 6X), 24.V.1950, (9 AMG). Cape District, Table Mountain, 2800 ft, c. 33.58S–18.25E, 15.XII.1950, (SSAE 83), (0/1 LUM). Malmesbury District, Hopefield, 33.05S–18.20E, 31.X.1950, (SSAE 19), (1/0 LUM). Ceres District, Skurfteberg, Alfred's Berg Pass (Gydo Pass), NNW Ceres, c. 33.20S–19.19E, 12.II.1951, (SSAE 181), (2/0 LUM). Worcester District, Waalhoek River, 10 mi WNW Worcester, c. 33.37S–19.20E, 1.VII.1951, (SSAE no station number), (1/0 LUM). Cape Prov., Dorps River into Prins Albert, Swartbergpas, c. 33.15S–22.03E, moss & roots on stones, (FRW 168AR), 11.III.1960, (2/2 AMG). Assegaibos stream, cold trib. of Great Berg River, 33.58S–19.04E, ex. dead leaves and detritus under stones out of current, 24.V.1950, (GBG Stn. 2: 6Y), (1/0 AMG). Great Berg River system, Lower Forest Reserve, Driefontein Bridge, 33.55S–19.03E, stones in current, 8.XII.1950, (GBG Stn. 3: 154F), (0/1 AMG). Kuilsrivier, trib. of Great Berg River, at ford, 33.04S–18.50E, stones in current, 11.X.1950, (GBG Stn. 17: 108H), (1/0 AMG). Great Berg River, Franschoek Forest Reserve, 1 mi above Assegaibos main stream, 33.59S–19.03E, stones in current 28.IX.1950, (GBG Stn. 1: 373J), (8/10 AMG). Klein Berg River (tributary of middle Great Berg River), 33.13S–18.58E, stones in current, 12.X.1950, (GBG Stn. 15: 110C), (0/1 AMG). As above, marginal vegetation, 26.IV.1951, (GBG Stn. 15: 243B), (3/0 AMG). As above, 30.VIII.1951, (GBG Stn. 15: 344A), (2/2 AMG). Palmiet River at National Road bridge, 34.10S–19.03E, stones in current and marginal vegetation, 8.VI.1961, (FRW 199E), (1/1 AMG). Cape Province, 2 mi SW of Citrusdal, c. 32.37S–19.00E, 150 m, 30.IV.1958, E. S. Ross & R. E. Leech, (2/2 CAS). Cape Province (western), Cape District, Du Toit's Kloof, 33.43S–19.11E, under stones in tiny spring and among algae in bottom gravel, 22.XI.1949, B. Malkin, (3/2 BMNH). Swellendam District, Swellendam, Wolfkloof, 1500 ft, in mountain stream in deep gorge, c. 34.01S–20.26E, 12.III.1954, J. Balfour-Browne, (4/7 BMNH). Malmesbury District, Kalabaskraal, ca. 350 ft, slow weedy stream, c. 33.28S–18.43E, 27.VII.1954, J. Balfour-Browne, (4/2 BMNH). Cape District, Hout Bay, 100 ft, on stones in small stream, c. 34.03S–18.21 E, 8.III.1954, J. Balfour-Browne, (0/1 BMNH). Somerset West District, Steenbras Dam, 1600 ft, damp trickle in watercourse, c. 34.05S–18.50E, 9.III.1954, J. Balfour-Browne, (0/1 BMNH). Stellenbosch District, Fransch

Hoek, Great Berg River, at roots of sedge in current, c. 33.55S–19.08E, 4.III.1954, J. Balfour-Browne, (1/2 BMNH). Paarl District, Paarl, 420 ft, small muddy ephemeral ditch, c. 33.45S–18.58E, 10.VIII.1954, J. Balfour-Browne, (3/0 BMNH). Paarl, 420 ft, shallow weedy rivulet, c. 33.45S–18.58E, 10.VIII.1954, J. Balfour-Browne, (2/3 BMNH).

Parasthetops spinipes new species

Figures 46–48

HOLOTYPE—Male, South Africa: Transvaal, Heidelberg, Elsburg Spruit, 26.31S–28.21E, (NIWR-VAL 10G), 2.III.1953; deposited in AMG.

DIAGNOSIS—Recognized among members of the *nigritus* group by the combination of the shining frons disc and the pronotum at base narrower than the head (HW:PB c. 52:50). Females have the explanate margin of the elytron widened near the posterior angles, as do the females of *nigritus* (fig. 46). Refer also to the diagnosis of *nigritus*.

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 202:122:83; HW:PL:PW:PB 52:41:61:50; AE 22. **COLOR**: Head and pronotum black; elytra fusco-castaneous; maxillary palpi fusco-castaneous, distal mere not infusate toward apex; venter black, propleura and elytral epipleura castaneous; legs testaceous. **HEAD**: Shining except at sides of frons and on vertex. Eyes large, in dorsal aspect 10 convex facets in longest series. Ocelli distinct. Frons disc strongly shining and moderately finely and moderately densely punctate, punctures c. 1 × ef, interstices 1–3 × pd; antecellar furrows not very deep, outside furrows and on vertex quite dull, distinctly alutaceous. Clypeus quite shining, punctate as on labrum but more densely toward sides. Labrum shining, irregularly and not densely but distinctly punctate, apicomediaally roundly shallowly emarginate to 0.18 length of labrum, edge of emargination narrowly upturned in both sexes. **PRONOTUM**: Widest just before middle, behind widest point arcuately attenuate to markedly rectangular basal angles, sides finely denticulate and very finely margined; anterior margin trisinate, weakly arcuate median 0.6 consisting of narrow hyaline border. Disc with reliefs strongly shining, finely punctate as frons, an anterior and posterior belt of stronger deeper punctures, largest at posterior c. 4 × size of punctures on reliefs. Foveae mcr. and densely punctate, as follow: longitudinal median sulcus not attaining base or apex and partially interrupted behind mid-

dle, deeper in front; small round shallow anterior and larger, deeper, oblique posterior admedian; large shallow anterior and smaller deep posterior adlateral, inner edge abrupt, outer obsolete. **ELYTRA**: Sides subparallel, barely at all explanate in male but evidently so, particularly posteriorly, in female. Apices truncate with sutural angle rounded rectangular. Sutural series moderately distinctly striate-impressed, 2nd and 3rd less evidently so; 2nd and 3rd series shortened behind, 4th not quite attaining sutural at apex, 5th to 8th just attaining apex. Serial punctures c. 1 × largest pronotal punctures, separated by rather less than their own diameter. Intervals in basal 0.5 of disc flat and wide, 3 × pd, becoming narrower and more raised distally; each with a unilinear row of fine, widely spaced feebly impressed punctures, except punctures random on intervals 2–4 in basal 0.5; intervals moderately shining, with irregular sparse obsolete transverse impressions. **VENTER**: Submentum and mentum strongly mcr., punctate. Propleura moderately shining, obsolete reticulate. Male: 6th sternum finely mcr., with submarginal transverse band of mixed short fine and short stout setae, band interrupted at middle, posterior margin of sternum weakly emarginate; 10th tergum strongly apicomediaally emarginate, acute apices on each side of emargination with short stout setae. Female: 6th sternum finely mcr., distal 0.5 with short stout golden setae, posterior margin sharply rounded; 10th tergum posterior margin sharply rounded, bearing short stout setae. **LEGS**: Femora and tibiae mcr., femora much more strongly shining. **AEDEAGUS**: TL 51 (fig. 47).

ETYMOLOGY—Latin, *spinipes*, in reference to the very slender and sharply pointed tarsal claws.

DISTRIBUTION—Lesotho and adjacent montane areas of eastern South Africa (fig. 48).

PARATYPES (276)—**Lesotho**: Drakensberg, Sani Pass Valley, 29.39S–29.12E, water collection, 8.III.1976, Endrödy-Younga (#1053), (35 TMP). As above, shore washing, 10.III.1976, Endrödy-Younga (#1062), (44 TMP). As above, shore washing, 14.III.1976, Endrödy-Younga (#1084), (1 TMP). As above, floated tussocks, 10.III.1976, Endrödy-Younga (#1063), (19 TMP). Qachas Nek, 20 mi N. Matatiele, 30.08S–28.41E, 7.III.1951, (SSAE 213), (1/0 LUM). Maseru, Lancer's Gap, 29.19S–27.29E, (SSAE 244), (1/1 LUM). Mamathes, 5 mi E Teyateyaneng, c. 29.09S–27.50E, 29.III.1951, (SSAE 252), (1/1 LUM). Henley's Dam, 8 mi SW Leribe, c. 29.00S–28.00E, 30.III.1951, (SSAE 254), (2/1 LUM). Nazareth M. S., 20 mi ESE Maseru, c. 29.30S–27.30E, in spring, 24.III.1951, (SSAE 245),

Brinck & Rudebeck, (32 LUM). Quthing, 5400 ft, wet rock wall, 15.III.1951, Brinck & Rudebeck, (SSAE 234), (3 LUM). **South Africa:** Cape Province: Aliwal North District, Aliwal North, 30.42S–26.43E, (18–25).VIII.1954, H. Andreae, (1/4 SAM). Cape Province, Naudes Nek, 12 mi ENE Rhodes, c. 30.40S–28.05E, 9.III.1951, (SSAE 220), (3/0 LUM). Hennops River, 28.V.1952, E. J. Pearce, (0/1 BMNH). Sekununiland, Ngwaritzs River, 31.V.1952, E. J. Pearce, (0/1 BMNH). Queenstown District, Dam near Sterkstroom, 25 mi Queenstown–Aliwal, c. 31.34S–26.33E, 13.II.1948, J. Omer-Cooper, (0/1 BMNH). Xalanga District, stream ca. 20 mi SW Cala, 4000 ft, on boulders and debris in current, c. 31.31S–27.41E, 26.III.1954, J. Balfour-Browne, (1/2 BMNH). Lady Frere District, ca. 12 mi from Queenstown on road to Lady Frere, ca. 3800 ft, in small grassy dam, 31.54S–26.53E, 26.III.1954, J. Balfour-Browne, (1/0 BMNH). Natal Province: Natal, 75 km WSW Estcourt, c. 29.10S–29.25E, Cathedral Peaks For. Sta., 1860 m, Meteorology Sta., Little Berg, malaise trough, 21–31.XII.1979, S. & J. Peck, (1/2 FMNH). Karkloff Grassveld, 29.19S–30.15E, floating debris, 09.XII.1989, Endrödy-Younga and Klim. (#2753), (1/0 TMP). Transkei: Matatiele District, Matatiele, 4800 ft, shallow muddy roadside ditch, very weedy with grasses and *Juncus*, c. 30.20S–28.49E, 28.III.1954, J. Balfour-Browne, (1/0 BMNH). Transvaal Province: Uitsoek, Grootkloof ind. for., 25.15S–30.33E, water collection, 14.XII.1986, Endrödy-Younga (#2387), (1 TMP). Transvaal, Magaliesbg., Tonquane, 25.15S–27.19E, water collection, 8.IV.1973, Endrödy-Younga (#84), (2 TMP). S. Transvaal, Roberts Drift, Vaal R., 27.02S–29.02E, sifted, flood debris, 8.X.1973, Endrödy-Younga (#190), (65 TMP). Pretoria, c. 25.45S–28.12E, (SSAE 282), 26.IV.1951, (2/4 LUM). Vaal River System, NIWR-VAL sites, specimens deposited in AMG: Headwaters of Vaal River between Breyten & Lake Chrissie, 26.17S–30.03E, (VAL Stn. 1: 451W, 743Y, 821L, 1212E, 1279E). Vaal River above dam, 26.41S–27.59E, (VAL Stn. A2: 299D). Vaal River where crossed by road from Ermelo to Lake Chrissie, 26.21S–30.06E, (VAL Stn. 2: 450E, 667A). Vaal River where crossed by Ermelo/Amsterdam road, 26.34S–30.12E, (VAL Stn. 2A: 844J). Vaal River above dam, 26.41S–27.47E, (VAL Stn. A4: 275E). Sandspruit where crossed by the Standerton/Volksrust road, 27.15S–29.47E, Potamogeton, (VAL Stn. 8: 496E). Wilge River where crossed by the road from Warden to Reitz, 27.48S–28.46E, (VAL Stn. 12: 471J–L). Molen River where crossed

by road from Warden to Harrismith, 28.01S–28.59E, (VAL Stn. 14: 509B). Vaal River above dam, 26.44S–27.36E, (VAL Stn. A15: 434). Headwater tributary of Klein Vaal River, on farm Broederstroom (number 246, Wakkerstroom district), 27.05S–30.06E, (VAL Stn. 20: 594J, 1000G, 1126N, 1266B). Klein Vaal River near its confluence with Vaal River, on farm Goedehoop (number 24, Ermelo district), 26.49S–30.08E, (VAL Stn. 21: 1111F). Rietspruit where crossed by road from Amersfoort to Ermelo, 26.54S–29.52E, (VAL Stn. 22: 495D). Kommandospruit where crossed by Vrede/Memel road, 27.37S–29.23E, (VAL Stn. 30: 599F). Elands River where crossed by Harrismith/Kestell road, 28.16S–28.51E, (VAL Stn. 39: 1328C, 1339U). Microhabitats: marginal vegetation (catalogue numbers: 111F, 275E, 299D, 434, 451W, 471J–L, 495D, 509B, 599F, 743Y, 821L, 844J, 1126N, 1212E, 1279E, 1339U), collection dates all months except II–IV, XI, XII, 1957–1961, (12/19 AMG); stones in current (catalogue numbers: 450E, 594J, 667A, 1266B, 1328C), I, VI, VII, XI, XII, 1958–1961, (3/2 AMG); Potamogeton (496E), 16.XI.1958; Bottom (1000G), 19.I.1960, (0/1 AMG). Near Belfast (441C), 23.VIII.1960, (1/0 AMG). Olifantsvlei, outlet, under stones (117AB), 6.X.1955, (1/0 AMG). Stream into Cowle's Dam, below bridge nr. Brakpan, c. 26.15S–28.22E, (REA 64A), 11.VIII.1971, P. Reavell, (1/0 AMG). Randburg, stream, (REA 76D), 6.VI.1971, (1/0 AMG).

Parasthetops curidius new species

Figures 4, 12, 49, 50a, 51–53

HOLOTYPE—Male, South Africa: Aliwal North District, Aliwal North, 30.42S–26.43E, in tank, 18–25.VIII.1954, H. Andreae; deposited in SAM.

DIAGNOSIS—Recognized among members of the *nigritus* group by the relatively wide pronotal base, which is wider than the head (HW:PB c. 60:66), the shape of the pronotum, with the sides abruptly sinuately attenuate from the middle toward the base, then slightly divergent just before the posterior angles (figs. 4, 49). Males further recognized by the elongate protarsal claws, the modified distal protarsomeres, and the modified 6th sternum and 10th tergum (figs. 12, 51). A distinctive shining species, the largest of the genus (TL c. 252).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 252:160:100; HW:PL:PW:PB 60:50:74:66; AE 24. **COLOR**: Head and pronotum black, feebly aeneous. Maxillary palpi piceous to black. Elytra rufo-brunneous. Legs testaceous. **HEAD**: Shining

except dull and subrugulose on each side from margin of eye to and including anteo-cellular furrow. Eyes large, in dorsal aspect 10 convex facets in longest series. Ocelli distinct. Frons on disc between anteo-cellular furrows strongly shining, slightly more finely and slightly less closely punctate than clypeus, interstices $1-4 \times pd$. Clypeal punctures distinct but not dense, size c. $1 \times ef$, interstices $1-3 \times pd$. Labrum finely punctate; apicomedia-ly roundly shallowly emarginate to 0.13 length of labrum, edge of emargination narrowly upturned in both sexes. **PRONOTUM:** Widest just in front of middle, at middle quite abruptly constricted and thence to base sides parallel or slightly divergent. Sides barely crenellate, very finely margined. Anterior margin very slightly arcuate on each side of nearly straight median 0.6 consisting of narrow hyaline border. Discal reliefs strongly shining and weakly aenescent, punctures extremely fine and sparse, $0.5 \times$ frons punctures; an anterior and posterior belt of much stronger deeper punctures, largest at posterior c. $6 \times$ size of punctures on reliefs. Foveae mcr. and densely punctate, subrugulose, as follows: midlongitudinal sulcus not attaining base or apex, very narrowly but completely interrupted near basal 0.33 to form two distinct foveae, an elongate anterior tapering behind, and a small oval posterior; very shallow rounded anterior and deeper obliquely oval posterior admedian foveae; and large shallow anterior confluent with smaller shallow posterior adlateral on each side. **ELYTRA:** Sides subparallel, feebly explanate and smooth. Apices most produced at suture, widely rounded at outer apical angles, similar in both sexes. Series slightly if at all striate-impressed except near base and sutural series at apex; 1st and 4th series confluent at apex, 2nd and 3rd shorter, 5th to 10th attaining apex. Discal serial punctures c. $1 \times$ largest pronotal punctures, serial interstices $1 \times pd$, punctures becoming slightly smaller laterally and distally. Intervals in basal 0.5 of disc flat and wide, c. $4 \times pd$, becoming narrower and slightly raised distally; each with unilinear row of fine, widely spaced feebly impressed setigerous punctures, except punctures random on intervals 2-5 in basal 0.5. **VENTER:** Mentum shallowly concave, mcr. and sparingly punctate. Propleura glabrous, obsoletely alutaceous. Male: 6th sternum strongly shining, with transverse belt of piliferous punctures, belt wider and punctures denser at middle, punctures sparser and belt tapering toward sides, posterior edge of sternum arcuately emarginate at middle; 7th sternum apicomedia-ly tumid; 10th tergum subcircular, apical 0.5 tumid.

Female: 6th sternum dull, very finely mcr., rounded at posterior edge, distal 0.5 with mixture of short fine and short stout setae. **LEGS:** Elongate, slender, femora and tibiae mcr., femora more strongly shining; protarsus, in male, with distal mere distinctly arcuate and bearing near base two very short, spike-like setae widely separated from more apical two slender setae, and claws elongate, distinctly longer than claws of other legs. **AE-DEAGUS:** TL 50 (fig. 52).

ETYMOLOGY—Greek, *curidius* (wedded, nuptial), in reference to the marked sexual dimorphism of the abdomen and protarsi.

DISTRIBUTION—Rather widely but apparently sparsely distributed in southern South Africa and southern Lesotho (fig. 53).

PARATYPES (123)—Same data as holotype (20/28 SAM). **Lesotho:** Quthing, Mount Hodimonate, c. 30.25S-27.43E, (SSAE 231), 12.III.1951, (1/1 LUM). **South Africa:** Cape Province: Namaqualand, Kamieskroon, 30.12S-18.01E, (seas.) river stones, 27.VIII.1977, Endrödy-Younga (#1340), (1/0 TMP). As above, shore washing, 27.VIII.1977, Endrödy-Younga (#1341), (1/0 TMP). Cape-Swartzberg, Seweweekspoort Klf, 33.24S-21.21E, river stones, 18.XI.1973, Endrödy-Younga (#269), (1/1 TMP). Cape Province (eastern), Sundays River System, below Graaff Reinet, c. 32.30S-24.32E, surber sample, (RSU 9.5), 13.VII.1967, (1/0 AMG). As above, except bridge on National Road between Graaff Reinet & Middleburg, c. 32.00S-24.45E, sweepings through MV & algae, (RSU 11.2), 13.VII.1967, (3 AMG). As above, except Letskraal, 32.05S-24.49E, surber and washings from rocks, (RSU 10.1), 13.VII.1967, (63 AMG). Glen Grey District, road between Queenstown and Lady Frere, ca. 3800 ft, on stones in running water of small stream, c. 31.50S-27.03E, 26.VIII.1954, J. Balfour-Browne, (2/0 BMNH).

Parasthetops aeneus Species Group

Recognized by the relatively short maxillary palpi, length of 2nd (pseudobasal) palpomere distinctly less than midline length of labrum, and the completely separated or shallowly confluent antero- and posteromedian pronotal foveae.

Parasthetops aeneus new species

Figures 54-56

HOLOTYPE—Male, Lesotho: Drakensberg, Sani Pass Valley, 29.39S-29.12E, water collection,

8.III.1976, Endrödy-Younga (#1053); deposited in TMP.

DIAGNOSIS—Recognized by the relative short maxillary palpi, length of 2nd (pseudobasal) palpomere distinctly less than midline length of labrum, the black dorsal coloration, sometimes with aeneus reflections, the shining finely sparsely punctate pronotal reliefs, and the completely separated or shallowly confluent antero- and postero-median pronotal foveae (fig. 54). Females further recognized by the median subapical concavity of the 6th sternum, and the absence of a fine ridge delimiting the hypomeron from the antennal pocket.

DESCRIPTION—**SIZE** (mm × 100): Holotype TL: EL:EW 180:114:74; HW:PL:PW:PB 50:42:58:47; AE 8. **COLOR**: Black, strongly shining and slightly aeneous; antennae fusco-testaceous; venter piceous; legs rufo-testaceous. **HEAD**: Shining except rugulose and dull on each side from antecellar furrow to eye. Eyes moderately large, in dorsal aspect eight quite weakly convex facets in longest series. Ocelli distinct. Frons with antecellar furrows almost punctiform, not attaining anterior edge; discal punctures very fine and sparse, c. $0.5 \times ef$, interstices $1-5 \times pd$. Frontoclypeal suture finely but quite distinctly incised, very weakly rounded with concavity anterior. Clypeal punctures slightly smaller and slightly denser than frons. Labrum anterior edge feebly sinuate emarginate to 0.12 length of labrum, in male entire anterior margin equally narrowly upturned, in female lobes less upturned than emargination. Maxillary palpi rather short, length of 2nd (pseudobasal) palpomere distinctly less than midline length of labrum. **PRONOTUM**: Obcordate, anterior angles effaced, posterior angles sharply rectangular, greatest width shortly before middle. Anterior margin very feebly trisinate, median 0.6 with extremely narrow hyaline border. Lateral margins finely crenulate. Foveae with large punctures similar to those at base of pronotum, except adlaterals rugulose but slightly shining, as follows: shallow anterior median sulcus in anterior 0.5 and a median posterior more or less obsolete foveae near base; obsolete basal admedian and small deep basal adlateral fovea on each side. Discal reliefs strongly shining, irregularly finely punctate, punctures c. $1 \times pd$ of frons discal punctures, and sparser, interstices $3-6 \times pd$. Transverse basal band of much larger punctures, c. $1.5 \times ef$, interstices $0.5-2 \times pd$. **ELYTRA**: Sides, in male, subparallel, apices truncate rounded, side margin feebly explanate; in female, sides weakly emarginate at middle, explan-

ate margin moderately developed, slightly wider than before middle as result of slight depression of elytron. Serial punctures in barely impressed very shallow striae, punctures on disc $1 \times pd$ largest punctures of pronotum, serial interstices very narrow, punctures subcontiguous; punctures smaller and more widely spaced distally, especially at summit of posterior declivity. Intervals weakly convex, $2 \times pd$ on disc, each with unilinear row of setigerous, widely spaced punctures, interstices c. $2-3 \times$ diameter of serial punctures, anterior rim of each puncture minutely raised. **VENTER**: Mentum and submentum shining, moderately punctate. Propleura glabrous, shining, with small fovea. Minute shining spot basomedially on metasternum, lacking in some individuals. Male: 6th sternum glabrous except for a submarginal band of fine sparse setae, finely mcr., apical margin transverse. Female: 6th sternum lobate produced, concave just before apex, posterior margin, except behind concavity, with narrow band of fine sparse setae. **LEGS**: Femora and tibiae shining, faintly alutaceous. **AEDEAGUS**: TL 52 (fig. 55).

ETYMOLOGY—Latin, *aeneus*, in reference to the brassy or golden green reflections of the black dorsal coloration.

DISTRIBUTION—Presently known from three disjunct populations, a very large population in Lesotho and the adjacent montane areas of eastern South Africa, a smaller population in southwestern South Africa, and one very disjunct locality in Namibia (fig. 56).

DISCUSSION—There is considerable variation in the median foveae of the pronotum: in some members the distinct anterior sulcus and obsolete posterior fovea are completely separated by strongly shining relief, whereas in other members the two depressions are narrowly or completely joined to form one submedially constricted sulcus. Slight variation in the shape of the distal piece of the aedeagus in specimens from Namibia is illustrated (fig. 55).

PARATYPES (659)—Same data as holotype, (307 TMP). **Lesotho**: Drakensberg, Sani Pass Valley, 29.39S–29.12E, shore washing, 10.III.1976, Endrödy-Younga (#1062), (15 TMP). Quithing, Mount Hodimonate, (SSAE 231), c. 30.25S–27.43E, 12.III.1951, Brinck & Rudebeck, (61 LUM). Quithing, wet rock wall, 15.III.1951, Brinck & Rudebeck, (SSAE 234), (24 LUM). Maseru, Lancer's Gap, 29.19S–27.29E, (SSAE 244), 22.III.1951, Brinck & Rudebeck, (1/0 LUM). Mount Morosi, 15 mi NE Quithing, c. 30.20S–27.50E, 6600–6700 ft, (SSAE 241), 18.III.1951, Brinck & Rudebeck, (6

LUM). Mokhotlong, 29.18S–29.05E, 7200 ft, (SSAE 266), 6.IV.1951, Brinck & Rudebeck, (12 LUM). Mount Machache, 25 mi E. Maseru, c. 29.20S–27.40E, (SSAE 247), 25.III.1951, Brinck & Rudebeck, (3 LUM). Hensley's Dam, 8 mi SW Leribe, c. 28.55S–28.00E, (SSAE 254), 30.III.1951, (3 LUM). **Namibia:** Naukluft, Naukluft Park, 24.16S–16.15E, river stones, 23.VIII.1982, Endrödy-Younga (#1920, 1921), (75 TMP). As above, water collection, 22.I.1975, Endrödy-Younga (#563), (69 TMP). As above, water coll., 26.X.1974, Endrödy-Younga (#430), (29 TMP). As above, shore washing, 26.X.1974, Endrödy-Younga (#431), (4 TMP). **South Africa:** Cape Province: Sundays River system, Letskraal, 32.05S–24.49E, surber sample and washings from rocks, (RSU 10.1), 13.VII.1967, (3 AMG). Aliwal North District, Aliwal North, 30.42S–26.43E, in tank, 18–25.VII.1954, H. Andreae, (5 SAM). Table Mountain, c. 33.58S–18.25E, Blinkwater Falls, on algae under stones, 21.XI.1949, B. Malkin, (0/1 BMNH). Rhodes, 30.48S–27.58E, (SSAE 224), 10.III.1951, Brinck & Rudebeck, (6 LUM). River 7 mi N. Moshesh's Ford, (SSAE 228), 11.III.1951, Brinck & Rudebeck, (2 LUM). Drakensbergen, 5 mi ENE Rhodes, (SSAE 222), 10.III.1951, Brinck & Rudebeck, (2 LUM). Graaf Reinet District, Bethesda Road, c. 32.15S–24.32E, 22.II.1947, J. Omer-Cooper, (1/0 BMNH). Colesberg District, Tweedale Spruit, c. 30.44S–25.05E, 25.II.1947, J. Omer-Cooper, (2/1 BMNH). (Griqualand), Mt. Ayliff District, Mt. Ayliff, c. 30.48S–28.23E, 5.IV.1947, J. Omer-Cooper, (0/1 BMNH). Nqutu District, Nqutu, c. 28.13S–30.40E, (14–30).IX.1950, A. H. Newton, (2/2 BMNH). Queens-town District, on road to Lady Frere, ca. 3800 ft, on stones in running water in small stream, c. 31.54S–26.53E, 26.III.1954, J. Balfour-Browne, (6/4 BMNH). Xalanga District, stream 20 mi SW Cala, 4000 ft, on boulders in current of Indwe River, c. 31.31S–27.41E, 26.III.1954, J. Balfour-Browne, (7/11 BMNH). W. Cape Prov., Wiedouw farm, 31.43S–18.43E, river stones, 19.VIII.83, Endrödy-Younga (#1945), (1 TMP). S.W. Cape, Hawaquis rad. tower, 33.41S–19.06E, shore washing, 27.X.1978, Endrödy-Younga (#1484), (1 TMP). Xalanga District, Cala Pass, 4500 ft, on wet rocks of tributary of Tsomo River, c. 31.31S–27.41E, 27.II.1954, J. Balfour-Browne, (2/7 BMNH). Natal Province: Natal, Buffalo River, 27.42S–30.33E, marginal vegetation, 23.IV.1974, (NAT Stn. 4: 314E), (1/0 AMG). Buffalo River System, (BF 16Q10), (1 AMG). As above, (BF 18Q22), (3 AMG). As above, (BF 18Q9), (1 AMG). Tugela River at Colenso, 28.44S–29.50E, marginal vegetation,

13.VI.1954, (TUG Stn. T10: 74Q6), (1/1 AMG). Tugela River, 28.44S–29.49E, (TUG Stn. 10: 13Q7), (1 AMG). Drakensburg, Organ Pipes Pass to Lesotho, 3000 m, 29.XII.1979, S. & J. Peck, (2/1 FMNH). Natal, 75 km WSW Estcourt, Cathedral Peaks For. Sta., c. 29.00S–29.20E, 1860 m, Meteorology Sta., Little Berg, malaise trough, 21–31.XII.1979, S. & J. Peck, (1/0 FMNH). Bergville District, Lawford's Spruit near Bergville, ca. 4250 ft, shallow stream, algae on sand and gravel over rock-slab bed, 28.44S–29.21E, 4.IV.1954, J. Balfour-Browne, (1/0 BMNH). Orange Free State: Orange Free State (east), camp, 28.33S–28.38E, shore washing, 7.XII.1977, Endrödy-Younga (#1412), (4 TMP). Transvaal Province: Middleburg, Cycas fm., 25.31S–29.16E, river stones, 19.XI.1985, Endrödy-Younga (#2266), (70 TMP). Hennops River, 17.VII.1955, in algae, L. Vari, (5 TMP). S. Transvaal, Roberts Drift, Vaal R., 27.02S–29.02E, sifted, flood debris, 8.X.1973, Endrödy-Younga (#190), (8 TMP). Carolina, Komati Vlakfontein, c. 26.05S–30.07E, 23.V.1968, E. Matthew, (1 SANC). Olifants–Klip River System, 25.52S–28.53S, marginal vegetation, 9.IX.1959, (OKS Stn. 2: 33N), (2 AMG). Olifantsvlei, outlet, 27.54S–26.20E, stones in current, 26.IV.1955, (OLF Stn. 8: 93A), (2 AMG). Vaal River System, (NIWR-VAL sites), (all deposited in AMG): Vaal River where crossed by road from Ermelo to Lake Chrissie, 26.21S–30.06E, (VAL Stn. 2: 450E). Vaal River where crossed by Ermelo/Amsterdam road, 26.34S–30.12E, (VAL Stn. 2A: 1231B). Vaal River where crossed by Ermelo/Piet Retief road, 26.39S–30.09E, (VAL Stn. 2C: 791F). Vaal River where crossed by road from Morgenzon to Amersfoort, 26.51S–29.42E, (VAL Stn. 3: 894H). Vaal River where crossed by the road from Standerton to Villiers, 26.59S–28.44E, (VAL Stn. 5A: 888C). Molen River where crossed by road from Warden to Harrismith, 28.01S–28.59E, (VAL Stn. 14: 546N, 558E). Kafferspruit where crossed by the Morgenzon/Ermelo road, 26.37S–29.51E, (VAL Stn. 19: 825H, 1055H). Headwater tributary of Klein Vaal River, on farm Broederstroom (number 246, Wakkerstroom district), 27.05S–30.06E, (VAL Stn. 20: 753Q, 801E, 830E, 877B, 881AC, 993D, 1082C, 1266B). Klein Vaal River near its confluence with Vaal River, on farm Goedehoop (number 24, Ermelo district), 26.49S–30.08E, (VAL Stn. 21: 789C, 822E, 884J, 884K, 1047P, 1061K, 1155F, 1247D, 1289F). Klein Vaal River, above station 21, where it forms boundary between farms Grootfontein & Waterval (numbers 64 and 65, Amersfoort district), 27.01S–30.09E, (VAL Stn. 21A: 1294D). Klip

River where crossed by road from Vrede to Volksrust, 27.21S–29.29E, (VAL Stn. 26: 6061). Elands River where crossed by Harrismith/Kestell road, 28.16S–28.51E, (VAL Stn. 39: 1339U). Headwaters of the As stream, south of Bethlehem, 28.26S–28.22E, (VAL Stn. 43: 581D). Microhabitats: stones in current (catalogue numbers: 450E, 546N, 558E, 581D, 606L, 753Q, 801E, 822E, 830E, 834S, 877B, 1047P, 1061K, 1155F, 1231B, 1247D, 1266B), various dates, July to March, 1958–1960, (37 AMG); marginal vegetation (catalogue numbers: 791F, 825H, 881AC, 884J, 884K, 888C, 894H, 993D, 1055H, 1078G, 1082C, 1289F, 1339U), various dates, all months except April, June, November, and December, 1959–1961, (42 AMG); vegetation in current (789C), (1 AMG); stony backwater (1294D), (1 AMG).

ADDITIONAL MATERIAL—**Namibia:** Naukluft River, 24.16S–16.15E, shore washing, 10.VIII.1989, Endrödy-Younga & Klim. (#2644), (38 TMP). Naukluft cascades, 24.16S–16.15E, 12.VIII.1989, Endrödy-Younga & Klim. (#2648), (430 TMP). **South Africa:** Cape Province: Kimberley, 1914, Power, (28 SAM). Natal Province: Karkloff Grassveld, 29.19S–30.15E, floating debris, 09.XII.1989, Endrödy-Younga & Klim. (#2753), (11 TMP). Karkloff Grassveld, 29.19S–30.15E, river stones, 05.XII.1989, Endrödy-Younga & Klim. (#2743), (74 TMP).

Parasthetops rufulus Species Group

Recognized by the strongly striate-impressed elytral series, the raised elytral intervals, and the microreticulate cuticle.

Parasthetops rufulus new species

Figures 57, 58

HOLOTYPE—Male, South Africa: Cape Province, Kuilsrivier, trib. of Great Berg River, at ford, 33.04S–18.50E, stones in current, 11.X.1950, (GBG Stn. 17: 108G); deposited in AMG.

DIAGNOSIS—Recognized among members of the genus by the rufotestaceous coloration, the dull, mcr. cuticle, the strongly striate-impressed elytral series, and the raised elytral intervals.

DESCRIPTION—**SIZE (mm × 100):** Holotype TL: EL:EW 167:108:72; HW:PL:PW:PB 41:36:50:39; AE 13. **COLOR:** Frons laterally, pronotum and elytra rufotestaceous, frons disc, clypeus and la-

brum darker; maxillary palpi flavo-testaceous; venter rufo-flavous, propleura and elytral epipleura flavous; legs testaceous. **HEAD:** Eyes moderately large, in dorsal aspect seven convex facets in longest series. Ocelli distinct. Frons dull, mcr., disc quite sparingly but coarsely shallowly punctate, punctures c. 1 × ef, interstices 1–2 × pd; antecellula furrows rather deep and wide, just attaining anterolateral edge. Clypeus dull, mcr., more strongly so laterally, sparingly rather coarsely but quite shallowly punctate. Labrum apicomediaally shallowly roundly emarginate to 0.23 length of labrum, lobes weakly upturned, somewhat shining, obscurely rugose-reticulate. **PRONOTUM:** Sides asymmetrically dilated, widest at middle, behind widest point rather abruptly rounded attenuate to rectangular basal angles; sides finely denticulate, especially in basal 0.5, very finely margined. Anterior margin trisinate, median 0.55 with very narrow hyaline border. Foveae dull, mcr., finely sparsely punctate except more coarsely punctate in anterior admedian foveae, as follows: midlongitudinal sulcus not quite attaining base or apex, slightly constricted and slightly shallower at midlength; shallow round anterior and oblique oval posterior admedian; and large shallow anterior broadly confluent with small deep posterior adlateral on each side. Reliefs somewhat shining, very obsoletely finely mcr., very sparsely finely punctulate, punctures 1 × or slightly smaller than frons punctures. Distinct band of much larger, c. 2 × ef, subcontiguous punctures behind anterior edge and a less numerous band of similar punctures across base. **ELYTRA:** Sides subparallel, feebly explanate in male, distinctly so in female particularly posteriorly, apices subtruncate. Series distinctly striate-impressed to 8th stria, 9th and 10th less evidently so; 2nd and 3rd series shortened behind, 1st to 4th joined at apex. Discal punctures large, c. 2 × largest pronotal punctures, subcontiguous. Intervals narrower than serial punctures, roundly weakly costate, interruptedly shining, each with unilinear row of widely spaced fine and indistinct setae. **VENTER:** Mentum and submentum distinctly mcr., quite dull. Propleura obsoletely mcr., fairly shining. Male: 6th sternum effacedly mcr., posterior 0.66 finely sparsely pubescent, posterior margin transverse; 10 tergum apicomediaally emarginate, apices on each side of emargination setose. Female: 6th sternum posterior margin rounded, disc transversely rather flat, longitudinally slightly depressed, finely sparsely pubescent; 10th tergum apically rounded. **LEGS:** Femora and tibiae alutaceous or mcr., femora more

strongly shining than tibiae. **AEDEAGUS:** TL 53 (including filament) (fig. 57).

ETYMOLOGY—Latin, *rufulus* (reddish, diminutive), in reference to the dorsal coloration.

DISTRIBUTION—South Africa, the western Cape Region, and one very disjunct locality at the Wit River in the eastern Cape Region (fig. 58).

PARATYPES (25)—**South Africa:** Cape Province: Same data as holotype (2/2). Great Berg River (lower), Farm, Sanddrift, 32.54S–18.53E, marginal vegetation, 24.IV.1951, (GBG Stn. 19: 237F), (2/1 AMG). As above, 30.VII.1951, (GBG Stn. 19: 318B), (0/1 AMG). As above, 26.IX.1951, (GBG Stn. 19: 378B), (0/1 AMG). Great Berg River, Gouda, road bridge, 33.16S–18.57E, marginal vegetation, 26.IV.1951, (GBG Stn. 14: 241A), (0/1 AMG). As above, 30.VIII.1951, (GBG Stn. 14: 346B), (0/2 AMG). Piquetberg, National Road bridge, 32.58S–18.44E, marginal vegetation, 25.VI.1951, (GBG Stn. 18: 299C), (0/1 AMG). As above, stones in current, 28.V.1952, (GBG Stn. 18: 581B), (6 AMG). Wit River, turnoff at Dunbrody, c. 33.39S–24.31E, 29.VIII.1967, (WIT), (1/1 AMG). Bellville District, Philadelphia, 33.40S–18.35E, running stream, gravel, 11.IX.1949, B. Malkin, (0/3 BMNH). As above, 18.XI.1949, (1/0 BMNH).

Parasthetops camurus Species Group

Recognized by the weakly or not at all striate-impressed elytral series, with large and deeply impressed punctures, the pronotum with median sulcus, and the slightly rounded, not distinctly parallel-sided elytra with normally developed posterior declivity.

Parasthetops camurus new species

Figures 14a, 59–61

HOLOTYPE—Male, South Africa: Transvaal Province, Vaal River, below Houtkop confluence, 26.41S–27.56E, in marginal vegetation, 17.VII.1957, (VAL Stn. A5: 278); deposited in AMG.

DIAGNOSIS—Distinguished from *reflexus* by the frons punctures on disc dense and coarse, some punctures confluent, mcr. within, and larger than an eye-facet, interstices shining but narrow, usually less than puncture diameter; clypeal punctures distinctly finer and sparser than those of frons (figs. 14a, 59).

DESCRIPTION—**SIZE (mm × 100):** Holotype TL: EL:EW 162:103:72; HW:PL:PW:PB 43:41:54:40; AE 7. **COLOR:** Head rufo-brunneous to piceous; pronotum and elytra rufous to rufo-brunneous, lighter than head; maxillary palpi testaceous except distal 0.5 of last mere piceo-testaceous; venter rufous; legs testaceous. **HEAD:** More strongly shining on clypeus than frons. Eyes moderately large, in dorsal aspect seven distinctly granuliform facets in longest series. Ocelli distinct. Frons on disc coarsely, densely irregularly punctate, punctures obsoletely mcr., c. 1–2 × ef, some punctures confluent, interstices shining, largest c. 1 × pd; antecellar depressions deep, oval, dull, and rugulose-like cuticle between depression and eye. Clypeus finely sparsely punctate, interstices strongly shining, 2–6 × pd; some larger punctures contiguous with labroclypeal suture. Labrum finely margined, finely punctate, apicomediaally shallowly roundly excised to 0.26 length of labrum. **PRONOTUM:** Broadly cordate, widest at about middle, anterior angles obtusely rounded, behind middle sides sinuately attenuate to rectangular posterior angles. Anterior margin very shallowly trisinate, median 0.60 with narrow hyaline border. Sides crenulate, less strongly so in basal 0.3. Punctures very nonuniformly sized, varying from very fine and sparse on shining discal reliefs to large (c. 2 × largest frons punctures), deep and dense in apical and basal bands; punctures confluent and mcr. in foveae. Foveae as follows: midlongitudinal deep sulcus not quite attaining base or apex; small round deep anterior and slightly larger oval oblique posterior admedian; and deep round anterior and deep oval posterior adlateral. Lateral depressions effacedly mcr., less shining than reliefs. **ELYTRA:** Sides very feebly serrate, weakly explanate in male, distinctly more explanate in female, apices subtruncate rounded in male, distinctly more truncate in female with posterior angles more developed. Series weakly striate-impressed, slightly wider than intervals; sutural and 4th series confluent at apex, 2nd and 3rd slightly shorter, 5th to 10th attaining apex. Serial punctures large on disc, c. 1 × largest pronotal punctures, linearly subcontiguous, becoming gradually smaller posteriorly, those at posterior declivity about 0.5 × those on disc. Intervals strongly shining, each with unilinear row of widely spaced minute decumbent setae, anterior rim of each setal socket extremely minutely raised. **VENTER:** Mentum and submentum quite dull, very finely deeply mcr. Propleura alutaceous, with distinct but quite shallow round mcr. fovea. Male: 6th sternum effacedly mcr., posterior 0.66 finely

sparsely pubescent, posterior margin shallowly widely emarginate; 10th tergum apicomediaally emarginate, apices on each side of emargination setose. Female: 6th sternum posterior margin rounded, disc finely sparsely pubescent; 10th tergum apically rounded. **LEGS:** Femora and tibiae mcr., femora more strongly shining. **AEDEAGUS:** TL 40 (filament coiled) (fig. 60).

ETYMOLOGY—Latin, *camurus* (crooked, turned inward), in reference to the coiled flagellum of the aedeagus.

DISTRIBUTION—Lesotho and proximate areas of the Transvaal and Natal provinces, South Africa (fig. 61).

PARATYPES (185)—**Lesotho:** Drakensberg, Sani Pass Valley, 29.39S–29.12E, water collection, 8.III.1976, Endrödy-Younga (#1053), (58 TMP). As above, shore washing, 10.III.1976, Endrödy-Younga (#1062), (80 TMP). **South Africa:** Natal Province: Polela River, Himeville, 29.45S–29.31E, marg. veg., 13.VI.1972, F. M. Chutter, (NAT 56KM), (2/1 AMG). Ncandu River, Stn. 11, stones in current, H. Metz, 20.III.1974, (NAT 298E), (1/0 AMG). Transvaal Province: Below bridge near Brakpan, c. 26.15S–28.22E, 11.VIII.1971, P. E. Reavell, (REA 67C), (1/0 AMG). Kliprivier Dam, 26.24S–28.06E, 30.VII.1971, P. E. Reavell, (REA 89B), (2/1 AMG). Kliprivier, c. 26.24S–28.06E, 30.VII.1971, P. E. Reavell, (REA 91F), (1/1 AMG). Vaal River System, (NIWR-VAL sites); stones in current, III, V, VIII, IX, 1956–1960, (5/8 AMG): Vaal River where crossed by the road from Standerton to Villiers, 26.59S–28.44E, (VAL Stn. 5A: 765H); Waterval River where crossed by the road from Balfour to Standerton, 26.51S–28.53E, (VAL Stn. 7: 507C); Wilge River where crossed by the road from Warden to Reitz, 27.48S–28.46E, (VAL Stn. 12: 498E); Kafferspruit where crossed by the Morgenzon/Ermelo road, 26.37S–29.51E, (VAL Stn. 19: 1078F, 1081C); Headwater tributary of Klein Vaal River, on farm Broederstroom (number 246, Wakkerstroom district), 27.05S–30.06E, (VAL Stn. 20: 877B, 1082C). In marginal vegetation, VII, XII, 1955–1959, (3/2 AMG): Sand-spruit where crossed by the Standerton/Volksrust road, 27.15S–29.47E, (VAL Stn. 8: 80A); Headwaters of the Wilge River, where crossed by the Harrismith/Collings Pass road, 28.12S–29.34E, (VAL Stn. 9: 644G); Headwater tributary of Klein Vaal River, on farm Broederstroom (number 246, Wakkerstroom district), 27.05S–30.06E, (VAL Stn. 20: 753P); Vaal River above dam, 26.43S–27.59E, (VAL Stn. A5: 105D); Vaal River above dam, 26.48S–27.47E, (VAL Stn. A10: 279A). Olifants-

vlei, "Outlet," 27.54S–26.20E, 21.III.1955, (OLF Stn. 8: 92A), (1/1 AMG). As above, 6.X.1955, stones in current, (OLF Stn. 8: 117AB), (1/0 AMG). Transvaal Prov. (eastern), Olifants-Klip River system, 25.52S–28.53E, stones in current, 25.V.1959, (OKS Stn. 2: 1X), (1/0 AMG). As above, marginal vegetation, (OKS Stn. 2: 2VI), (0/1 AMG); As above, 19.VI.1959, (OKS Stn. 2: 10W), (1/1 AMG); As above, 5.VIII.1959, (OKS Stn. 2: 21L), (1/1 AMG); As above, 9.IX.1959, (OKS Stn. 2: 33N), (1/0 AMG); As above, 9.VI.1960, (OKS Stn. 2: 96G), (0/1 AMG); As above, (OKS Stn. 2: 108N), (0/1 AMG). Jukskei-Crocodile River system, 25.43S–27.50E, stones in current, (CRO Stn. 20: 271C), (0/3 AMG). Jukskei-Crocodile River system, 25.48S–27.54E, marginal vegetation, 21.V.1957, (CRO Stn. 22: 274B), (0/1 AMG). Suikerbosrand Rivier, near Heidelberg, 5026 ft, c. 26.31S–28.21E, 8.IV.1954, J. Balfour-Browne, (1/2 BMNH).

Parasthetops reflexus new species

Figures 62, 63

HOLOTYPE—Male, South Africa: Natal Province, Umzimkulu River at The Rocks, 29.49S–29.31E, stones in current, 15.VI.1972, F. M. Chutter, (NAT 28AE); deposited in AMG.

DIAGNOSIS—Distinguished from *camurus* by the frons and clypeal discal areas similarly finely sparsely punctate, punctures smaller than an eyefacet, interstices strongly shining, 2–4 × puncture diameter or more.

DESCRIPTION—**SIZE** (mm × 100): Holotype TL: EL:EW 180:112:68; HW:PL:PW:PB 45:41:54:38; AE 9. **COLOR:** Frons, pronotum, elytra, and legs testaceous; maxillary palpi testaceous, distal mere slightly infuscate at apex; labrum and clypeus piceous or piceo-castaneous; venter rufous, propleura and elytral epipleura flavescent. **HEAD:** Eyes moderately large, in dorsal aspect seven convex facets in longest series. Ocelli distinct. Frons with disc shining, punctures distinct, 0.5 × ef, interstices 1–2 × pd; antecellar sulci deep, rugulose, each sulcus separated from dull area immediately bordering eye by narrow slightly raised strip of smoother shining cuticle. Clypeus shining, punctate as frons disc. Labrum flat, shining, irregularly and quite sparsely finely punctulate, apicomediaally angulately emarginate to 0.3 length of labrum, emargination minutely reflexed and roundly ended. **PRONOTUM:** Obcordate, widest at or just in front of middle, side well rounded and, behind widest point, sinuately attenuate to rectangular basal an-

gle. Anterior margin very shallowly trisinate, median 0.60 with narrow hyaline border. Sides very finely crenulate, especially in posterior 0.5, not margined. Pronotum with distinct median longitudinal sulcus not attaining base or apex, slightly constricted near basal 0.3, with a distinct rounded anterior and obliquely oval posterior admedian and a large round shallow anterior and deep small posterior adlateral fovea on each side. Reliefs shining, very finely sparsely punctulate, punctures finer than those of frons disc. A few very large irregularly shaped punctures near anterior extremes of posteroadmedian foveae. Lateral depressions effacedly mcr., shining, but less so than reliefs. A few large deep punctures, c. 1–1.5 × ef, behind anterior edge and a more numerous band across base, interstices less than puncture diameter. **ELYTRA:** Very distinctly 10-seriate punctate, internally more striate-impressed, punctures deep, much larger than eye-facet, slightly larger than largest punctures on base of pronotum, subcontiguous on disc becoming smaller and more widely separated distally; 1st and 4th series almost joined at apex, 2nd and 3rd slightly shortened behind. Intervals narrower than series, shining, feebly transversely rounded, each with unilinear row of very widely spaced fine indistinct setae, each setal socket with anterior rim minutely raised. Apically subtruncate in male, very slightly more rounded in female. Sides very weakly explanate in both sexes, alike. **VENTER:** Mentum distinctly mcr., dull. Submentum shining, finely punctulate. Propleuron weakly shining, effacedly alutaceous except large mcr. fovea. Sternum 6 shining, very finely transversely mcr., glabrous, with a few piliferous punctures distally in male, more numerous in female; 6th sternum in male very shallowly rounded emarginate, in female broadly rounded. **LEGS:** Femora more shining than tibiae. **AEDEAGUS:** TL 40 (fig. 62).

ETYMOLOGY—Latin, *reflexus* (bent or turned back), in reference to the very unusual aedeagal form and the very reflective dorsum.

DISTRIBUTION—Natal and Transvaal provinces, South Africa (fig. 63).

DISCUSSION—Specimens from the Vaal River system seem to indicate that this species has a preference for marginal vegetation as compared to the “stones in current” habitat. A total of 49 specimens were taken from marginal vegetation, whereas only 18 were found on stones in the stream current.

PARATYPES (196)—**South Africa:** Natal Province: Same data as holotype, (1/1 AMG). Ngwagwane River nr. Riverside, 30.05S–29.44E, mar-

ginal vegetation, H. Metz, 13.VI.1972, (NAT 30AB–AD), (2 AMG). Umkomaas River, Stn. 3, where crossed by Himeville to Impendhle rd., 29.37S–29.44E, marginal vegetation, H. Metz, 14.VI.1972, (NAT 36X–Z), (1/0 AMG). Buffalo River, 30.20S–30.36E, marginal vegetation, 24.IX.1974, (NAT 42L), (1/0 AMG). Transvaal Province: Vaal River System, (NIWR-VAL sites), (all deposited in AMG): Headwaters of Vaal River between Breyten & Lake Chrissie, 26.17S–30.03E, (VAL Stn. 1: 816XA). Vaal River above dam, 26.43S–27.59E, (VAL Stn. A1: 277B). Vaal River where crossed by Ermelo/Amsterdam road, 26.34S–30.12E, (VAL Stn. 2A: 735M, 799F, 1145J, 1296L). Vaal River where crossed by road from Morgenzon to Amersfoort, 26.51S–29.42E, (VAL Stn. 3: 443S, 785F, 894H, 1114C). Vaal River at Standerton, below a creamery effluent, 26.58S–29.15E, (VAL Stn. 4: 1377G). Vaal River below station 4, at Standerton below sewage works, 26.58S–29.15E, (VAL Stn. 5: 360, 363C, 1206D, 738WX, 1148B, 1191C). Vaal River where crossed by the road from Standerton to Villiers, 26.59S–28.44E, (VAL Stn. 5A: 741D, 745E, 771E, 1176L, 1230E, 1297C). Waterval River where crossed by the road from Balfour to Standerton, 26.51S–28.53E, (VAL Stn. 7: 468A). Wilge River where crossed by the road from Warden to Reitz, 27.48S–28.46E, (VAL Stn. 12: 471JL). Vaal River above dam, 26.44S–27.36E, (VAL Stn. A15: 343C). Waterval River where crossed by Standerton/Leslie road, 26.36S–29.02E, (VAL Stn. 17: 1102B, 1209D, 1269). Blesbokspruit where crossed by Standerton/Morgenzon road, 26.46S–29.32E, (VAL Stn. 18: 452F). Kafferspruit where crossed by Morgenzon/Ermelo road, 26.37S–29.51E, (VAL Stn. 19: 502C, 511U, 736C, 798G, 825H, 1055H, 1103K, 1168C). Headwater tributary of Klein Vaal River, on farm Broederstroom (number 246, Wakkerstroom district), 27.05S–30.06E, (VAL Stn. 20: 753P, 801D, 829G, 877B, 881AC, 993D, 1112B, 1266B). Klein Vaal River near its confluence with Vaal River, on farm Goedehoop (number 24, Ermelo district), 26.49S–30.08E, (VAL Stn. 21: 822E, 1131H, 733Y-AA, 739M, 884J, 1111F, 1131H, 1196G). Klein Vaal River, above station 21, where it forms boundary between farms Grootfontein & Waterval (numbers 64 and 65, Amersfoort district), 27.01S–30.09E, (VAL Stn. 21A: 1151J, 1234E). Rietspruit where crossed by road from Amersfoort to Ermelo, 26.54S–29.52E, (VAL Stn. 22: 506J). Elands River where crossed by Harrismith/Kestell Road, 28.16S–28.51E, (VAL Stn. 39: 1339E). Russespruit where crossed by

Warden/Reitz road, 27.49S–28.40E, (VAL Stn. 41: 1336E). Microhabitats for NIWR-VAL sites: stones in current, (catalogue numbers: 343C, 363C, 502C, 736C, 745E, 753P, 801D, 822E, 877B, 1102B, 1112B, 1168C, 1206D, 1230E, 1234E, 1266B, 1336E, 1377G), (18 specimens AMG); marginal vegetation, (catalogue numbers: 277B, 360, 443S, 452F, 468A, 471JL, 506J, 511U, 733Y-AA, 735M, 738WX, 739M, 741D, 771E, 785F, 798G, 799F, 816XA, 825H, 829G, 881AC, 884J, 894H, 993D, 1055H, 1103K, 1111F, 1114C, 1131H, 1145J, 1151J, 1169G, 1191C, 1209D, 1269, 1296L, 1297C, 1339E), (49 specimens AMG); bottom, (1148B), (1 AMG); willow roots, (1176L), (8 AMG). Olifants River, on farm Aasvogelkrans, 25.35S–29.20E, marginal vegetation, 31.VIII.1965, (OKS Stn. 5: 140R), (1/1 AMG). S. Transvaal, Roberts Drift, Vaal R., 27.02S–29.02E, sifted, flood debris, 8.X.1973, Endrödy-Younga (#190), (113 TMP).

Parasthetops andreaei Species Group

Recognized by the parallel-sided flattened elytra with the posterior declivity virtually obsolete and the very weakly or not at all striate-impressed elytral series, with punctures smaller than width of the elytral intervals.

Parasthetops andreaei new species

Figures 63, 64

HOLOTYPE—Male, South Africa: Cape Province, Aliwal North District, Aliwal North, 30.42S–26.43E, in tank, 18–25.VII.1954, H. Andreae; deposited in SAM.

DIAGNOSIS—Recognized among members of the genus by the strongly shining, finely sparsely punctate head and pronotal reliefs, the dark castaneous dorsal coloration, the parallel-sided flattened elytra with the posterior declivity virtually obsolete, and the very weakly or not at all striate-impressed elytral series, with punctures smaller than width of the elytral intervals.

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 173:110:68; HW:PL:PW:PB 41:36:52:40; AE 5. **COLOR**: Black or very dark castaneous; maxillary palpi flavo-testaceous, apex of distal mere infuscate; elytra piceo-castaneous, sides and apex paler; venter piceous, propleura and elytral epipleura flavo-castaneous; legs flavescent. **HEAD**: Eyes rather large, convex, in dorsal aspect eight small moderately convex facets in longest series.

Ocelli distinct. Frons on disc shining and finely sparsely punctate as on clypeus, punctures c. $0.5 \times ef$, interstices $2-4 \times pd$; antecellar sulci deep, mcr.; sides between sulcus and eye slightly transversely rounded, rather dull, finely mcr. Labrum strongly shining, free margin minutely reflexed, apicomediaally roundly rather widely emarginate to 0.25 length of labrum; lobes minutely apically denticulate. **PRONOTUM**: Greatest width slightly before middle, anterior angles obtuse, from widest point posteriorly sinuate-attenuate to rectangular basal angles, sides finely crenulate, finely margined. Anterior margin very shallowly trisinuate, median 0.60 with very narrow hyaline border. Foveae as follows: median longitudinal sulcus not attaining base or apex and constricted behind middle, deep round anterior and oblique oval posterior admedian, large deep anterior and quite small deep posterior adlateral; foveae and sulcus rugose punctate. Reliefs highly shining, on disc very sparsely very finely punctulate, more finely than frons disc. Subbasal transverse band of large sharply impressed punctures, c. $1 \times ef$, interstices narrow walls to $1 \times pd$. Lateral depressions slightly shining but much less so than reliefs. Circular flat-bottomed depressions of median pair of anterior marginal sensilla large and very distinct on holotype. **ELYTRA**: Sides subparallel, in male barely, in female, particularly posteriorly, evidently explanate. Apex in male subtruncate, in female a little more widely rounded, sutural apex rounded-rectangulate. Posterior declivity very obsolete. Lateral declivity in anterior 0.5 of disc gradual, summit at 7th interval behind humerus where 8th interval obsolete, punctures of series 7–8 interdigitating or separated by narrow walls; in posterior 0.5 of disc less gradual, summit at slightly transversely rounded 8th interval. Only sutural series toward apex striate-impressed; 2nd and 3rd shortened behind, 1st and 4th to 8th almost attaining apex. Serial punctures large, $1-1.5 \times ef$ on disc, becoming smaller and more widely spaced posteriorly, strongly impressed, longitudinally separated on disc by less, on sides and apex by about their own diameter. Intervals almost flat, c. $2 \times pd$, shining; each with unilinear row of very widely spaced extremely fine decumbent setae. **VENTER**: Mentum mcr., propleura shining. Sternum 6 shining, with very fine transverse reticulation, glabrous with a subterminal row of fine piliferous punctures. **LEGS**: Femora and tibiae very effacedly mcr., femora more shining. **AEDEAGUS**: TL 45 (fig. 64).

ETYMOLOGY—Named in memory of the late Dr.

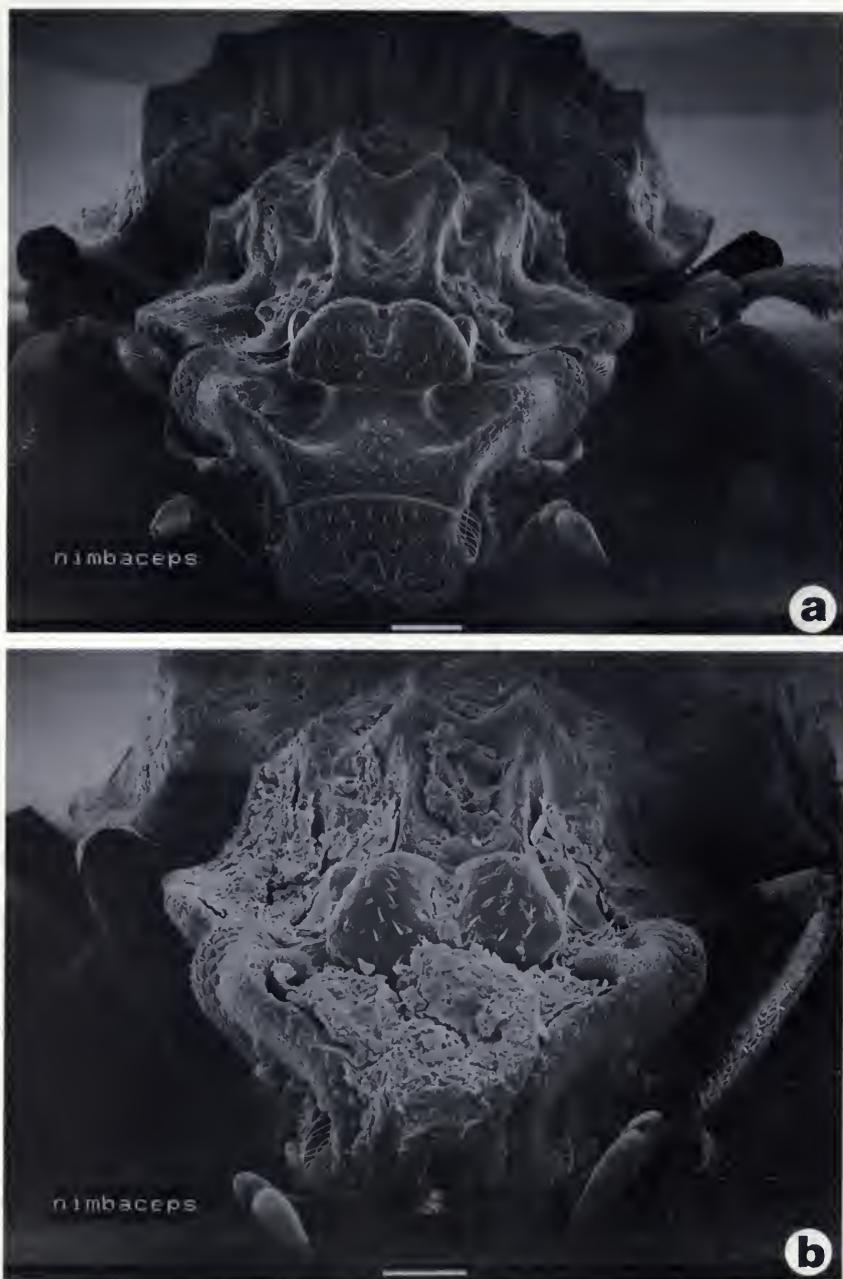


FIG. 17. *Nucleotops nimbiceps*, frontal views. a. Clean specimen. b. Uncleaned specimen. Scale lines = 100 μ m.

H. Andreae of Cape Town, who introduced J. Balfour-Browne to many collecting sites in the Cape District.

DISTRIBUTION—Known only from the type locality in northeastern Cape Province, South Africa (fig. 63).

PARATYPE—Same data as holotype, (0/1 SAM).

***Mesoceration* Janssens**

Type species: *Mesoceration capense* Janssens.
Mesoceration Janssens, 1967: 11 (n. gen., desc.).

DIAGNOSIS—Recognized by the carinate 8th interval of the elytron (except *rubidum*) (figs. 15, 16),

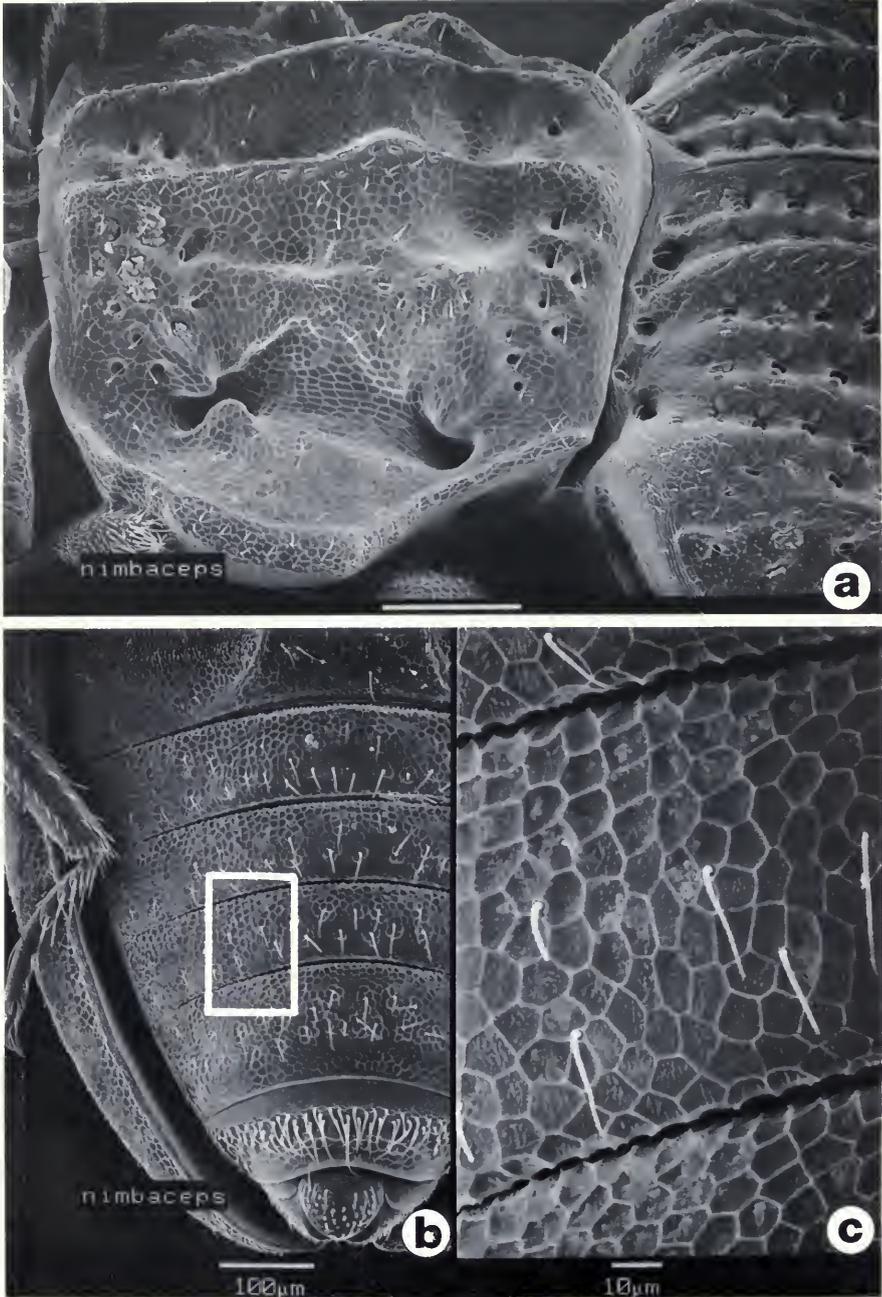


FIG. 18. *Nucleotops nimbiceps*. a. Pronotum and base of elytra, oblique view. b. Abdominal sterna, male. c. Microsculpture of abdominal sterna. Scale line = 100 μm for a.

the ventral appressed plastron vestiture covering abdominal sterna 1–4 and the basal part of 5, the glabrous and shining apical part of sternum 5, the elongate maxillary palpi and legs, and the rather

deep and narrow V-shaped apicomedian emargination of the labrum.

DESCRIPTION—Form moderately elongate and convex. Size about 1.15–1.80 mm. Color black to

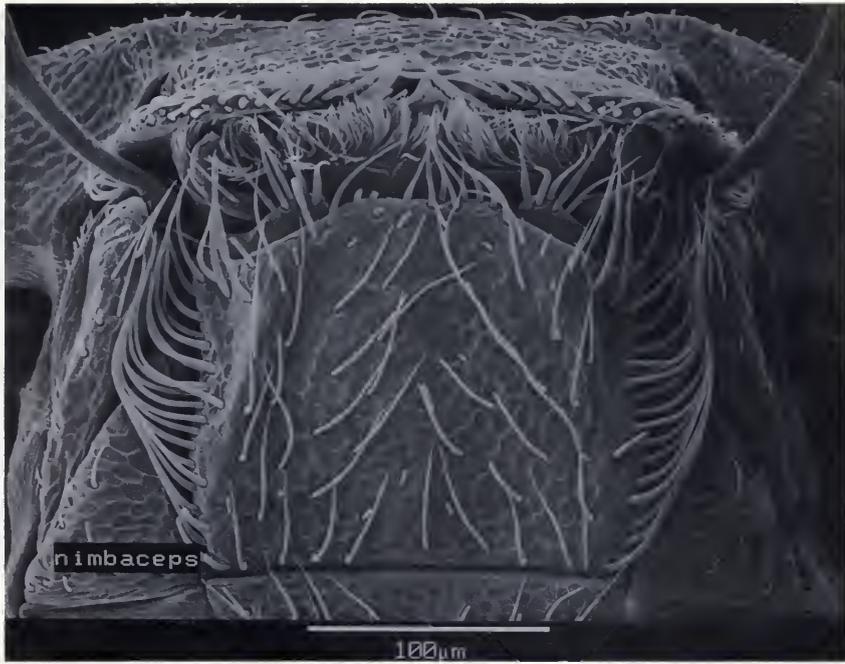


FIG. 19. *Nucleotops nimbiceps*, mentum.



FIG. 20. *Nucleotops nimbiceps*. a. Aedeagus of holotype. Scale line = 0.1 mm. b. Geographical distribution.

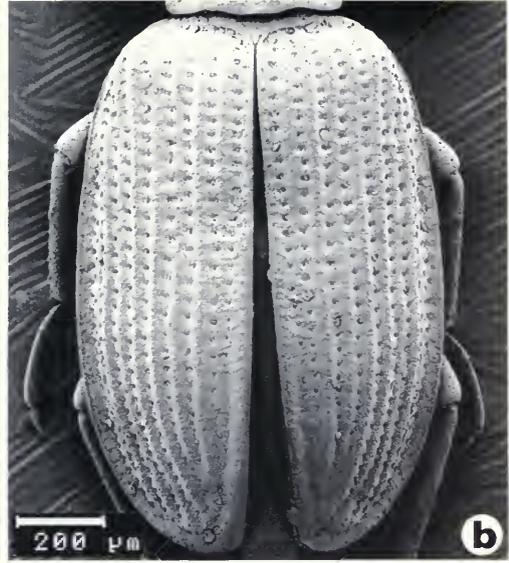
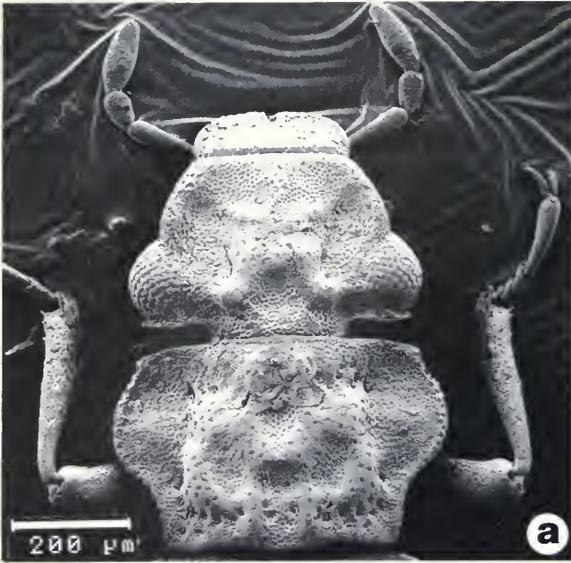


FIG. 21. *Pterosthetops impressus*. a. Head and pronotum. b. Elytra.

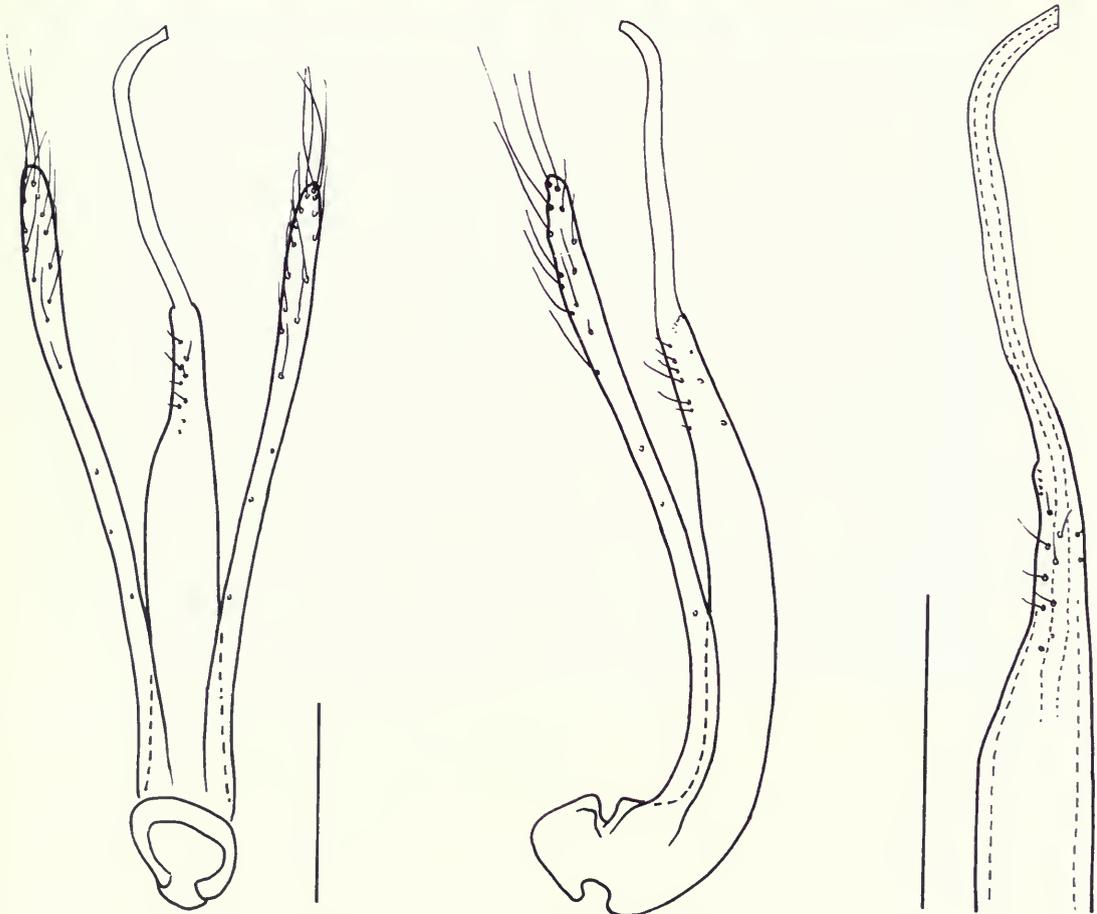


FIG. 22. *Pterosthetops impressus*, aedeagus of holotype. Scale lines = 0.1 mm.

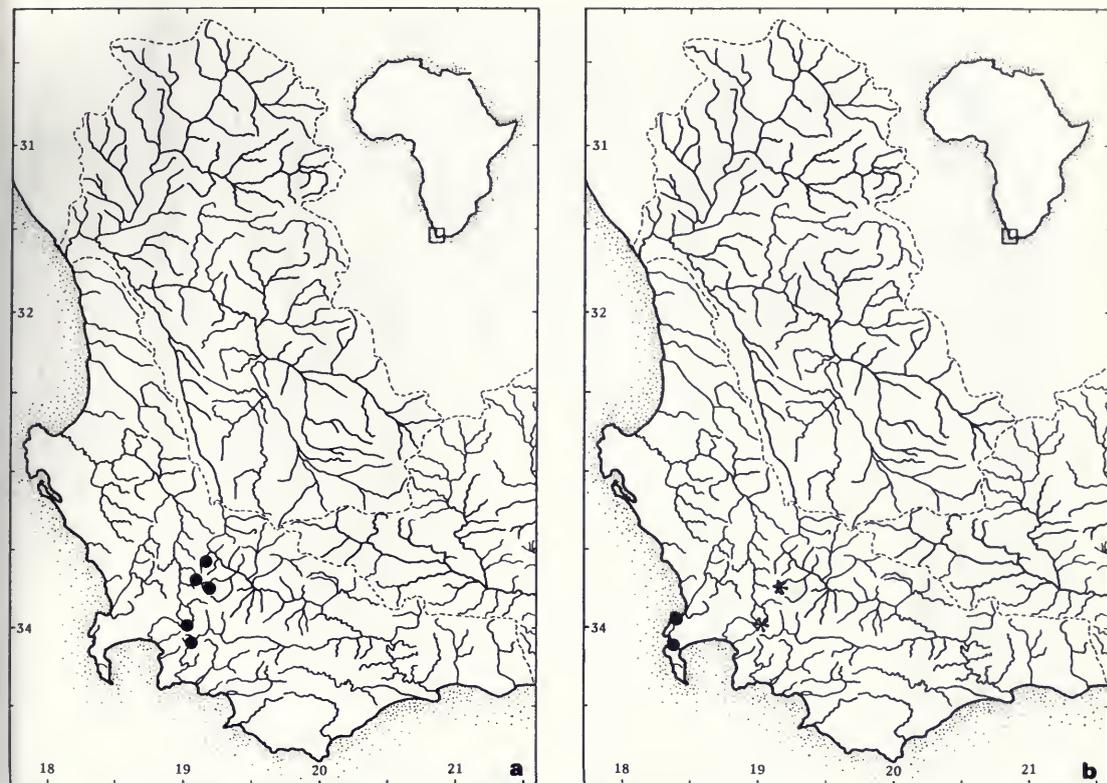


FIG. 23. Geographical distributions of *Pterosthetops* species. a. *P. impressus*. b. *P. equestrius* (●) and *P. harrisoni* (*).

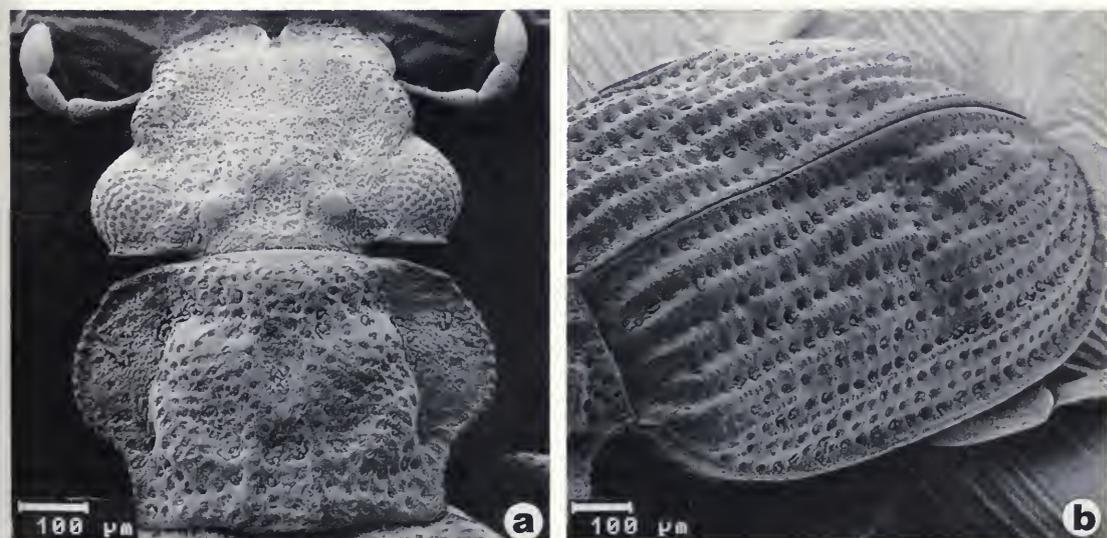


FIG. 24. *Pterosthetops harrisoni*. a. Head and pronotum. b. Elytra, oblique view.

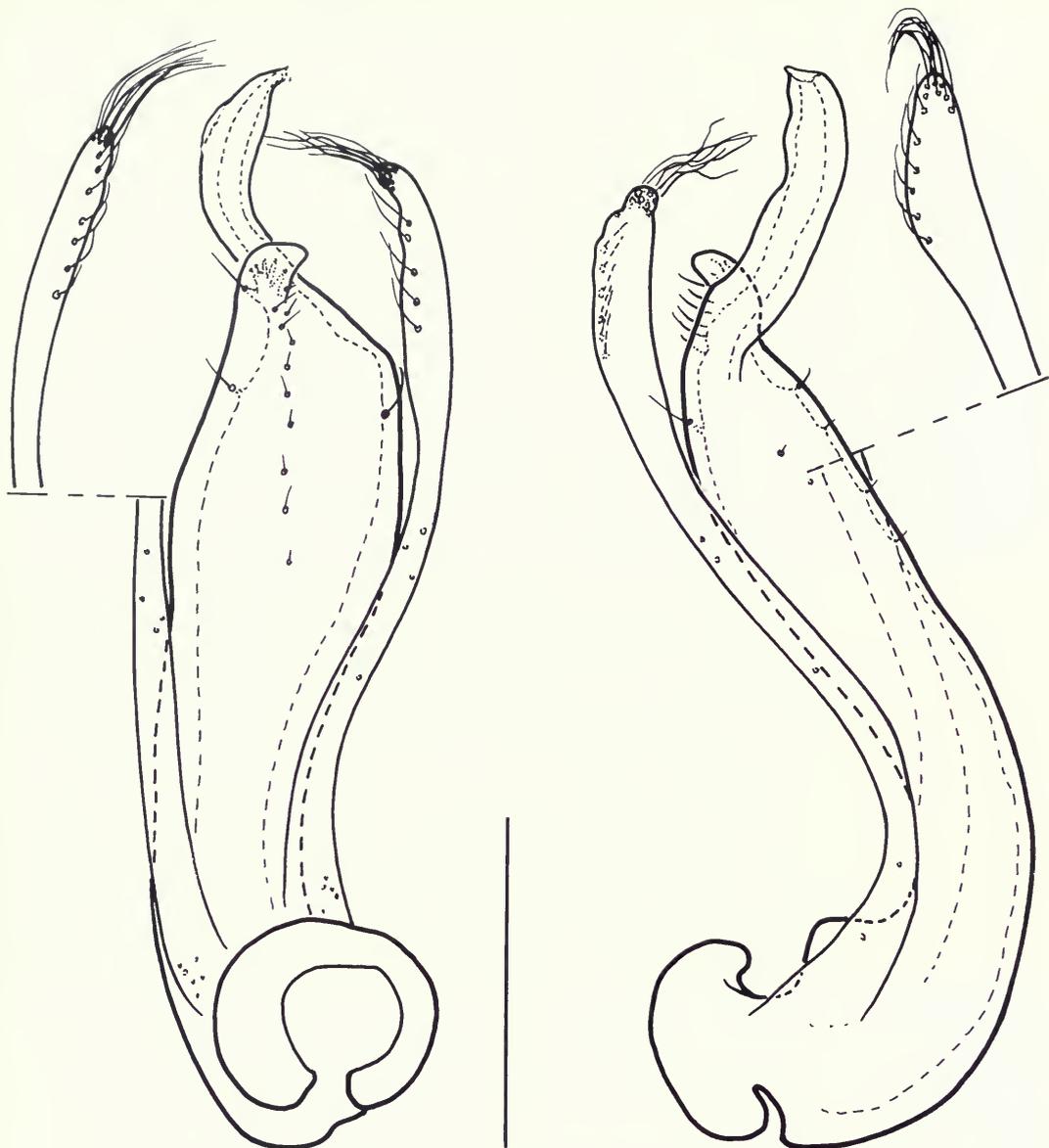


FIG. 25. *Pterosthetops harrisoni*, aedeagus of holotype. Scale line = 0.1 mm.

brown to reddish to testaceous. Eyes variable, never very large, sometimes quite reduced. Frontoclypeal suture at most weakly arcuate, sometimes straight. Labrum at most set at a slight angle to clypeus, sometimes in same plane; apicomedian emargination V-shaped, deep and narrow. Maxillary palpus longer than antenna, length greater than width of anterior margin of clypeus, when extended backward reaching beyond posterior border of eye. Mentum trapezoidal, submentum subpentagonal. Antennomeres primitively 11 (6

+ 5), but sometimes with loss of articulations between meres of compact pubescent club, hence club varying (in known species) from one to five "meres." Pronotum with lateral depressions and six more or less developed discal foveae, median pair of foveae sometimes entirely confluent to form median groove. Elytron variable, usually with 8th interval distinctly carinate, costate, or tectiform, often also with series 5-6 basally confluent, sometimes also with series 1-2 apically confluent; rarely (*rubidum*) with 10 regular series of punctures, but

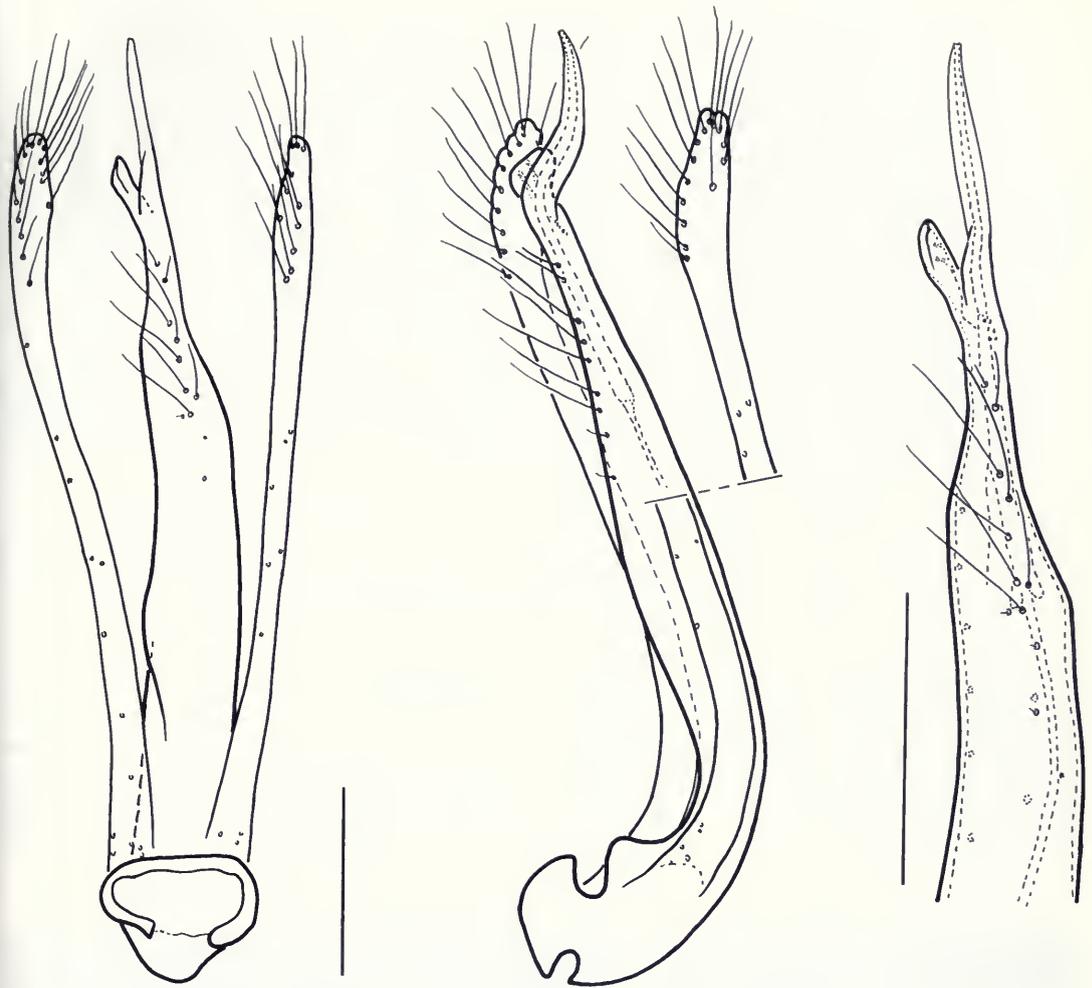


FIG. 26. *Pterosthetops brincki*, aedeagus of holotype. Scale lines = 0.1 mm.

then series 7 more discrete near base than is series 6; posterior longitudinal and transverse declivities moderately to very weakly developed, elytral disc sometimes nearly flat between carinae. Thoracic sterna and abdominal sterna 1-4 densely clothed with short dense pubescence, except glabrous prosternal midlongitudinal ridge, mesosternal plaques, and glabrous strongly shining area on metasternum, latter usually small basomedial triangular area, sometimes narrow transverse line along base of metasternum, infrequently (*abstrictum*) large inverted V-shaped glabrous area. Pubescence of pro- and mesosternum erect or suberect (probably hydrofuge but not plastron). Pubescence of metasternum appressed (probably plastron), except midlongitudinal impression bearing erect pubescence less dense than that of surrounding area;

midlongitudinal impression varying in shape from very narrow to as wide as long. Abdominal sterna with pubescence appressed (probably plastron); 5th sternum clothed basally and laterally with pubescence, leaving a posterior shining area that is variable in shape from narrowly transverse to semi-circular to quadrate, sometimes raised. Procoxal cavities separated by narrow lamina, widely open behind. Mesocoxal cavities separated by intercoxal processes of meso- and metasterna. Abdomen with six (female) or seven (male) visible sterna. Intercoxal sternite small, triangular. Legs and claws elongate; tarsi 5-5-5, ratios of lengths of articles and claw about 1:1:1.5:2:6:3 (claw). Setae of last protarsomere sexually dimorphic: in females simple, in males usually basal two or rarely three or all four setae on ventral margin enlarged and spi-

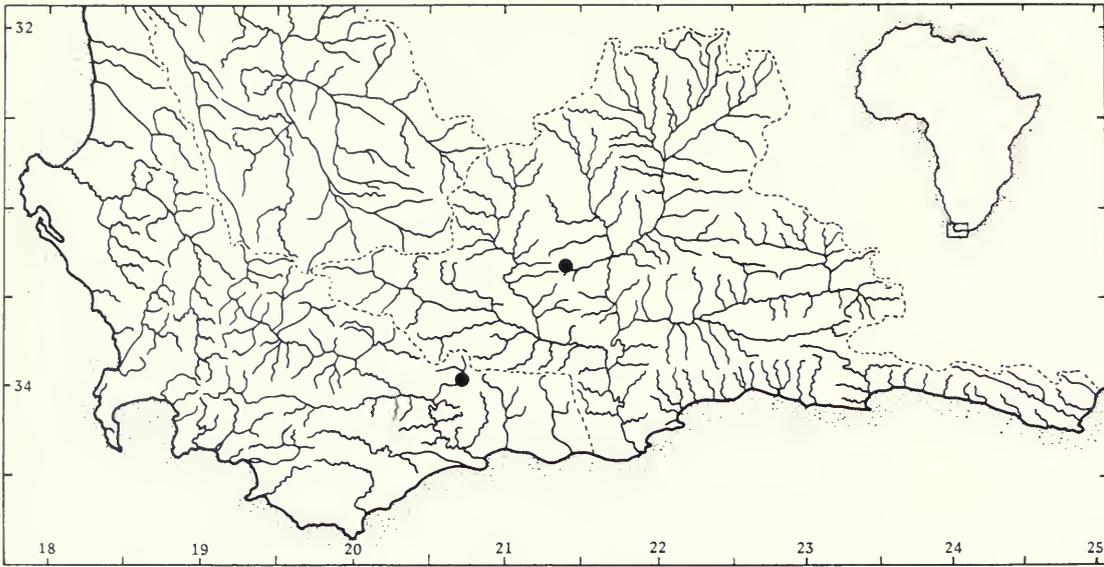


FIG. 27. *Pterosthetops brincki*, geographical distribution.

niform (except *rubidum*, where tibiae are markedly sexually dimorphic). Metatrochanter small. Aedeagus with parameres attached near base; main-piece variable, generally with apical area of main-piece produced on left side and duct issuing from right side (and angling toward the left).

Microhabitats

Specimens of all *Mesoceration* species have been collected from stones in the current of streams or rivers. Specimens of some species are also found in marginal vegetation, but usually in smaller



FIG. 28. *Pterosthetops equestrius*, female. a. Dorsum. b. Head and pronotum.

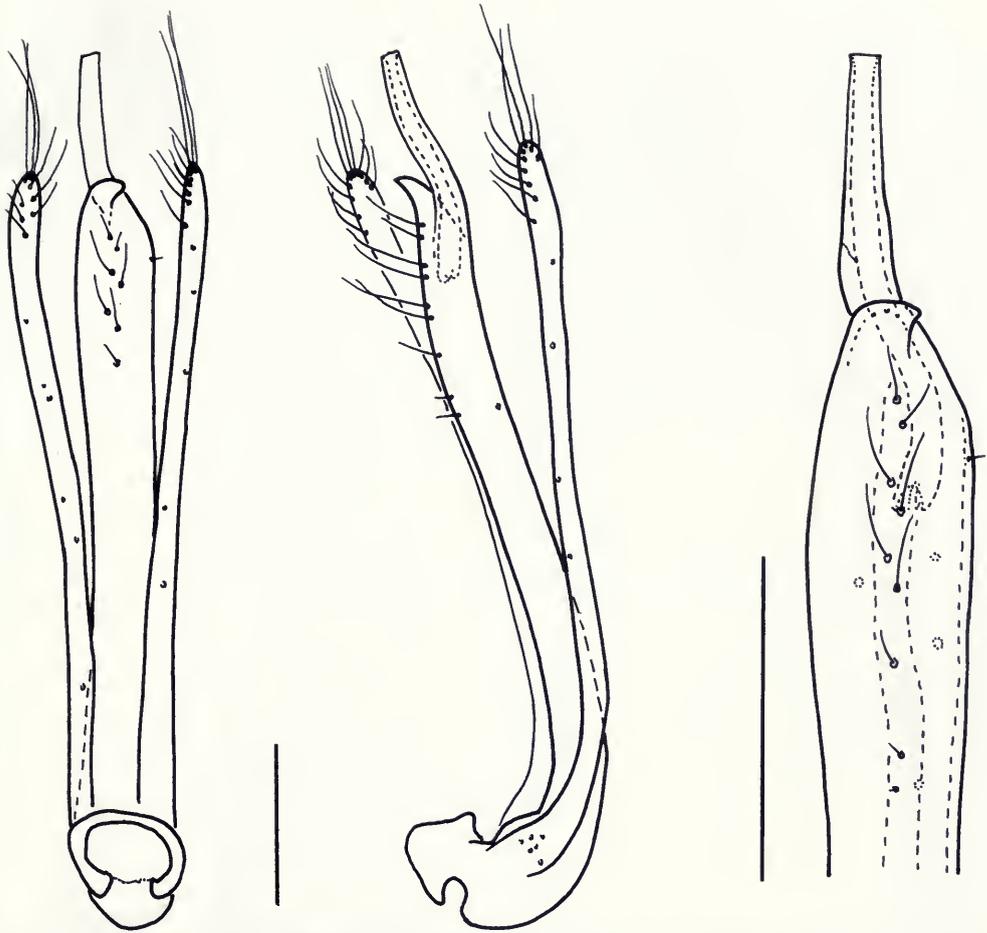


FIG. 29. *Pterosthetops equestris*, aedeagus of holotype. Scale lines = 0.1 mm.

numbers. A few species have been collected by the shore washing technique; very preliminary data

suggest that one species (*endroedyi*) may prefer this microhabitat type.

Key to Groups and Species of *Mesoceration*

1. Elytron with 8th interval always modified, either carinate, costate or tectiform (figs. 15a–b, 15d, 16); metasternum with glabrous area various, usually in form of minute basomedian triangle, not in form of narrow transverse line; elytron usually modified in area behind humeral umbo: 6th interval obliterated by confluent or subconfluent 5th and 6th series, or 6th series originating well behind humeral umbo, or 5th and 6th series entirely restricted to posterior part of elytron 2
- Elytron with 8th interval weakly or not carinate; 5th and 6th series discrete throughout (fig. 15c); metasternum with glabrous shining area in form of narrow transverse line over median 0.3 of base (fig. 70); rufopiceous to rufotestaceous species (Rubidum Group) 9
2. Elytron with 5th and 6th series restricted to posterior, hence basal 0.5 with only five series between suture and carina (fig. 15d); metasternal disc with large glabrous shining area (fig. 108b); eyes small, coarsely faceted; elytral apices very truncate (figs. 107a, 108a) . . . (Abstrictum Group) *abstrictum*
- Characters otherwise; elytron (except *distinctum*) with 5th and 6th series confluent or subconfluent in area behind humeral umbo, or 6th series originating well behind humeral umbo; hence six series

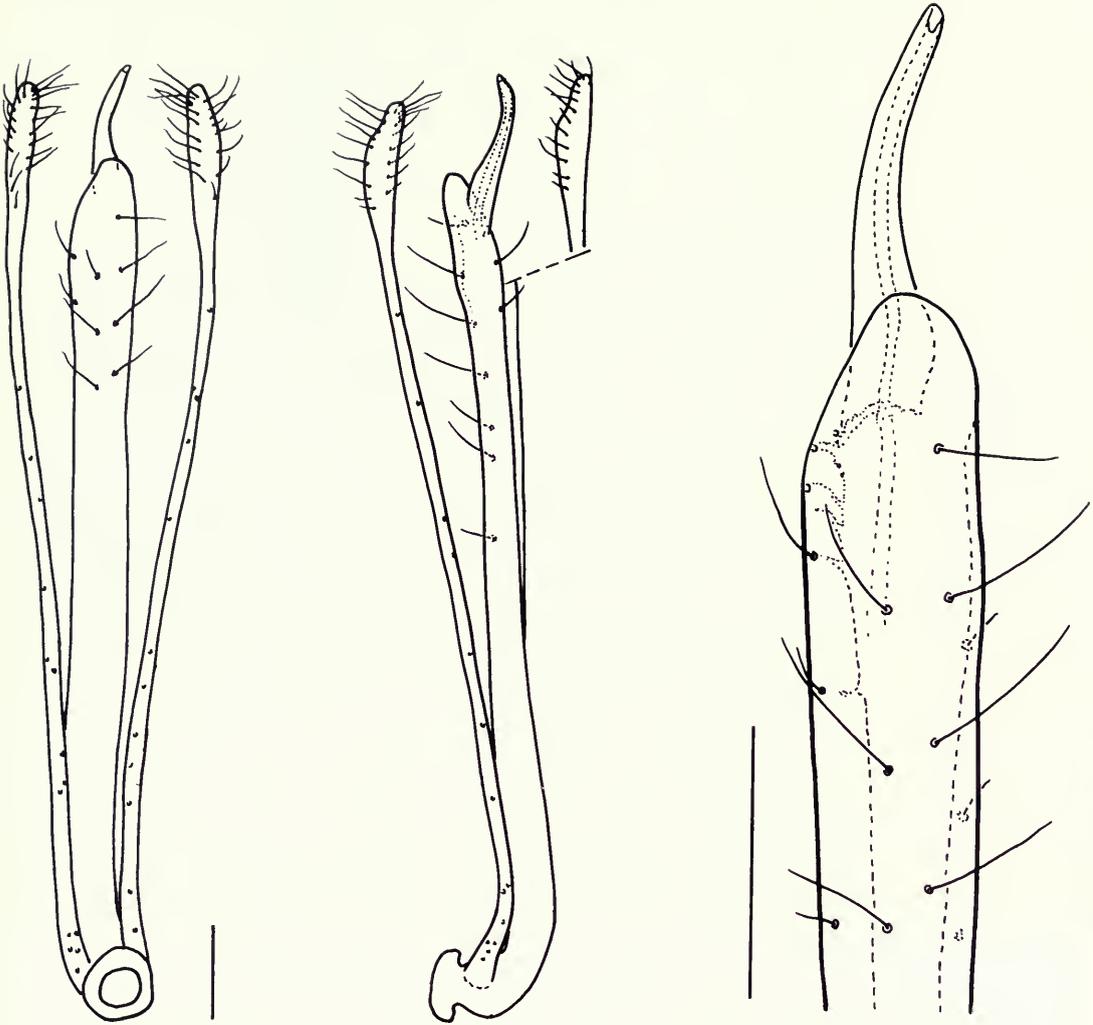


FIG. 30. *Prosthetops pronotus*, aedeagus of holotype. Scale lines = 0.1 mm.

- between suture and carina; metasternum with small basomedian shining area; eyes various, but not as coarsely faceted 3
3. Pronotal reliefs very smooth medially and laterally, strongly shining, finely sparsely punctulate; elytra not granulate, shining, sometimes with 6th interval distinct basally (*distinctum*) 4
- Pronotal reliefs always microreticulate laterally, usually medially also, strongly so and dull, or only effacedly so and slightly shining; elytra granulate or not 5
4. Elytron with 5th and 6th series distinct throughout, not confluent in area behind humeral umbo (fig. 15a); 1st and 2nd series distinct throughout; dorsum piceous or black (fig. 66) (Distinctum Group) *distinctum*
- Elytron in area behind humeral umbo with 5th and 6th series confluent or appearing as a single series; 1st and 2nd series posteriorly confluent (fig. 16a); dorsum rufo-brunneous or castaneous, at least in part (Rivulare Group) 11
5. Elytral disc with sutural, 3rd and 5th intervals roundly tectiform, 2nd and 4th intervals flat (fig. 15b); elytra very broad at shoulders, regularly attenuate from about midlength to apices; sides of pronotum not denticulate (fig. 104) (Sulcatulum Group) *sulcatulum*
- Characters not as above 6

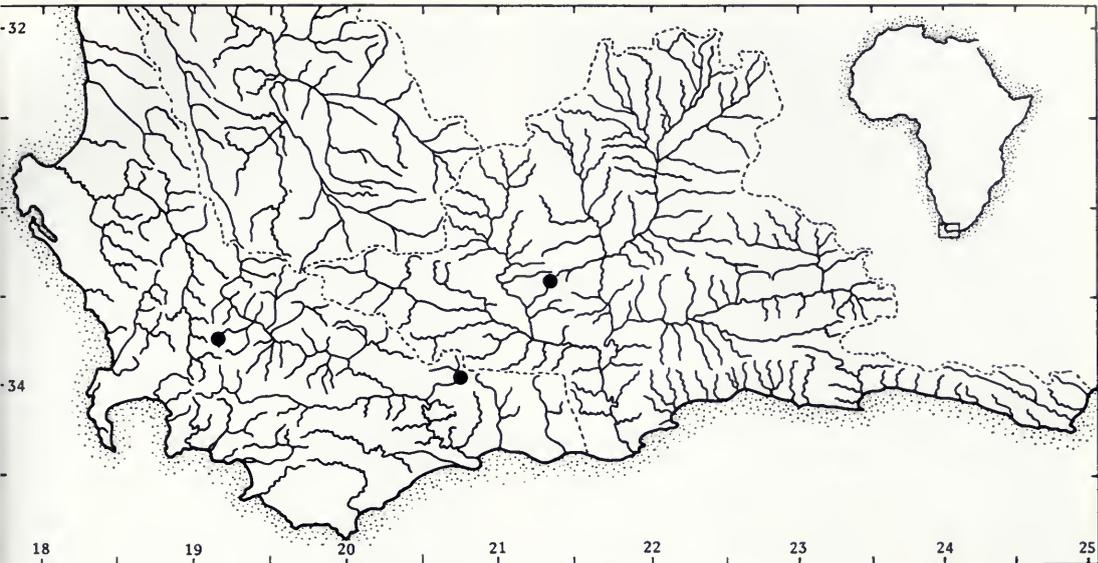


FIG. 31. *Prosthetops pronotus*, geographical distribution.

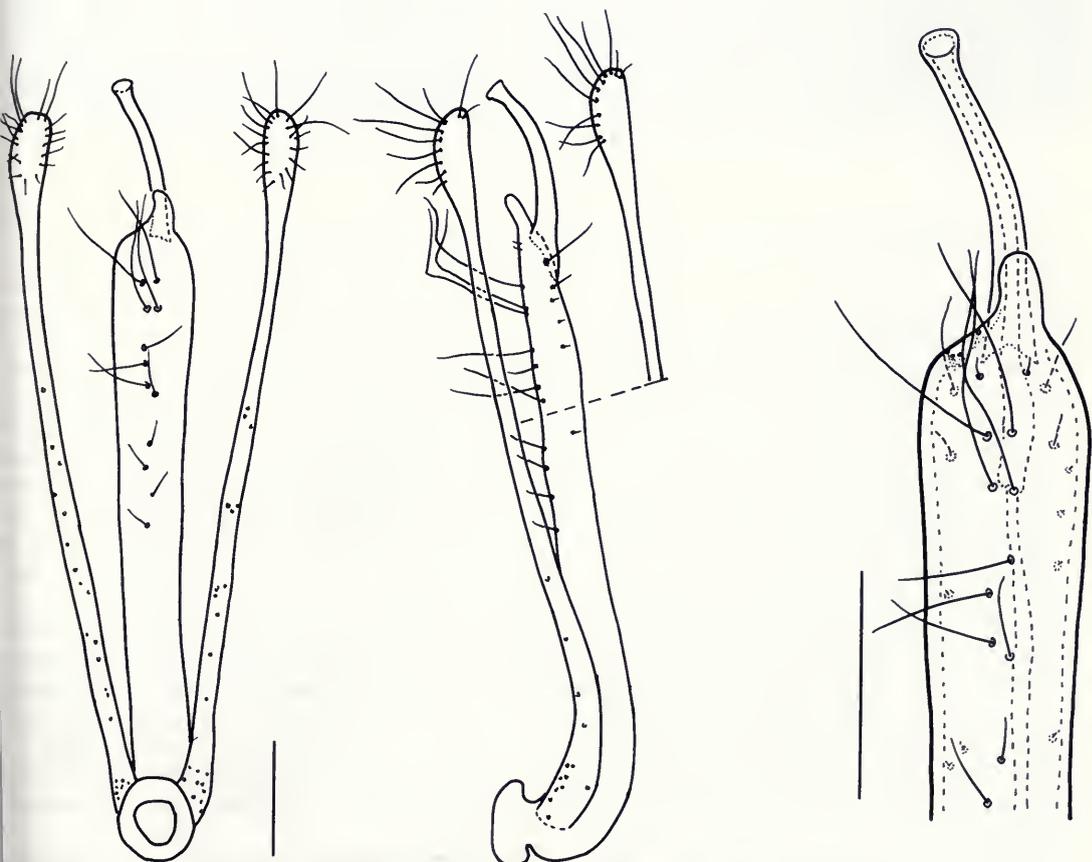


FIG. 32. *Prosthetops megacephalus*, aedeagus. Scale lines = 0.1 mm.

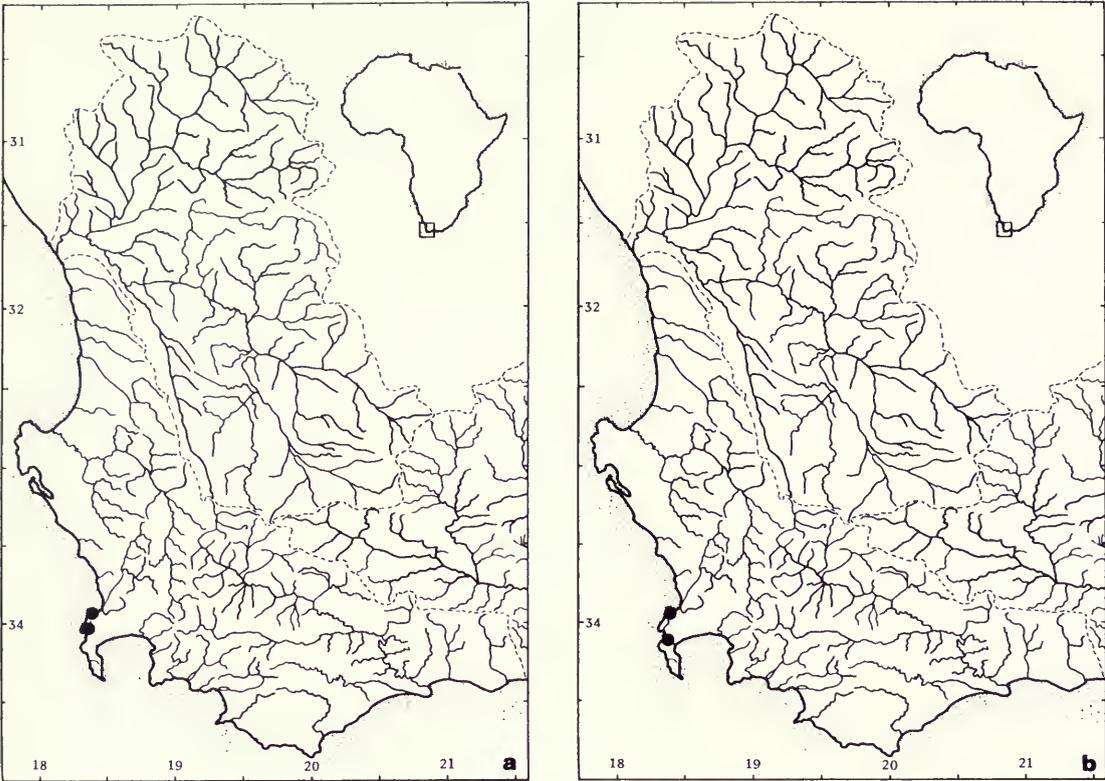


FIG. 33. Geographical distributions of *Prosthelaps* species. a. *P. megacephalus*. b. *P. nitens*.

6. Elytra widest just behind shoulders, then regularly attenuate to apices; summit of posterior declivity near midlength; intervals shining, flat, not granulate; dorsum testaceous (figs. 16c, 103) (Pallidum Group) *pallidum*
- Elytra not distinctly attenuate from near shoulders; summit of posterior declivity past midlength; intervals granulate or not; coloration various 7
7. Elytra with moderately to well-developed posterolateral angles, apices transversely or subobliquely truncate (fig. 84b); elytral epipleuron less elongate distally, usually ended near or before middle of 5th sternum; 5th sternum never thickened or bent downward (Truncatum Group) 13
- Elytra attenuate from near middle to apices, posterolateral angles obsolete or narrowly separated from sutural angle; elytral epipleuron more elongate distally, ended at or beyond posterior margin of 5th sternum; 5th sternum, in females, sometimes thickened and bent downward at posterior margin (figs. 91b,d) 8
8. Discal elytral intervals 2–5 raised slightly, transversely rounded, very discrete, without granules; series striate impressed, without granules; 5th sternum normal in both sexes (Apicalum Group) *apicalum*
- Discal elytral intervals 2–5 flat or with uneven, irregular surfaces, and with granules (sometimes minute) (fig. 16d); series not distinctly striate-impressed, with or without granules (raised anterior rim of socket of punctural seta); 5th sternum, in females, with posterior margin thickened and sometimes bent downward (figs. 91b,d) (Endroedyi Group) 15
9. Elytron with 8th interval not carinate or only very weakly so (figs. 15c, 69); males with protibia widened apically, 5th sternum enlarged, posterior border emarginate (fig. 70a) *rubidum*
- Elytron with 8th interval clearly carinate; other characters not as above 10
10. Elytra with sides ovate, dorsum very convex at summit of posterior declivity, evenly strongly transversely arcuate from suture to margin; body size larger (TL c. 180 vs. 165) ... *transvaalense*

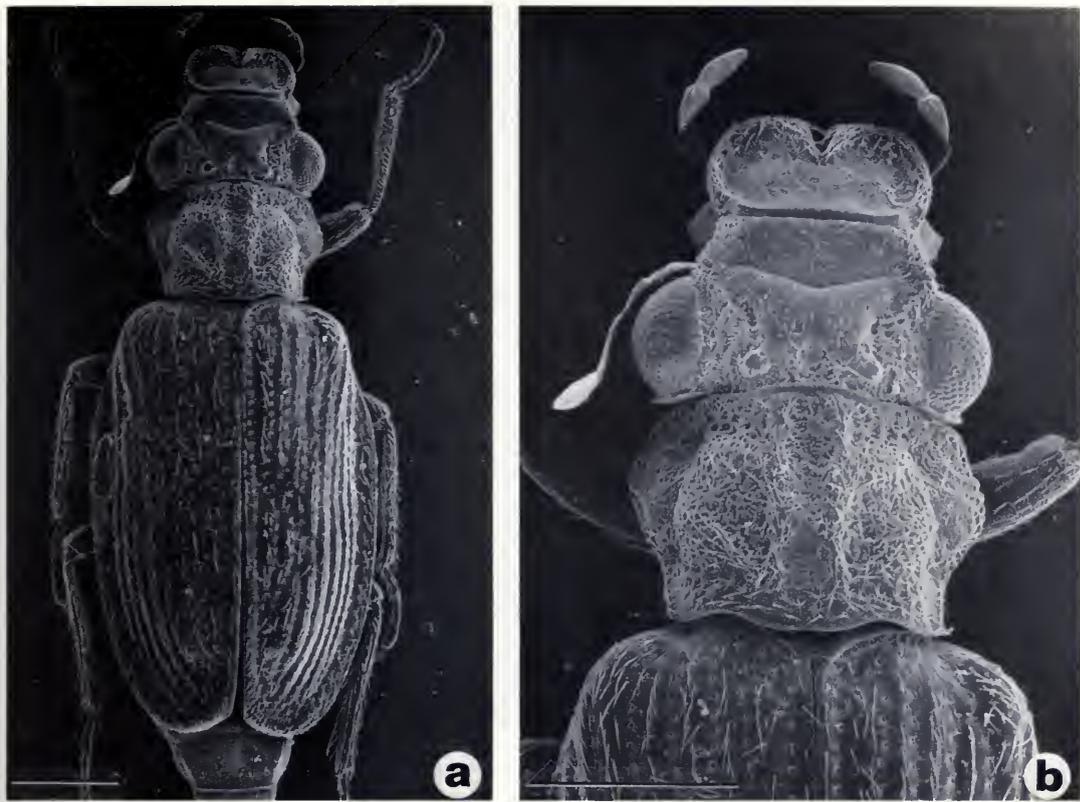


FIG. 34. *Prosthetops setosus*, female. a. Dorsum. b. Head and pronotum. Scale lines = 400 μ m.

- Elytra parallel-sided or virtually so, not markedly convex at summit of posterior declivity *fusciceps*
- 11. Elytral epipleuron narrowly attaining sutural apices; series 1-2 confluent before summit of posterior declivity in both sexes (fig. 16a); pronotal anteromedian fovea only slightly larger than anteroadmedian foveae (fig. 65a); frons tumid, much more finely sparsely punctate than clypeus (fig. 77); 5th sternum, in both sexes, with shining area transversely subrectangulate, in males, with a small rounded papilla on each side of midline near distal margin *rivulare*
- Elytral epipleuron ended at or only slightly beyond posterolateral angle, not attaining sutural angle; series 1-2 confluent before or beyond summit of posterior declivity; pronotal anteromedian fovea 2-3 \times size of anteroadmedian foveae, attaining midlength of pronotum; frons not tumid, punctures only slightly smaller than clypeal punctures; 5th sternum with shining area sublunate, normal in both sexes 12
- 12. Elytral series 1-2 confluent at or before summit of posterior declivity in both sexes. Males: elytral apices transversely narrowly truncate; aedeagus as illustrated (fig. 82). Females: elytral series 1 in basal 0.25 not striate-impressed, the punctures finer than largest punctures at base of pronotum; elytral apices conjointly rounded, the posterolateral angles slightly less apparent *splendorum*
- Both sexes with elytral series 1-2 confluent beyond summit of posterior declivity. Males: elytral apices conjointly rather broadly rounded; aedeagus as illustrated (fig. 80). Females: elytral series 1 in basal 0.25 weakly striate-impressed, with punctures larger, at least as large as largest punctures at base of pronotum; elytral apices obliquely subtruncate, posterolateral angles slightly more apparent *jucundum*
- 13. Pronotal reliefs granulose (fig. 89) *brevigranum*
- Pronotal reliefs not granulose 14

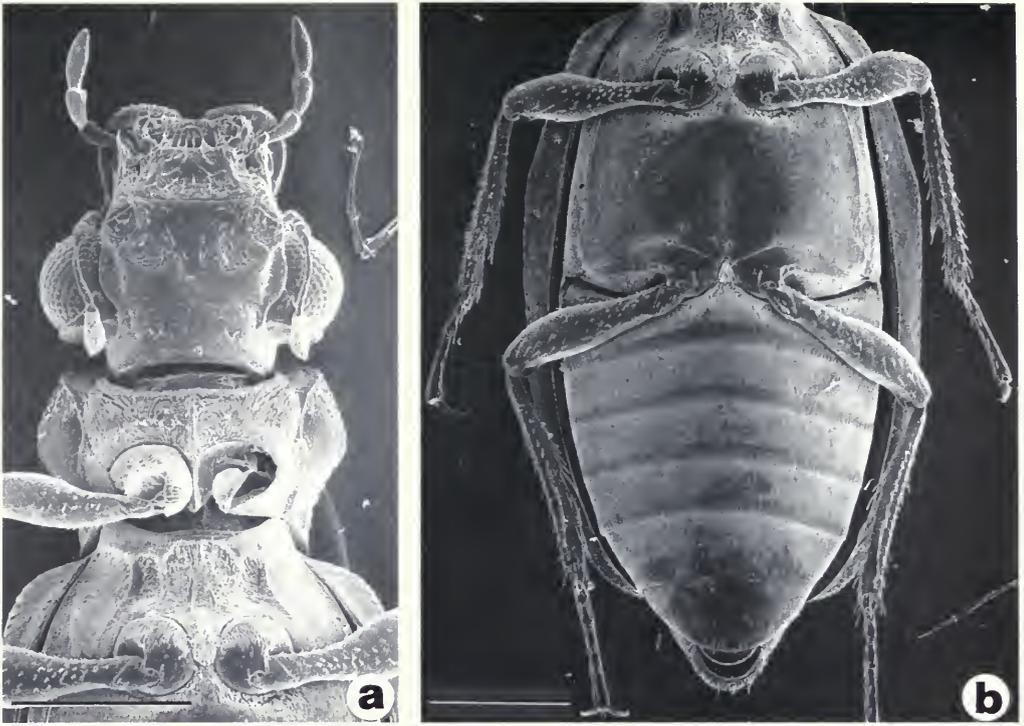


FIG. 35. *Prosthetops setosus*, female. a. Venter of head, prosternum, mesosternum. b. Metasternum and abdomen. Scale lines = 400 μ m.

14. Pronotum and elytra rufo-testaceous; elytral carina, in lateral view, distinctly arcuate in posterior 0.66; aedeagus as illustrated (fig. 87); size smaller (TL c. 140 vs. 160) *rufescens*
 - Pronotum piceous, elytra brunneous to piceous; elytral carina nearly straight in lateral view, not distinctly arcuate in posterior 0.66; aedeagus as illustrated (fig. 85) *truncatum*
15. Pronotal reliefs with granules that are obscured by strong microreticulation (fig. 65b); elytral disc with large, shining, round granules between serial punctures and on intervals, those on intervals randomly and closely spaced (fig. 16d); 5th abdominal sternum, in females, strongly bent downward (fig. 91d) *endroedyi*
 - Pronotal reliefs not granulose; elytral disc with granules of intervals minute, widely spaced, forming unilinear row; granules (when present) between serial punctures equally minute; 5th abdominal sternum, in females, bent downward or not 16
16. Elytra weakly transversely convex between carinae for entire length, posterior declivity very gradual (fig. 93); 1st and 2nd series always confluent, or becoming obsolete, beyond summit of posterior declivity; head large relative to size of pronotum, HW:PL:PW c. 34:30:37; 5th abdominal sternum, in females, "bent" downward (fig. 91b) *languidum*
 - Elytra depressed on disc, humped at summit of posterior declivity; 1st and 2nd series confluent at or beyond summit of posterior declivity; head not as large compared to size of pronotum 17
17. Elytral medial intervals with unilinear row of granules more developed, continuing beyond summit of posterior declivity; frons at most effacedly microreticulate, more shining than microreticulate clypeus; elytral carina, in males, gradually decreasing in size at posterior extreme; 5th abdominal sternum, in females, with posterior margin bent downward and thickened on each side of middle, outline angulate in posterior view; aedeagus as illustrated (fig. 98) *dissonum*
 - Elytral medial intervals with unilinear row of granules less developed, becoming obsolete at or

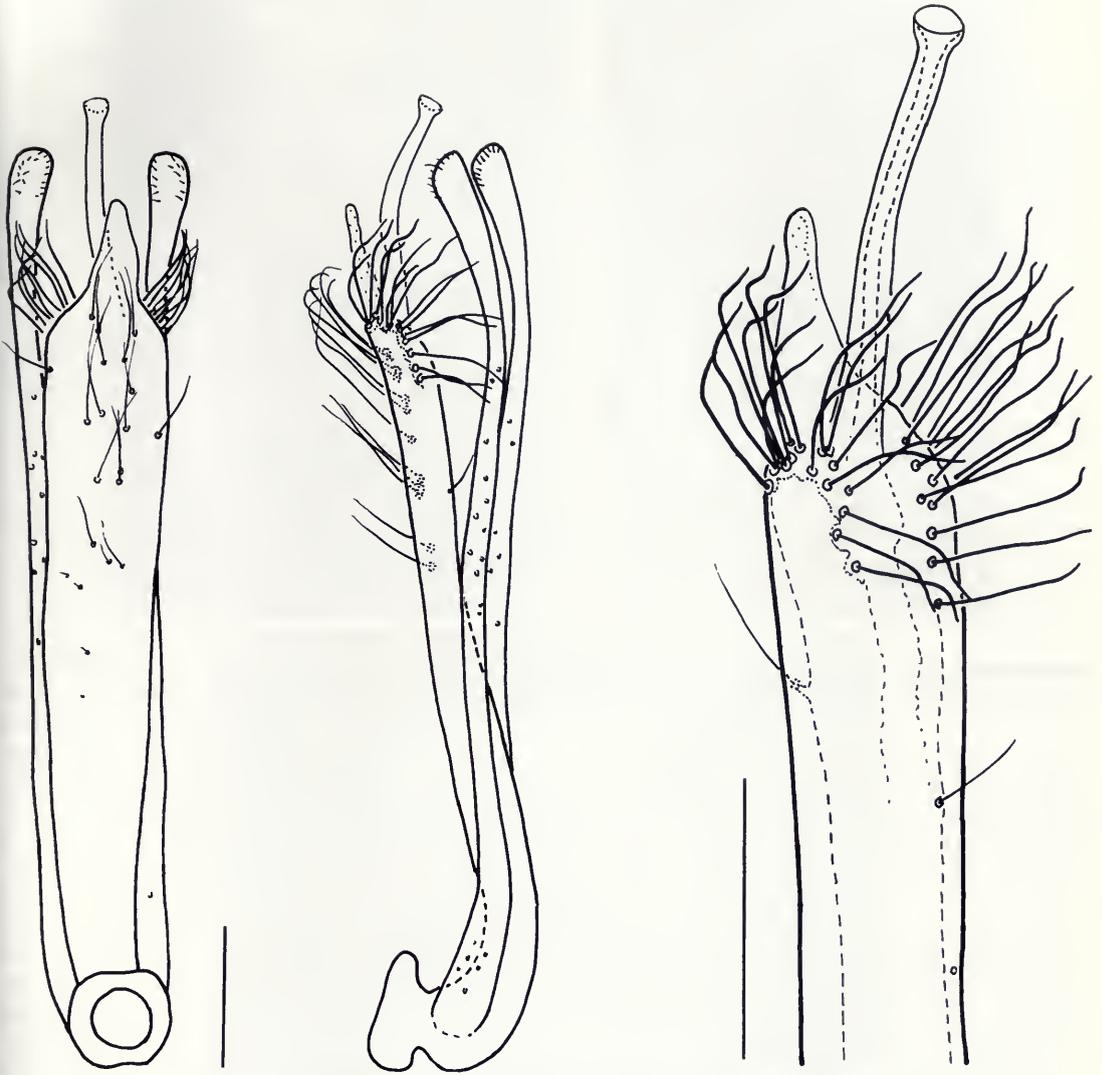


FIG. 36. *Prosthetops setosus*, aedeagus of holotype. Scale lines = 0.1 mm.

- before summit of posterior declivity; frons and clypeus equally microreticulate, punctulate and dull; elytral carina, in males, distinctly thickened at posterior extreme 18
18. Elytra with 1st and 2nd series confluent at or before summit of posterior declivity; 5th abdominal sternum, in females, with posterior margin thickened on each side of slightly depressed middle, not bent downward, arcuate in posterior view; aedeagus as illustrated (fig. 96); size smaller (TL c. 156 vs. 172) *concessum*
- Elytra with 1st and 2nd series confluent beyond summit of posterior declivity; aedeagus as illustrated (fig. 99); females unknown *capense*

Mesoceration distinctum Species Group

Recognized by the elytron having the 5th and 6th series near base distinctly separated by the 6th

interval, the carinate 8th interval, the nongranulate elytral intervals, and the small triangular basomedian glabrous shining area of the metasternum.

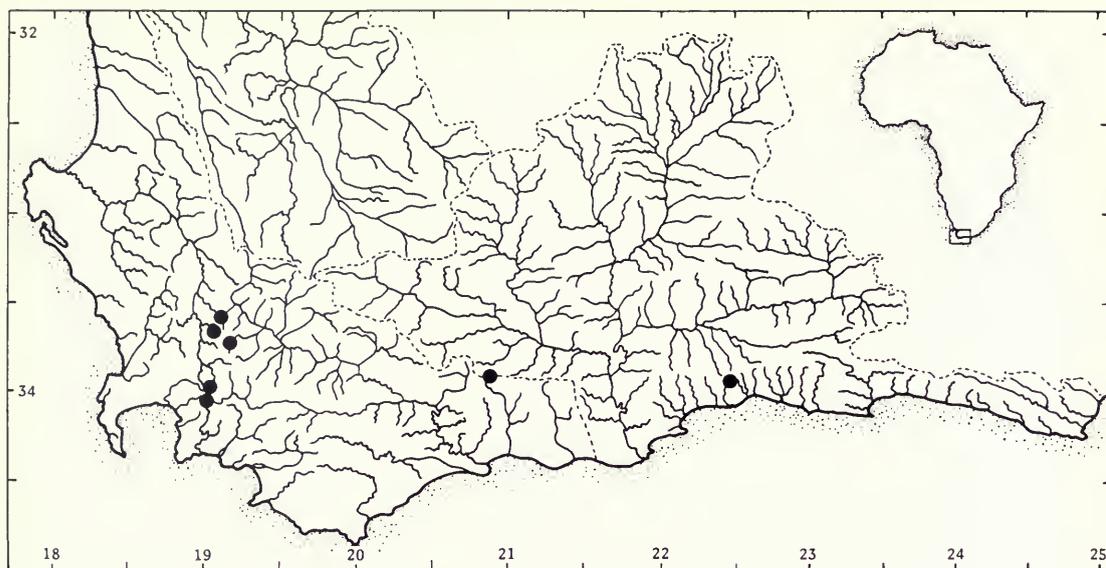


FIG. 37. *Prosthetops setosus*, geographical distribution.

***Mesoceration distinctum* new species**

Figures 15a, 66–68

HOLOTYPE—Male, South Africa: Cape Province, upper Great Berg River, Assegaibos stream, 33.58S–19.04E, stones in current, (GBG Stn. 2: 145D), 24.XI.1950, A. D. Harrison; deposited in AMG.

DIAGNOSIS—Recognized by the well-developed elytral carina, the shining nongranulate pronotal reliefs and elytral intervals, the distinctly separated 5th and 6th elytral series, the small pronotum (HW:PL:PW c. 39:34:44), and the black dorsal coloration (figs. 15a, 66).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 153:94:64; HW:PL:PW 39:34:44. **COLOR**: Black or piceous, moderately shining, maxillary palpi piceo-testaceous, venter piceous, mentum rufescent, legs testaceous. **HEAD**: Labrum obsolete mcr., feebly shining. Clypeus mcr., sparsely obsolete punctulate. Frons shining, mcr. only at sides, sparsely finely punctulate on disc, punctures separated by about 3 × pd; antecellar sulci shallow. Ocelli distinct. **PRONOTUM**: Cordate, widest in front of middle; anterior angles obsolete, posterior rectangular; sides finely margined, feebly crenulate; anterior margin shallowly arcuate over median 0.75, without hyaline border; moderately convex, finely but quite densely on disc, anteriorly and posteriorly very strongly and distinctly, almost rugosely, punctate; with 10 dis-

tinct foveae disposed as follows: two median, an anterior elongate and round posterior, a small round anterior and larger oval posterior admedian and a large anterior and small round deep posterior adlateral on each side, foveae shining; each puncture with a fine short hair. **ELYTRA**: Almost parallel-sided, apices widely rounded; sutural apices rectangular; sides smooth, weakly explanate. Serial punctures quite large at base, progressively finer apically, basal punctures subconfluent and consequently series here somewhat striate-impressed; seven series between suture and carina, interval 6 discrete to base; anterior rim of socket of each punctural seta simple, not at all granuliform. Intervals, except 8th, flat, very finely unilinearly punctulate, width on disc about 2–3 × puncture diameter; 8th distinctly costate. All punctures bearing a short fine seta. **VENTER**: Mentum mcr. Thoracic sterna and abdominal sterna 1–4 densely clothed with short setae, except glabrous prosternal midlongitudinal ridge, mesosternal plaques, and small glabrous strongly shining triangular area basomedially on metasternum. Sternum 1 with sublateral basal carina on each side. Sternum 5 similarly clothed basally and laterally leaving a semicircular posterior area glabrous and shining. Sternum 6 glabrous and obsolete mcr. with a posterior band of piliferous punctures. **LEGS**: Male apical protarsomere with two spiniform setae. Femora and tibiae effacedly mcr. **WINGS**: Fully developed. **AEDEAGUS**: TL 31 (fig. 67).

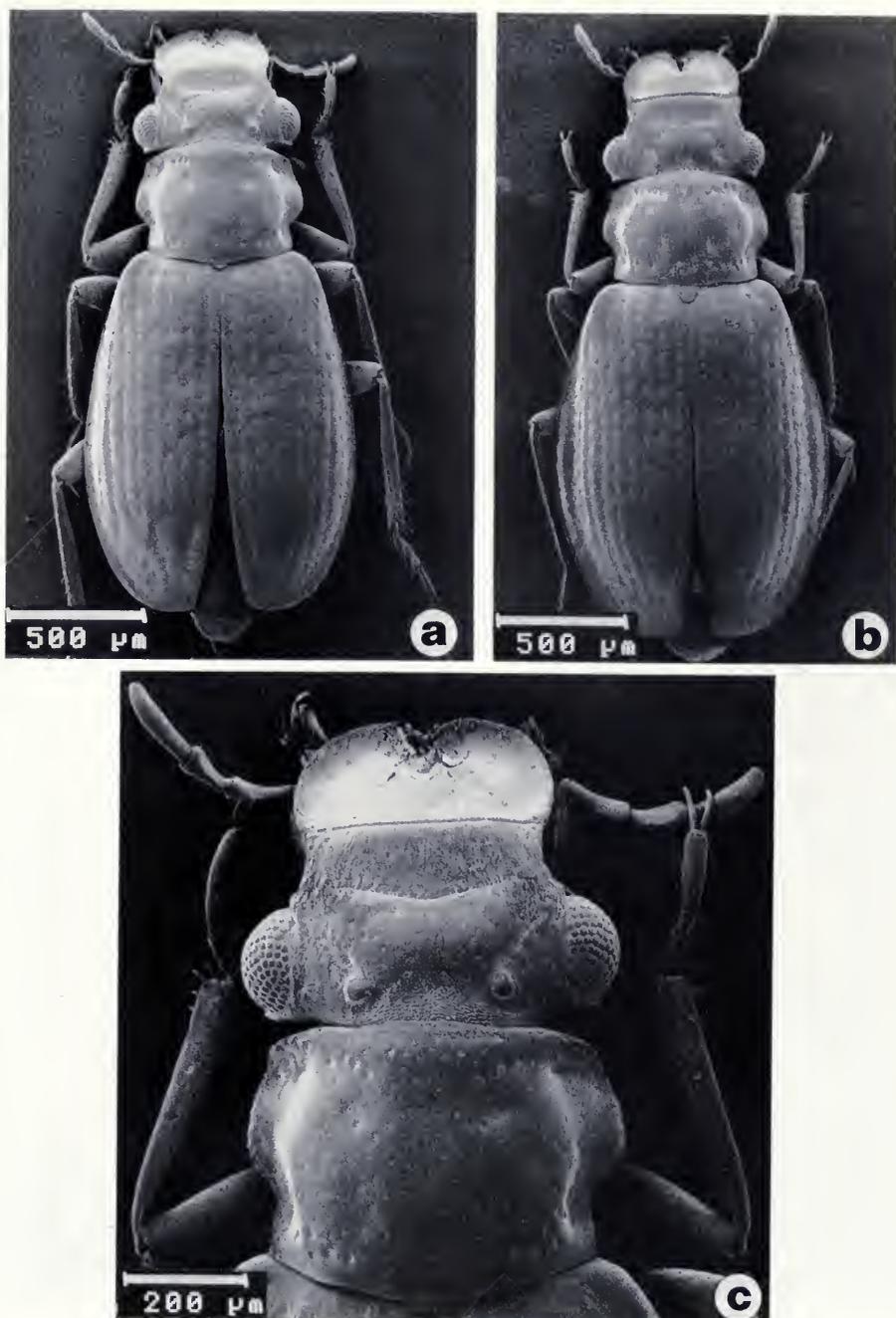


FIG. 38. *Prosthetops nitens*. a. Dorsum, male. b. Dorsum, female. c. Head and pronotum, male.

ETYMOLOGY—Latin, *distinctum* (separate, different), in reference to the distinctly separated 5th and 6th series and the nongranulate elytra.

DISTRIBUTION—Currently known from the western, central, and eastern parts of the Cape Region, South Africa (fig. 68).

DISCUSSION—The distinct 5th and 6th elytral

series is clearly a plesiomorphic condition. The small pronotum and smooth dorsum, if these features are true synapomorphies, would indicate a relationship with the *rivulare* group; the aedeagus is not clearly indicative of such a relationship.

PARATYPES (180)—South Africa: Cape Province: Same data as holotype, (0/2 AMG). As above,

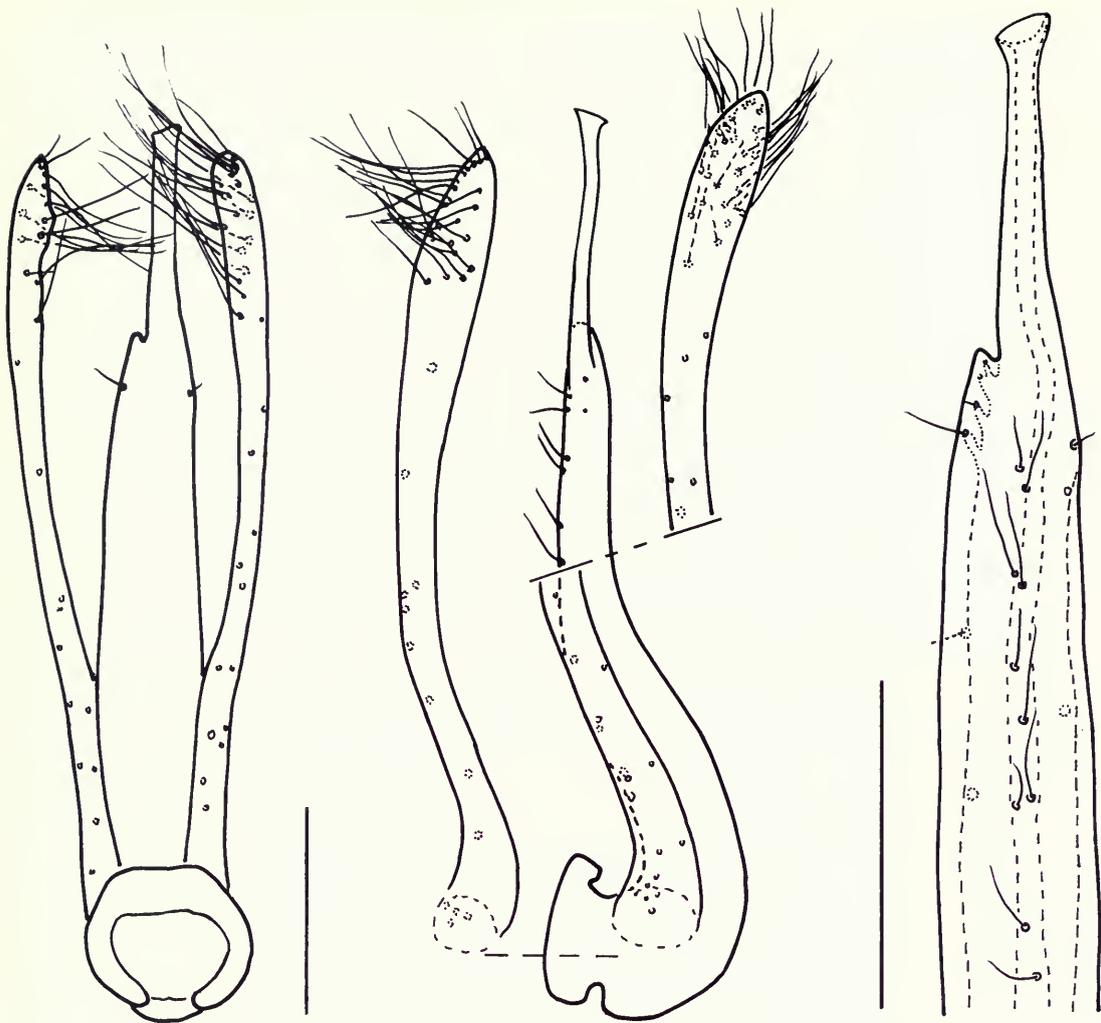


FIG. 39. *Prosthetops nitens*, aedeagus of lectotype. Scale lines = 0.1 mm.

leaf packs, stones out of current, 24.V.1950, (GBG Stn. 2: 6X), (0/1 AMG). As above, 11.IV.1951, (GBG Stn. 2: 226D), (0/1 AMG). W. Cape, Dwarsberge, 34.02S–19.01E, river stones, 15.XI.1973, Endrödy-Younga (#256), (76 TMP). S. Cape Mt., Helderfontein, 1150 m, 33.55S–20.52E, river stones, 31.X.1978, Endrödy-Younga (#1497), (44 TMP). Langeberge, Helderfontein, 1150 m, 33.56S–20.52E, river stones, 8.III.1979, Endrödy-Younga (#1565), (18 TMP). S.W. Cape, Hawaquas rad. tower, 33.41S–19.06E, shore washing, 27.X.1978, Endrödy-Younga (#1484), (1 TMP). S.W. Cape, Nuweberg For. Sta., 34.03S–19.04E, river stones, 14.XI.1973, Endrödy-Younga (#247), (16 TMP). S. Cape, Harkerville Forest, 34.04S–23.10E, shore washing, 7.XII.1976, Endrödy-Younga (#1299), (1/0 TMP). Swellendam District, Swellendam,

Wolfkloof, 1500 ft, in mountain stream in deep gorge, c. 34.01S–20.26E, 12.III.1954, J. Balfour-Browne, (5/13 BMNH). Fransch Hoek Forest Reserve, Great Berg River, at roots of sedge in current, c. 33.55S–19.08E, 4.III.1954, J. Balfour-Browne, (1/1 BMNH).

Mesoceration rubidum Species Group

Recognized by the elytron having the 5th and 6th series discrete (separated or not totally confluent) in area behind humeral umbo, the narrow transverse glabrous shining area over the basomedian 0.3 of the metasternum, the relatively wide and relatively flat midlongitudinal glabrous area of the prosternum, and the reddish coloration.

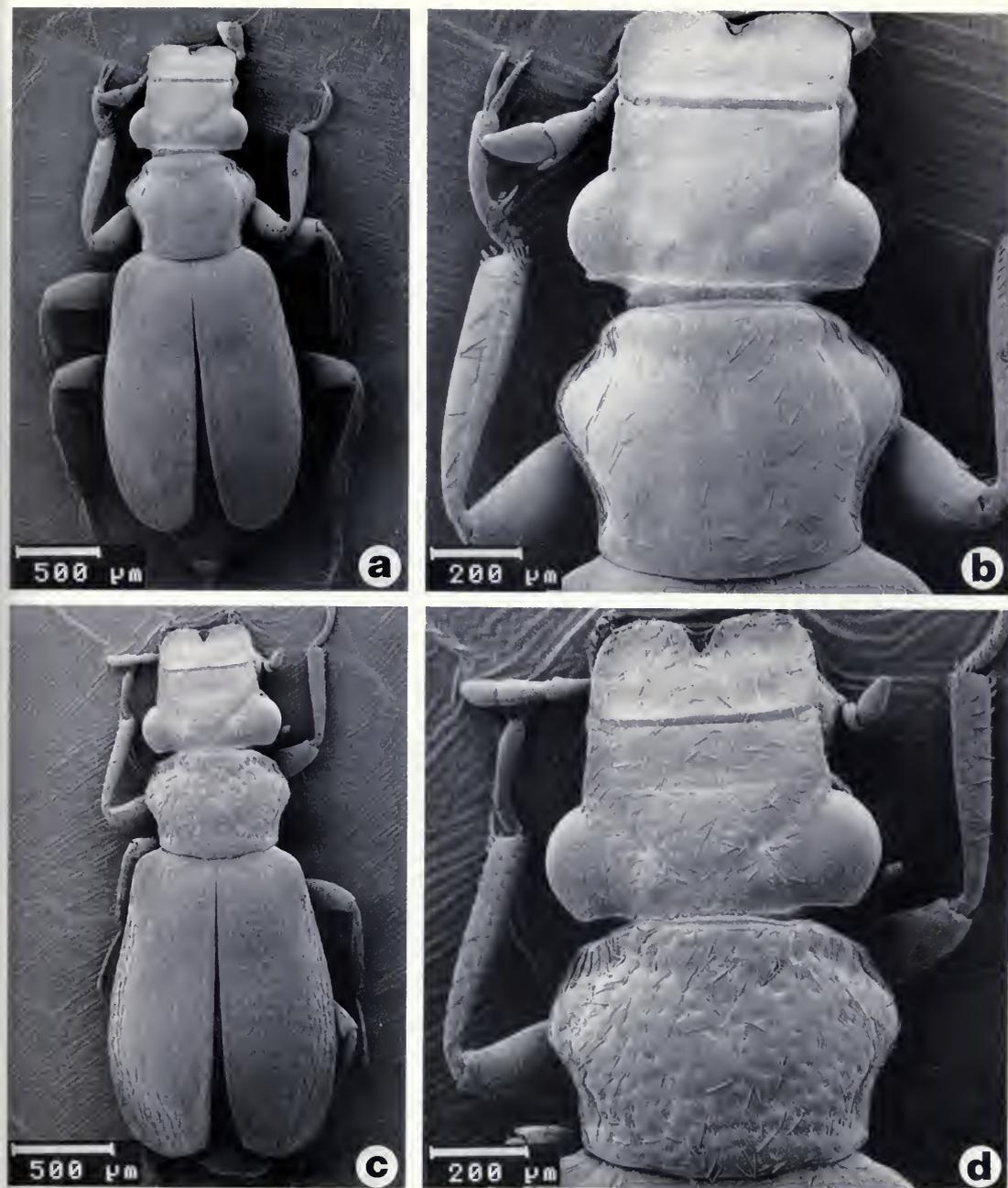


FIG. 40. *Prosthetops grandiceps*. a. Dorsum, male. b. Head and pronotum, male. c. Dorsum, female. d. Head and pronotum, female.

***Mesoceration rubidum* new species**
 Figures 15c, 69–73

HOLOTYPE—Male, South Africa: Natal Province, Tugela River, Stn. T2, stones in current, (NIWR-TUG 76Q7); deposited in AMG.

DIAGNOSIS—Distinguished from other mem-

bers of the *rubidum* group by the elytral carina which is at most very weakly developed, ended at or before level of summit by elytral declivity, absent in some individuals (figs. 15c, 69). Males are immediately recognized by the 5th and 6th sterna, which are distinctly swollen, the 5th with posterior border emarginate (fig. 70a), and by the protibia,

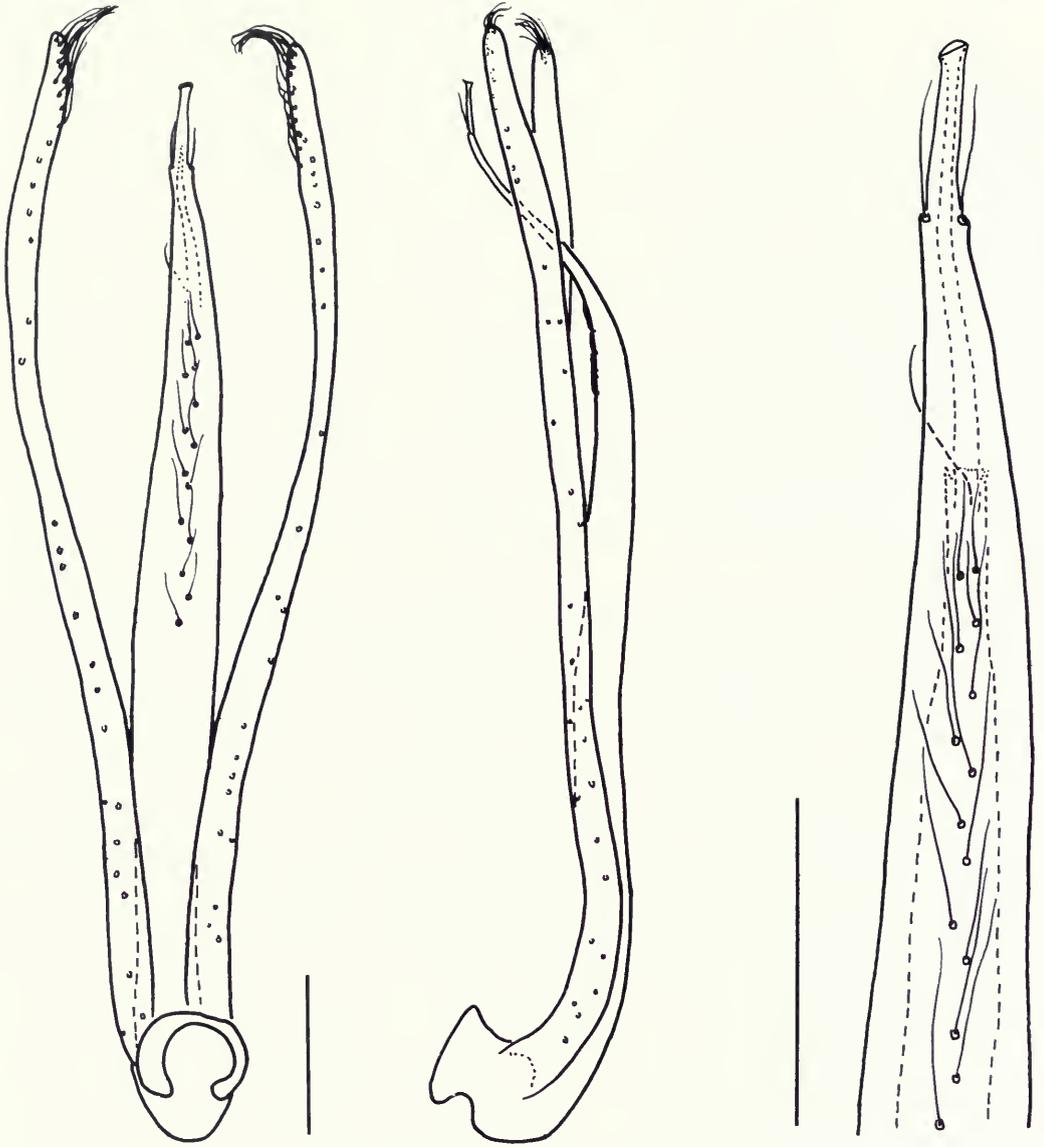


FIG. 41. *Prosthetops grandiceps*, aedeagus of holotype. Scale lines = 0.1 mm.

which is widened subapically. In combination with the reddish coloration, the non-mcr., shining pronotal reliefs, and the elytral intervals each with granules in unilinear row.

DESCRIPTION—SIZE (mm × 100): Holotype TL: EL:EW 164:104:70 (TL to elytral apices); HW:PL: PW 42:40:52. **COLOR:** Uniformly rufo-testaceous, clypeus somewhat infuscate. **HEAD:** Labrum narrowly angulately emarginate at middle of anterior edge up to 0.5 its length, lobes barely

margined and quite distinctly mcr. Clypeus shining at middle but mcr. at sides, finely punctate. Frons finely sparsely but distinctly punctate on disc, punctures much smaller than eye-facet, interstices strongly shining, 2–4 × pd; antecellar furrows rather broad and shallow, not attaining sides in front of eye, quite dull, minutely rugose-reticulate; area between furrow and eye rugose punctate. **PRONOTUM:** Obcordate, widest just in front of middle, from widest point weakly sinuately at-

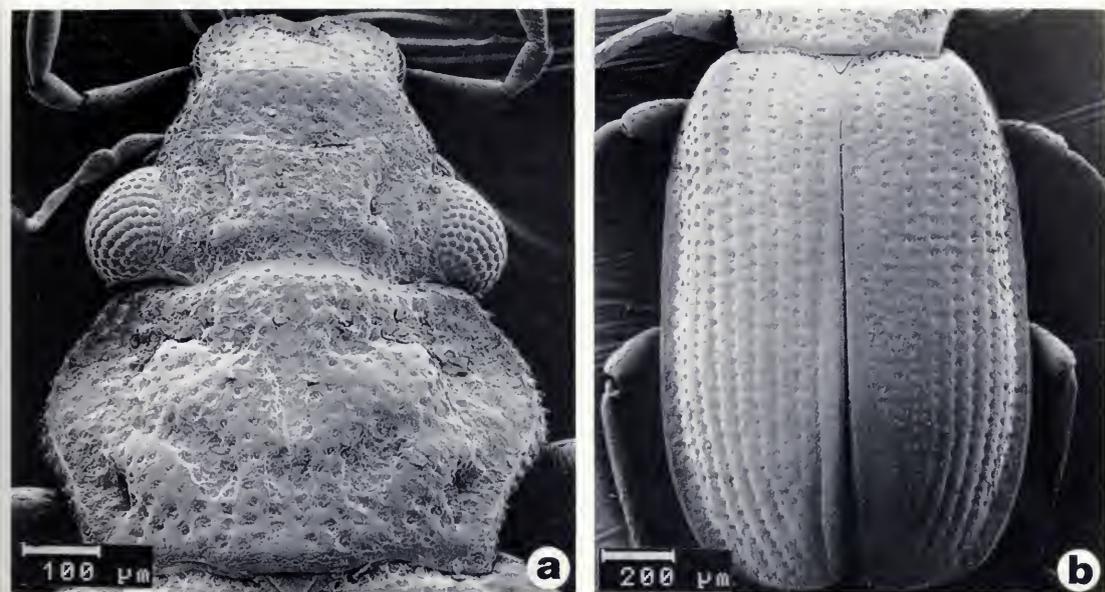


FIG. 42. *Parasthetops nigrinus*, female. a. Head and pronotum. b. Elytra.

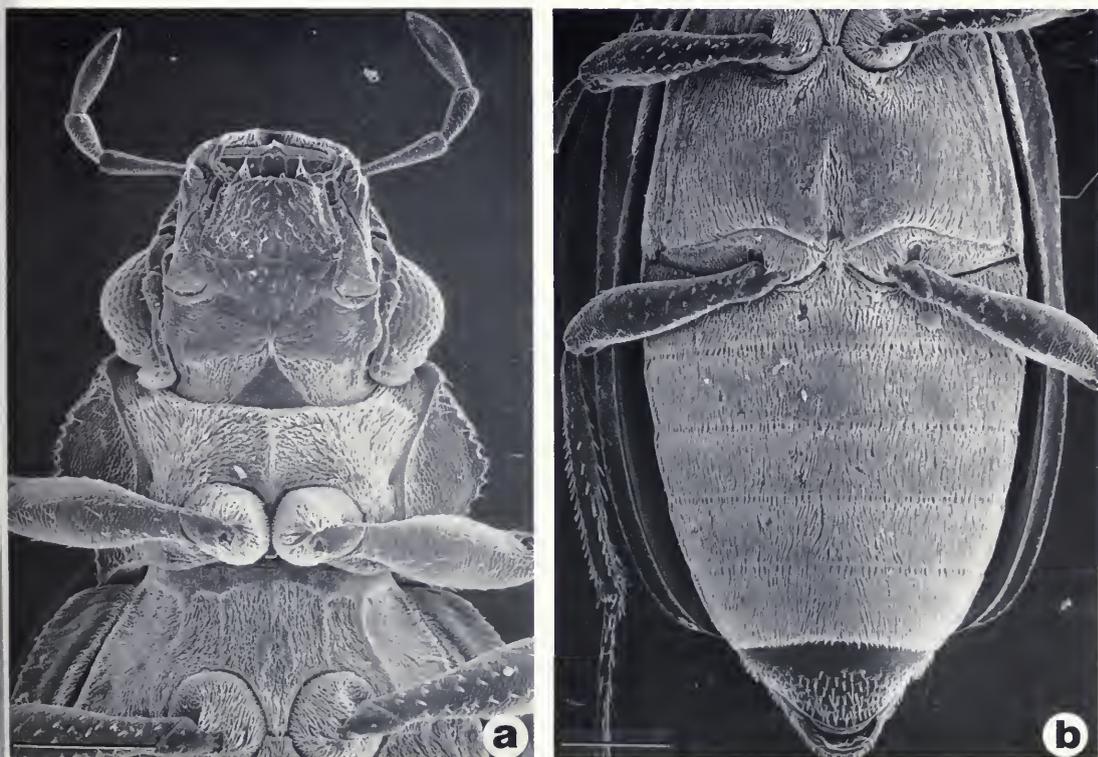


FIG. 43. *Parasthetops nigrinus*, female. a. Venter of head, prosternum, mesosternum. b. Metasternum and abdomen. Scale lines = 200 μ m.

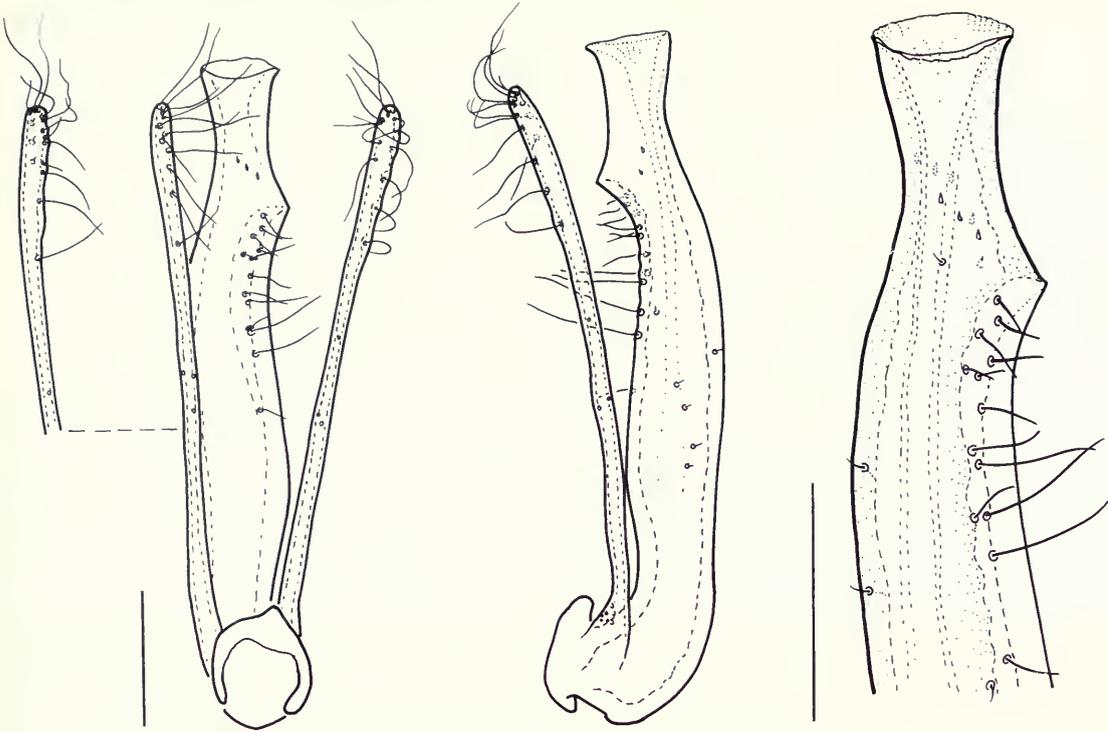


FIG. 44. *Parasthetops nigrinus*, aedeagus of holotype. Scale lines = 0.1 mm.

tenuate to rectangular basal angles. Anterior margin shallowly arcuate over median 0.75, without hyaline border. Foveae as follows: anterior median longitudinal sulcus and posterior rounded fovea

usually distinctly delimited, a small round anterior and larger oblique posterior admedian and large shallow anterior and small deep posterior adlateral fovea on each side; reliefs on disc shining and

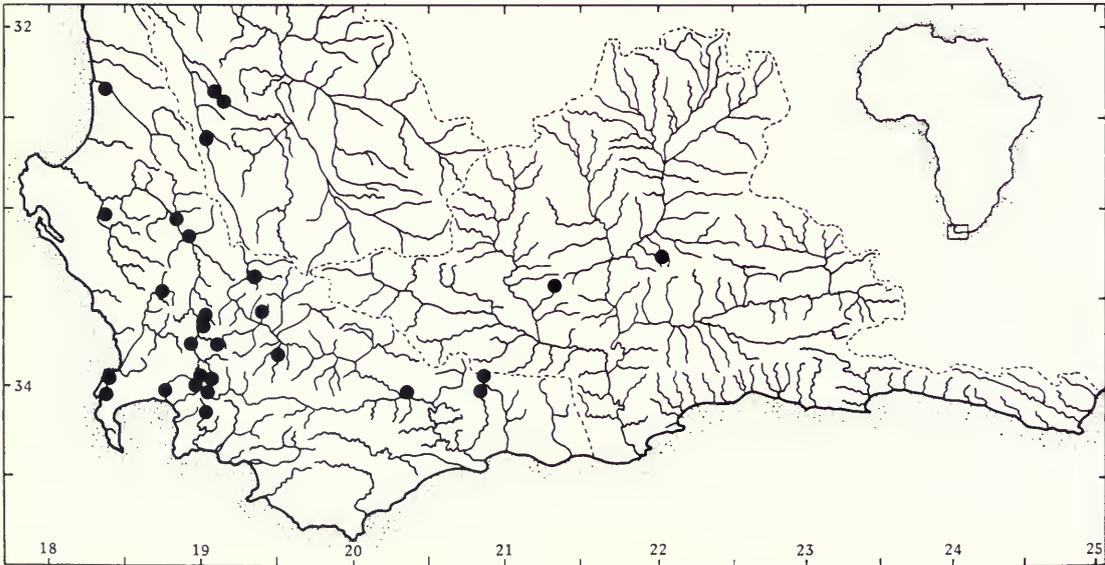


FIG. 45. *Parasthetops nigrinus*, geographical distribution.

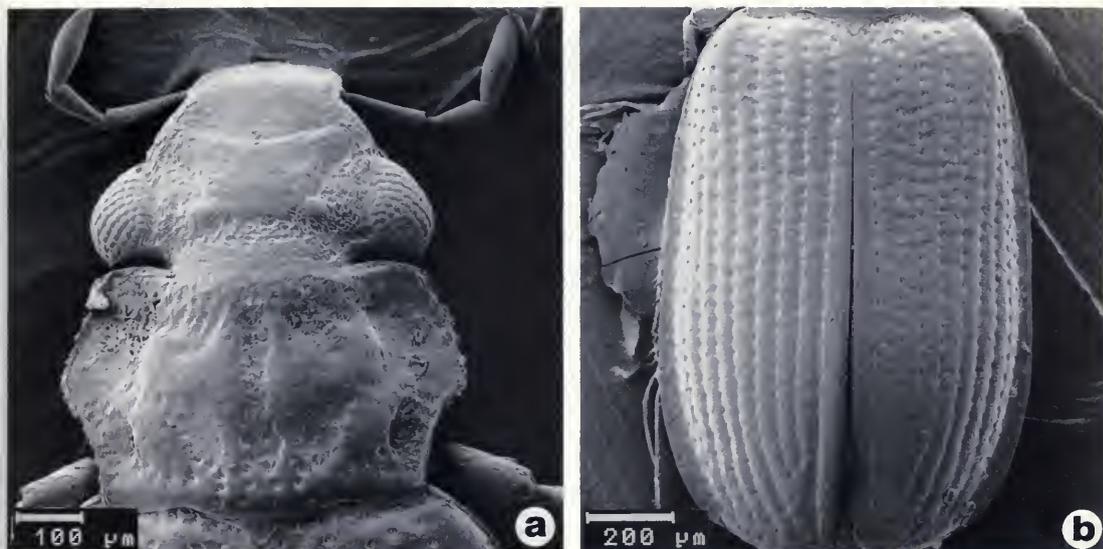


FIG. 46. *Parasthetops spinipes*, female. a. Head and pronotum. b. Elytra.

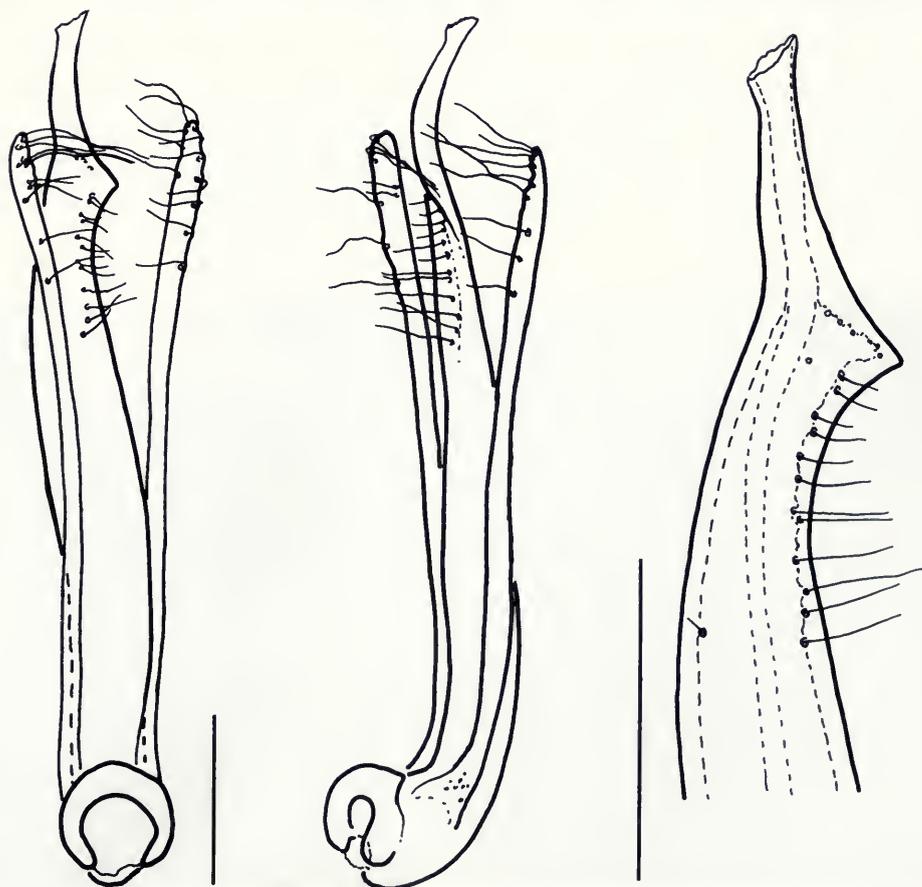


FIG. 47. *Parasthetops spinipes*, aedeagus of holotype. Scale lines = 0.1 mm.

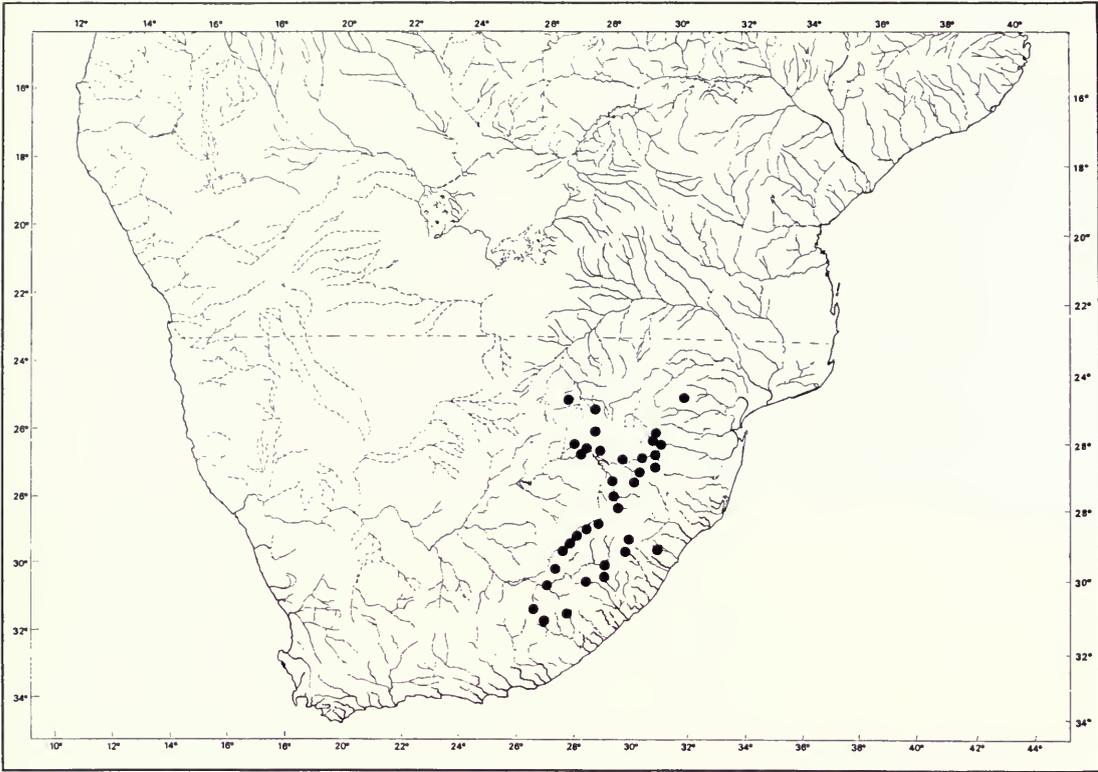


FIG. 48. *Parasthetops spinipes*, geographical distribution.

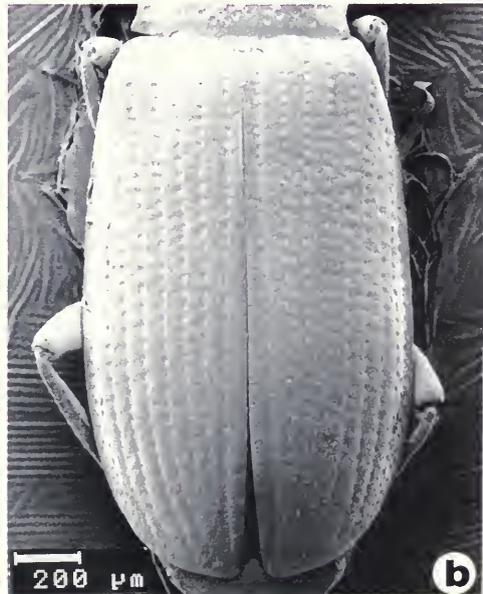
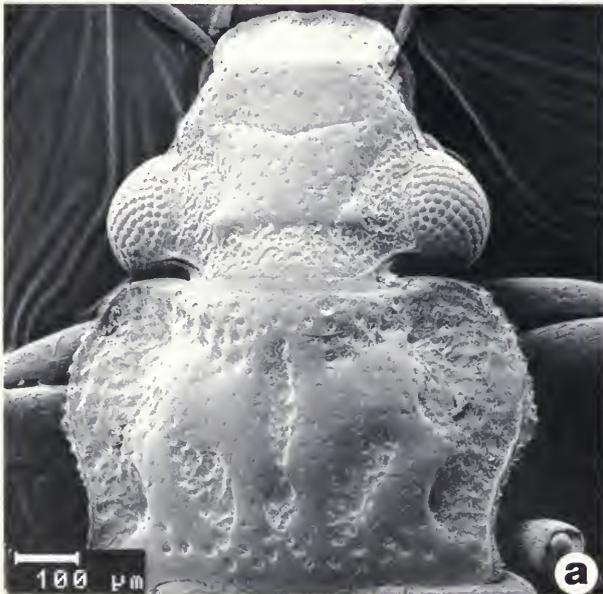


FIG. 49. *Parasthetops curidius*, male. a. Head and pronotum. b. Elytra.

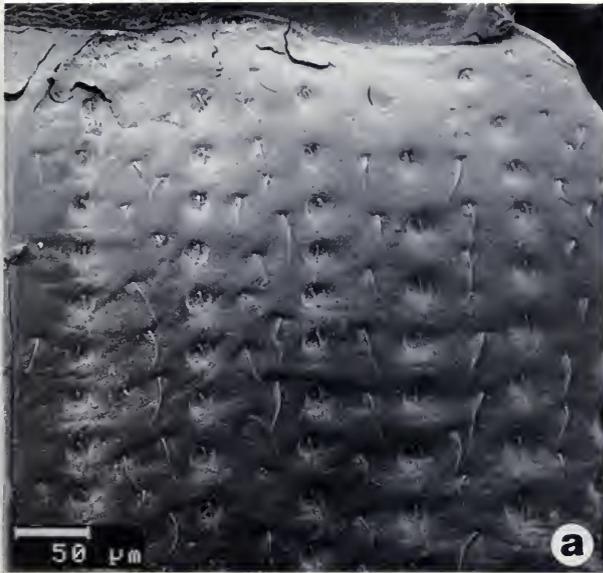


FIG. 50. a. *Parasthetops curidius*, base of right elytron. b. *Parasthetops nigrinus* male, venter of abdominal apex. To same scale.

sparingly finely punctulate-like frons disc, toward sides of disc an area of much larger and deeper and closer punctures is usually evident; sides finely crenellate and indistinctly margined. **ELYTRA:** Rather ovate, sides slightly rounded, not subparallel; external apical angle widely rounded to sutural apex. Ten-seriate punctate, only sutural series striate-impressed posteriorly; serial punctures

basally much larger than eye-facet and subcontiguous, distally decreasing in size and more separated; a minute granule formed at the anterior rim of the socket of each punctural seta, granules similar in size to those of intervals. Interval width basally on disc about 0.5–1 × puncture diameter, intervals becoming progressively wider until distally they are as wide or much wider than serial

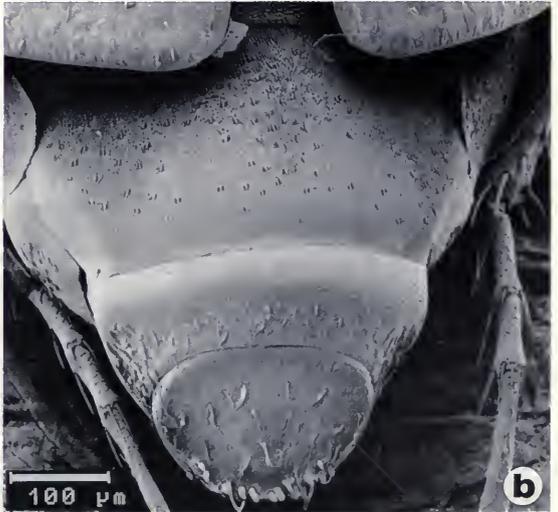


FIG. 51. *Parasthetops curidius*, dorsum of abdominal apex. a. Male. b. Female.

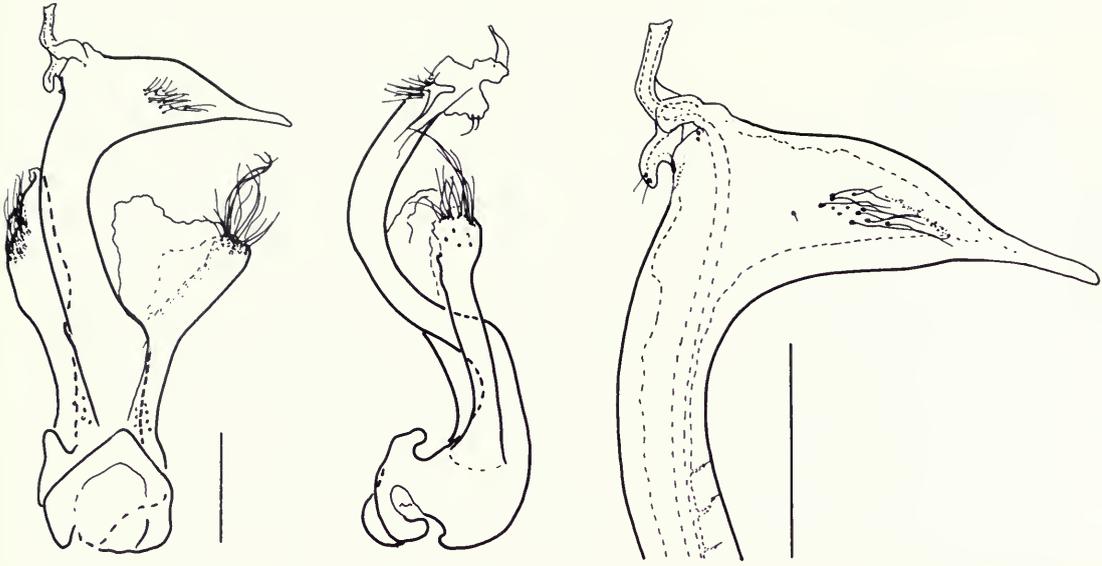


FIG. 52. *Parasthetops curidius*, aedeagus of holotype. Scale lines = 0.1 mm.

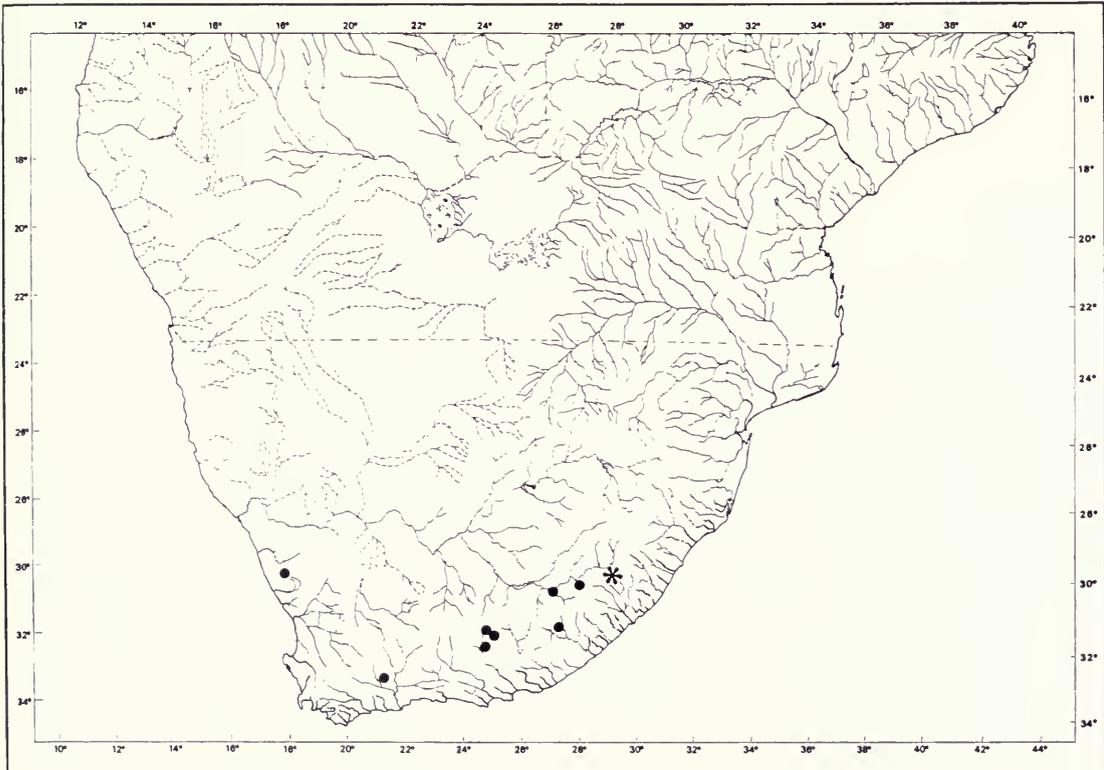


FIG. 53. Geographical distributions of *Parasthetops curidius* (●) and *Prosthetops grandiceps* (*).

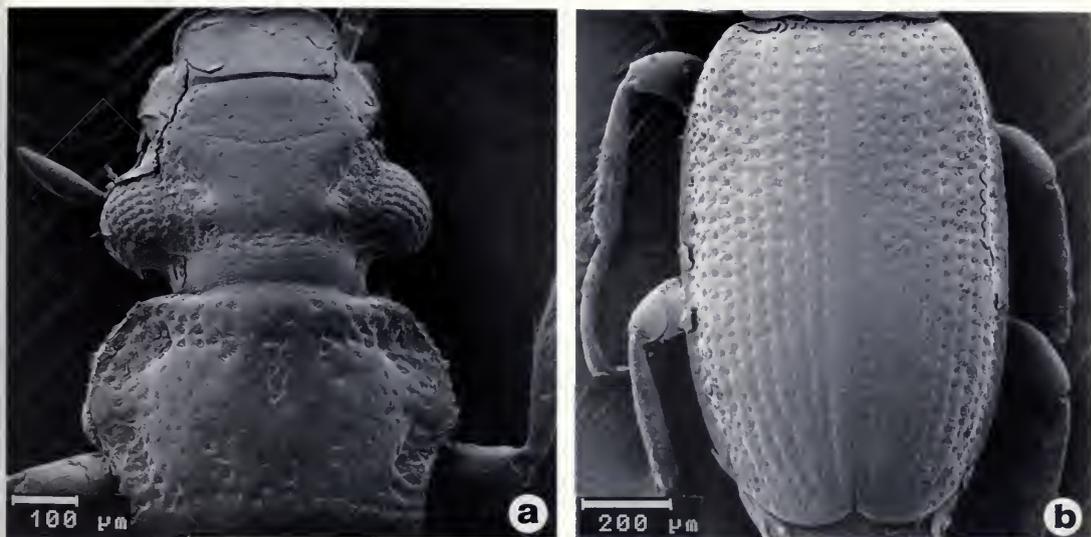


FIG. 54. *Parasthetops aeneus*. a. Head and pronotum. b. Elytra.

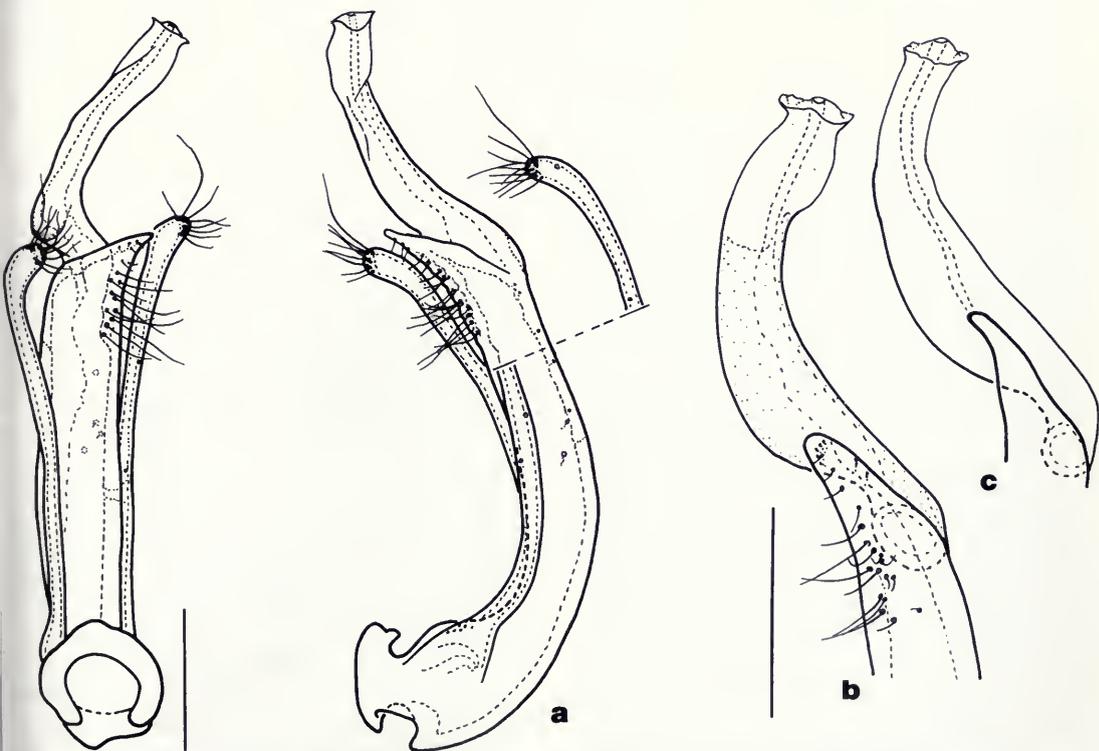


FIG. 55. *Parasthetops aeneus*, aedeagus. a-b. Holotype. c. Variant from Namibia, Naukluft. Scale lines = 0.1 mm.

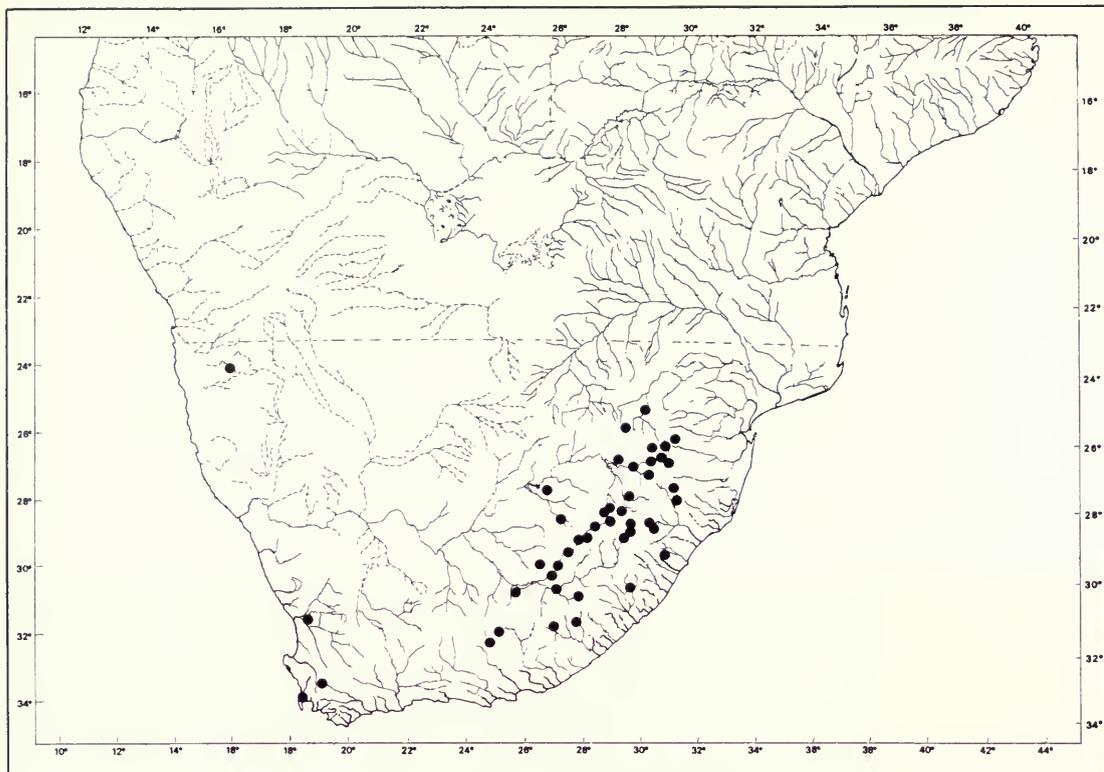


FIG. 56. *Parasthetops aeneus*, geographical distribution.

punctures; shining, virtually flat except 8th obsoletely raised in posterior in some specimens; each interval with unilinear row of widely spaced minute granules. **VENTER:** Mentum mcr., apparently impunctate. Submentum strongly shining, sparingly punctulate. Propleura shining and loosely mcr. Thoracic sterna and abdominal sterna 1–4 clothed with dense setae, except glabrous prosternal midlongitudinal ridge, glabrous dull mesosternal plaques, and glabrous strongly shining transverse band at base of metasternal disc. Sternum 1 with sublateral basal carina on each side. In male sternum 5 similarly clothed in proximal 0.5, glabrous and shining in distal 0.5; sternum 6 shining, median area with quite numerous large setiferous punctures, toward sides glabrous, shining; both 5th and 6th swollen. In female sternum 5 only glabrous in distal 0.25, sternum 6 with piliferous punctate area smaller and confined to subconical apical part of sternum. **LEGS:** Male apical protarsomere with simple, nonspiniform, setae. Male protibia widened subapically. Femora and tibiae effacedly mcr. **WINGS:** Fully developed. **AEDEAGUS:** TL 41 (figs. 71, 72).

ETYMOLOGY—Latin, *rubidum* (reddish), in reference to the dorsal coloration.

DISTRIBUTION—Transvaal Province and western Natal Province, South Africa (fig. 73).

DISCUSSION—If only superficial dorsal examination is used, individuals that lack an elytral carina might appear to belong in the genus *Parasthetops*. However, as in most other *Mesoceration*, the pronotum lacks an anterior hyaline border, the labrum has a narrow V-shaped apicomedian emargination, and the 5th sternum posteriorly is glabrous and shining (fig. 70). Some specimens have the carina apparent.

There is slight variation in the form of the aedeagus. An aedeagal variant is illustrated (fig. 71), from a specimen with the following data: Natal Province, Umkomaas River, Stn. 3, where crossed by the Himeville to Impendhle road, 29.37S–29.44E, 14.VI.1972.

PARATYPES (155)—**South Africa:** Same data as holotype (0/2 AMG). Natal Province: Umkomaas River, Stn. 3, where crossed by the Himeville to Impendhle road, 29.37S–29.44E, 14.VI.1972, (1/2 AMG). Transvaal Province: Vaal River System,

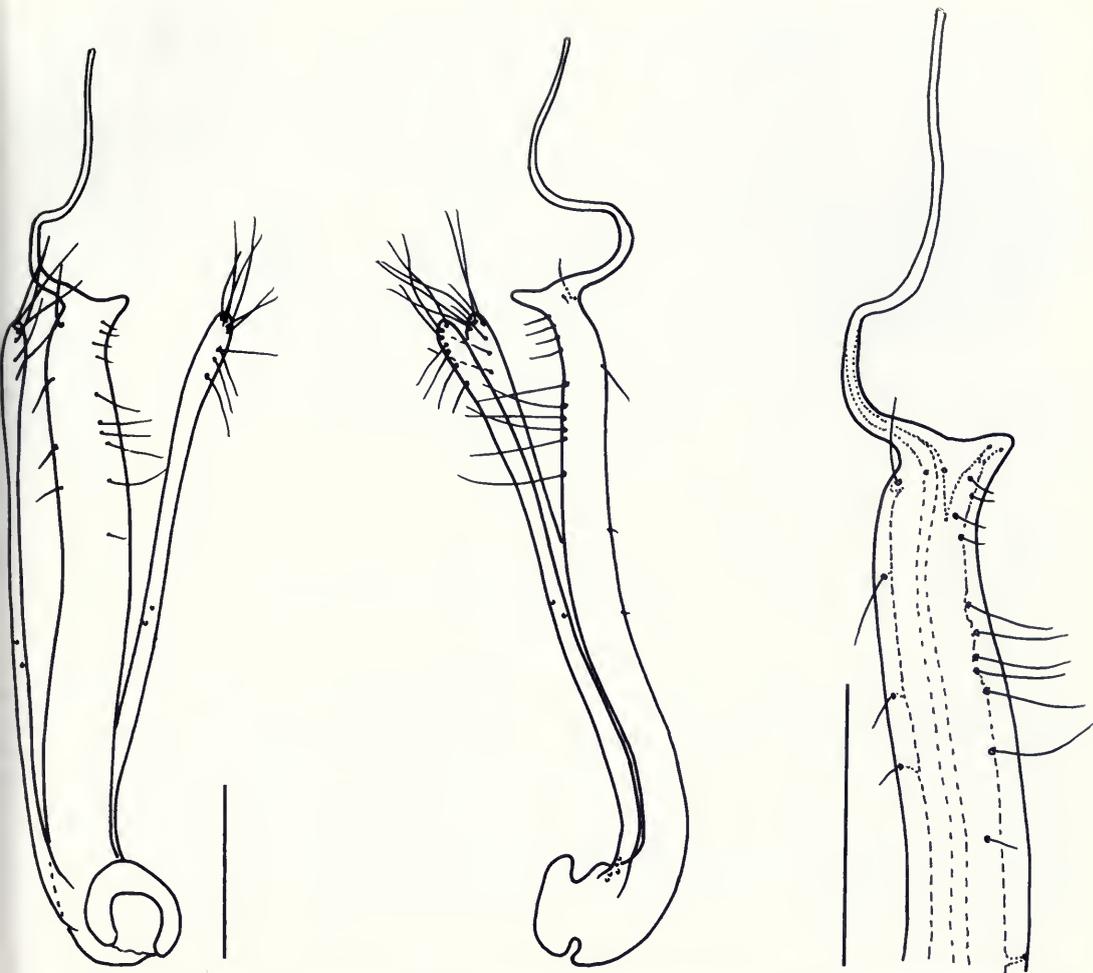


FIG. 57. *Parasthetops rufulus*, aedeagus of holotype. Scale lines = 0.1 mm.

(NIWR-VAL sites; AMG): stones in current, all months except IV and XII, 1958–1960: 26.21S–30.06E, (Stn. 2: 413AC, 667A, 1060B), 26.34S–30.12E, (Stn. 2A: 742J, 797B), 28.12S–29.34E, (Stn. 9: 562C), 26.48S–27.47E, (Stn. 10: 571S), 28.17S–29.07E, (Stn. 11: 563G), 27.16S–29.29E, (Stn. 13: 561G), 26.37S–29.51E, (Stn. 19: 1078F), 27.05S–30.06E, (Stn. 20: 753P, 830E, 877B, 1082C), 26.49S–30.08E, (Stn. 21: 737JJ–KK, 772E, 789B, 822D, 1047P, 1061K, 1080D), 27.25S–29.21E, (Stn. 31: 617C), 28.26S–28.22E, (Stn. 43: 585G), (36/67 AMG); marginal vegetation, V, VIII, X, XI, 1958–1961: 26.34S–30.12E, (Stn. 2A: 735M), 28.12S–29.34E, (Stn. 9: 554L), 27.48S–28.46E, (Stn. 12: 471JL), 27.05S–30.06E, (Stn. 20: 1082C), 28.16S–28.51E, (Stn. 39: 1339T), (1/5 AMG); bottom, (734D), 21.VII.1959, (2/2 AMG);

bottom, 26.21S–30.06E, (Stn. 2), 2.VI.1960, (1/0 AMG). Transvaal Prov., Middleburg, Cycas fm., 25.31S–29.16E, river stones, 19.XI.1985, Endrödy-Younga (#2266), (3/4 TMP). Transvaal Prov., Nelshoogte gallery for. below St., 25.51S–30.53E, river stones, 2.XII.1986, Endrödy-Younga (#2342), (19 TMP). As above, in rapid, 3.XII.1986, Endrödy-Younga (#2347), (2 TMP). S. Transvaal, Roberts Drift, Vaal R., 27.02S–29.02E, sifted, flood debris, 8.X.1973, Endrödy-Younga (#190), (5 TMP). East O. F. S., Golden Gate, camp, 28.33S–28.38E, shore washing, 7.XII.1977, Endrödy-Younga (#1412), (3 TMP).

ADDITIONAL MATERIAL—Natal Province: Bushman's River, Stn. B4, rocky run, (BUS 11Q2), 19.IX.1953, (2/1 AMG). Transvaal Province: Vaal River System, (NIWR-VAL sites; AMG): stones in

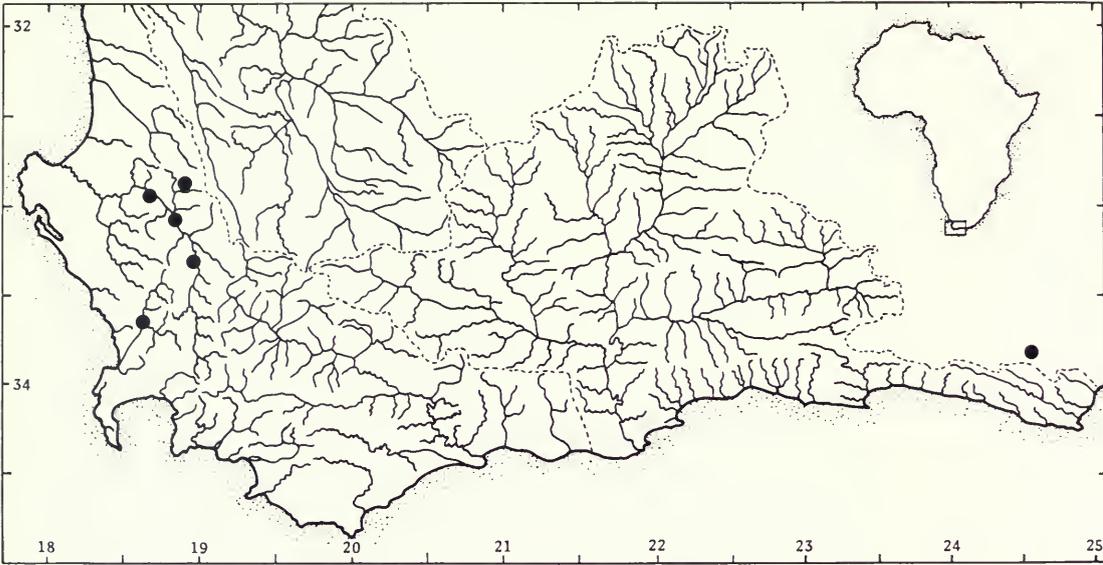


FIG. 58. *Parasthetops rufulus*, geographical distribution.

current, V, VII, VIII, X, 1960: 26.34S–30.12E, (Stn. 2A: 1231B), 26.59S–28.44E, (Stn. 5A: 1230E), 26.37S–29.51E, (Stn. 19: 1155F), 26.49S–30.08E, (Stn. 21: 1225A, 1247D), 27.01S–30.09E, (Stn. 21A: 1234E, 1236C), (15/21 AMG); bottom, 27.01S–30.09E, (Stn. 21A: 1180A), 2.VI.1960, (1/0 AMG); vegetation in current, 26.49S–30.08E, (Stn. 21: 1225A), 20.VII.1960, (0/1 AMG); moss on rocks,

26.49S–30.08E, (Stn. 21: 1298B), 18.X.1960, (5/4 AMG). Sadelboom, stones in current, 25.52S–28.53E, (GEN 99C), 16.V.1956, (0/3 AMG). Bridal Veil, stones in current, 25.05S–30.44E (GEN 141P), 8.VII.1959, (0/1 AMG). Suid Kaap Rivier, marginal vegetation, 25.44S–30.59E, (GEN 145J), 6.VII.1959, (0/1 AMG). Chol Stn., stones in current, (GEN 749S), 3.III.1962, (2/0 AMG). Olifants-

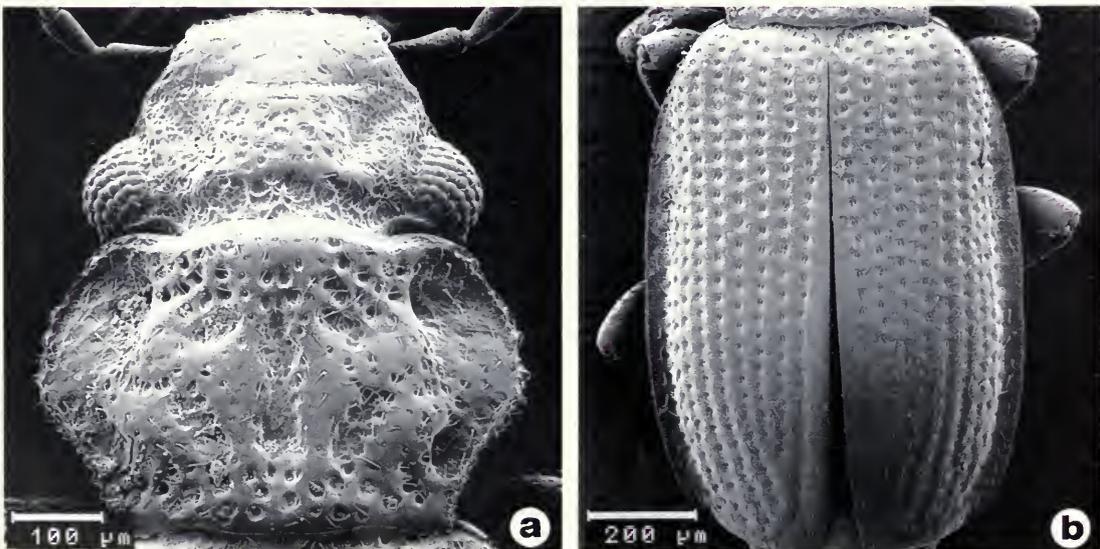


FIG. 59. *Parasthetops camurus*. a. Head and pronotum. b. Elytra, female.

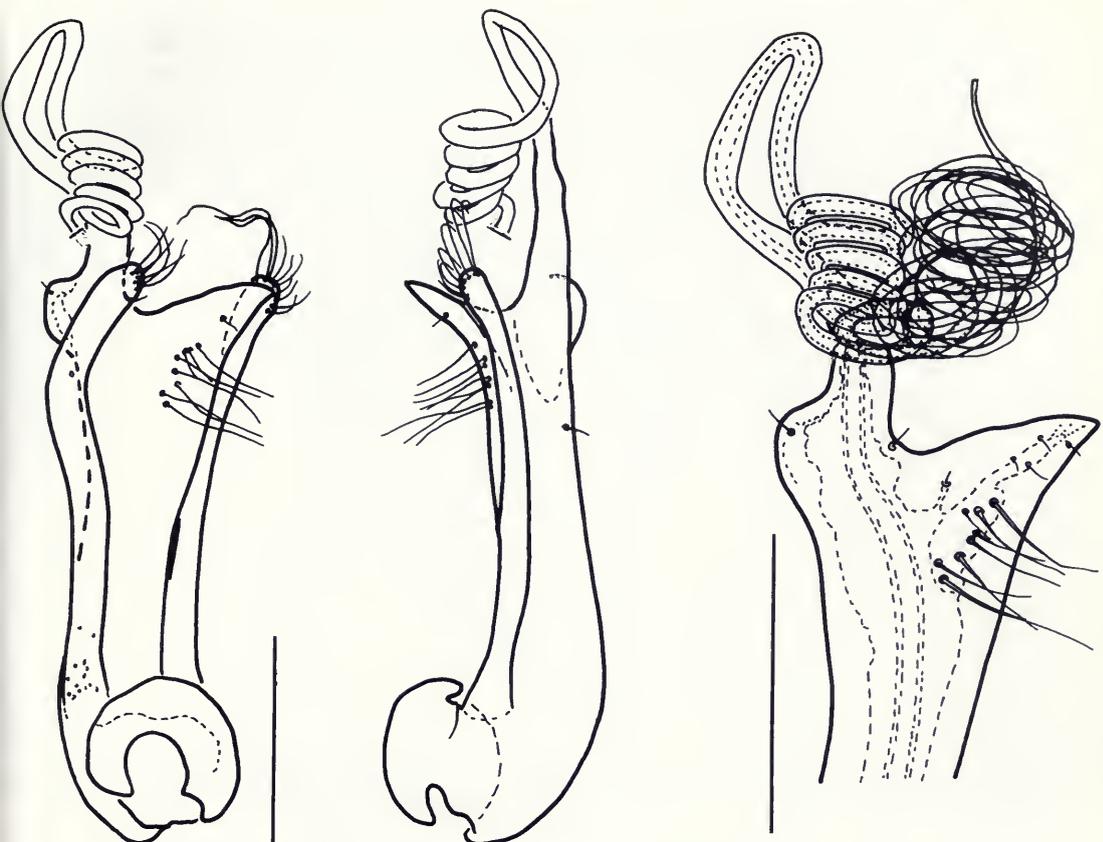


FIG. 60. *Parasthetops camurus*, aedeagus of holotype. Scale lines = 0.1 mm.

Klip River System, (NIWR-OKS sites): stones in current, all months except I, II, IV, XI, 1959–1960: 25.51S–28.52E, (Stn. 1: 61M, 82A, 95Q, 107U), 25.52S–28.53E, (Stn. 2: 11X, 22U, 45L, 96G, 108N), (6/9 AMG); marginal vegetation, V, VI, XI, 1959: 25.52S–28.53E, (Stn. 2: 2Vi, 10W, 44R), (1/4 AMG).

***Mesoceration fusciceps* new species**

Figures 74, 79

HOLOTYPE—Male, South Africa: Cape Province, Paarl District, Middle Berg River, Wellington, Lady Lock bridge, 33.37S–18.59E, stones in current, (GBG Stn. 12: 520M), 14.II.1952; deposited in AMG.

DIAGNOSIS—Distinguished from other members of the *rubidum* group by the combination of granulate elytral intervals, the strongly developed elytral carina, and the parallel-sided (or nearly so)

elytra that are not markedly convex at summit of posterior declivity.

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 168:106:68; HW:PL:PW 40:40:50. **COLOR**: Head and pronotal disc black or piceous; sides of pronotum, sides of elytra, maxillary palpi and legs rufo-testaceous; venter rufescent. **HEAD**: Labrum quite distinctly alutaceous, impunctate. Clypeus obsolete alutaceous, sparingly finely punctate. Frons on disc strongly shining, distinctly punctate, punctures distinctly smaller than eye-facet, interstices c. 1 × pd; oblique lateral furrows distinct but quite shallow, rugosely alutaceous, meshes markedly impressed. Ocelli distinct. **PRONOTUM**: Subcordate, widest before middle, from widest point to rectangular posterior angles sinuate; sides crenulate, anterior angles widely rounded; anterior margin shallowly arcuate over median 0.75, without hyaline border. Disc with a median longitudinal sulcus interrupted behind middle and deeply foveate after interruption; adlateral foveae

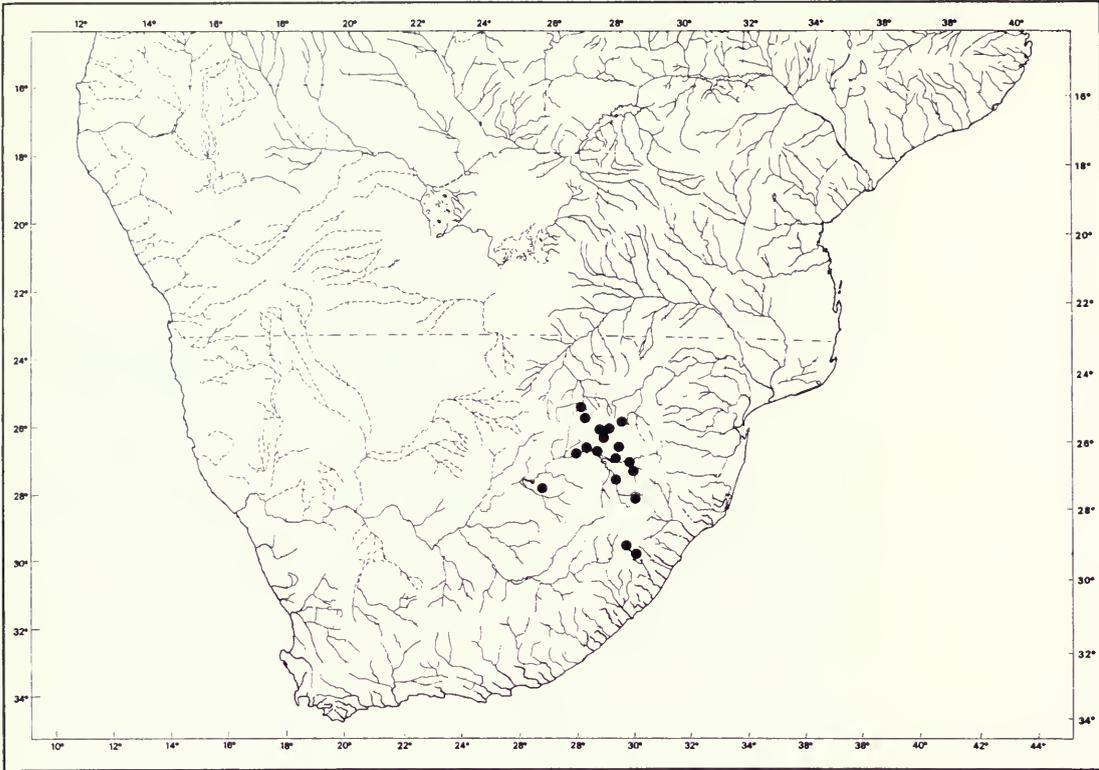


FIG. 61. *Parasthetops camurus*, geographical distribution.

shallow, anterior rounded, posterior elongate-oval; adlateral foveae shallow and indistinct; reliefs shining and distinctly punctate, punctures c. $1 \times ef$, slightly larger and deeper anteriorly and posteriorly, interstices $0.5-2 \times pd$; foveae finely but distinctly mcr. **ELYTRA**: Widest at about middle, sides subparallel; apices in male truncate, sutural angle rectangular and external apical angle widely rounded, in female apices more roundly truncate. Serial punctures barely striate-impressed, basally larger and closer together, distally progressively smaller and less impressed; seven series between suture and carina, 6th interval discrete to base; a minute granule formed at the anterior rim of the socket of each punctural seta, granules similar in size to those of intervals. Intervals flat, shining, except 8th, which is elevated as a distinct but low longitudinal costa from shoulder to shortly before apex; intervals on disc about $1-2 \times$ puncture diameter; each interval with unilinear row of widely spaced minute granules. **VENTER**: Mentum finely alutaceous, impunctate, submentum shining, sparingly punctate. Genae transversely finely corrugated. Thoracic sterna and abdominal sterna 1-

4 clothed with dense short setae, except glabrous midlongitudinal area (relatively wide and slightly raised) of prosternum, glabrous dull mesosternal plaques, and glabrous shining very narrow transverse band at base of metasternal disc. Metasternal disc moderately concave. Sternum 1 with sublateral and submedial basal carina on each side. Sternum 5 similarly clothed in basal 0.5, glabrous and shining in distal 0.5. Sternum 6 shining, posterior margin shallowly emarginate (males) or roundly produced (females). **LEGS**: Male apical protarsomere with two spiniform setae. Femora moderately thickened in both sexes. Femora and tibiae effacedly mcr. **WINGS**: Fully developed. **AEDEAGUS**: TL 44 (fig. 74).

ETYMOLOGY—Latin, *fusciceps* (dark head), in reference to the dorsal coloration of the head.

DISTRIBUTION—South Africa, the western Cape Region (fig. 79).

PARATYPES (76)—**South Africa**: Cape Province: Same data as holotype, (7/7 AMG). As above, marginal vegetation, 14.IX.1951, (GBG Stn. 12: 348B), (0/1 AMG). Klein Berg River (tributary of Middle Berg River), 33.13S-18.58E, marginal vegetation,

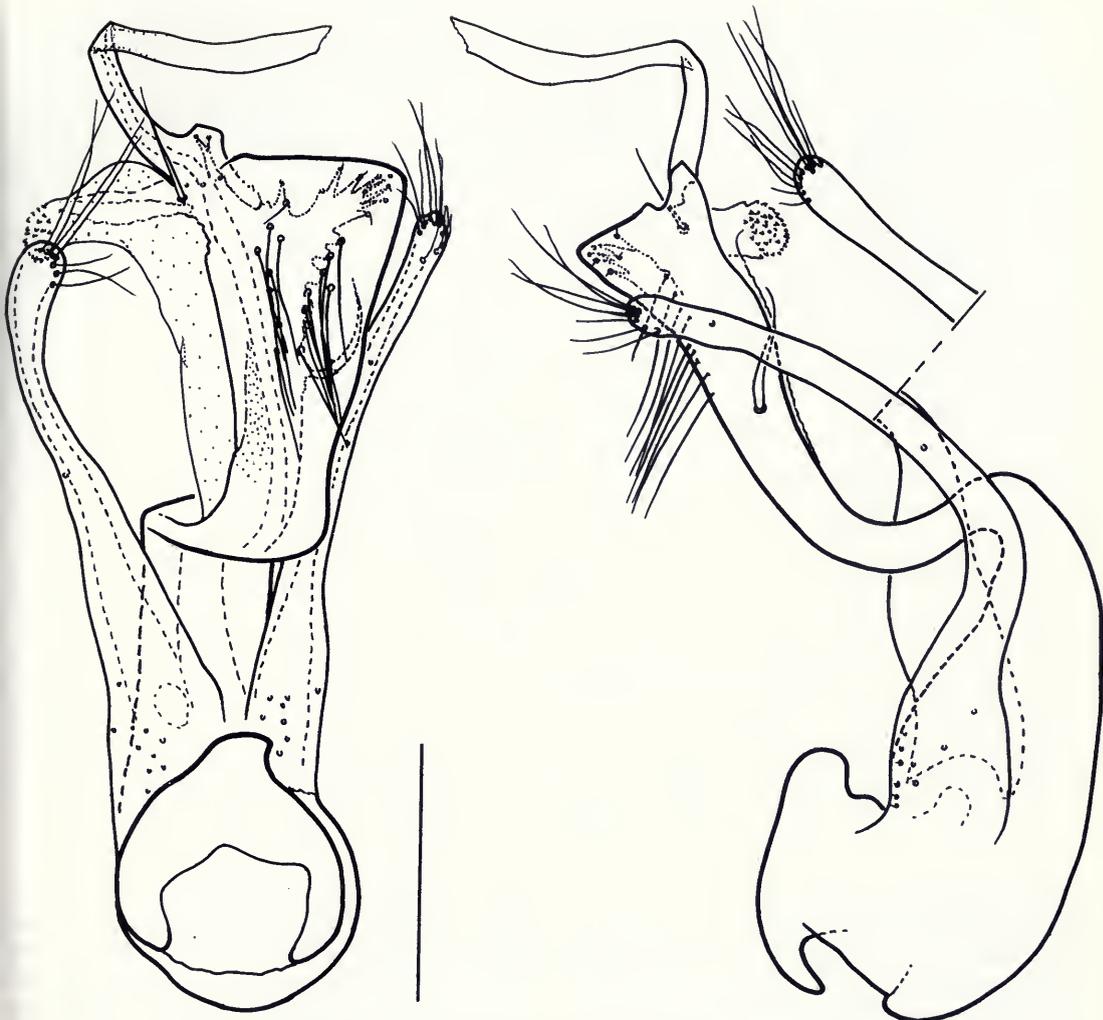


FIG. 62. *Parasthetops reflexus*, aedeagus of holotype. Scale line = 0.1 mm.

26.IV.1951, (GBG Stn. 15: 243A), (1/4 AMG). Farm, Sanddrift, 32.54S–18.53E, marginal vegetation, 25.IV.1951, (GBG Stn. 19: 237F), (1/4 AMG). Piquetberg, National Road bridge, 32.58S–18.44E, stones in current, 28.IV.1952, (GBG Stn. 18: 568N), (2/0 AMG). As above, 28.V.1952, (GBG 581B), (1/0 AMG). Lower Berg River, Bridgetown, 33.06S–18.51E, marginal vegetation, 30.VIII.1951, (GBG Stn. 16: 343A), (0/1 AMG). As above, SB, 28.XII.1951, (GBG 477A), (0/2 AMG). Kuils River at ford, 33.04S–18.50E, stones in current, 11.X.1950, (GBG Stn. 17: 108G), (3/1 AMG). Cape-Cedarberg, Olifants R., Boshof, 32.20S–18.59E, shore washing, 20.VIII.1983, Endrödy-Younga, Penrith (#1951), (17 TMP). As above, river stones,

20.VIII.1983, Endrödy-Younga, Penrith (#1952), (28 TMP).

***Mesoceration transvaalense* Janssens**

Figures 71, 75, 76

Mesoceration transvaalense Janssens, 1971: 142 (n. sp., desc., fig.).

HOLOTYPE—Female, South Africa: E. Transvaal, Gladdespruit (affluent of Crocodile River), c. 25.27S–30.58E; deposited in ISNB.

DIAGNOSIS—Distinguished from other members of the *rubidum* group by the combination of

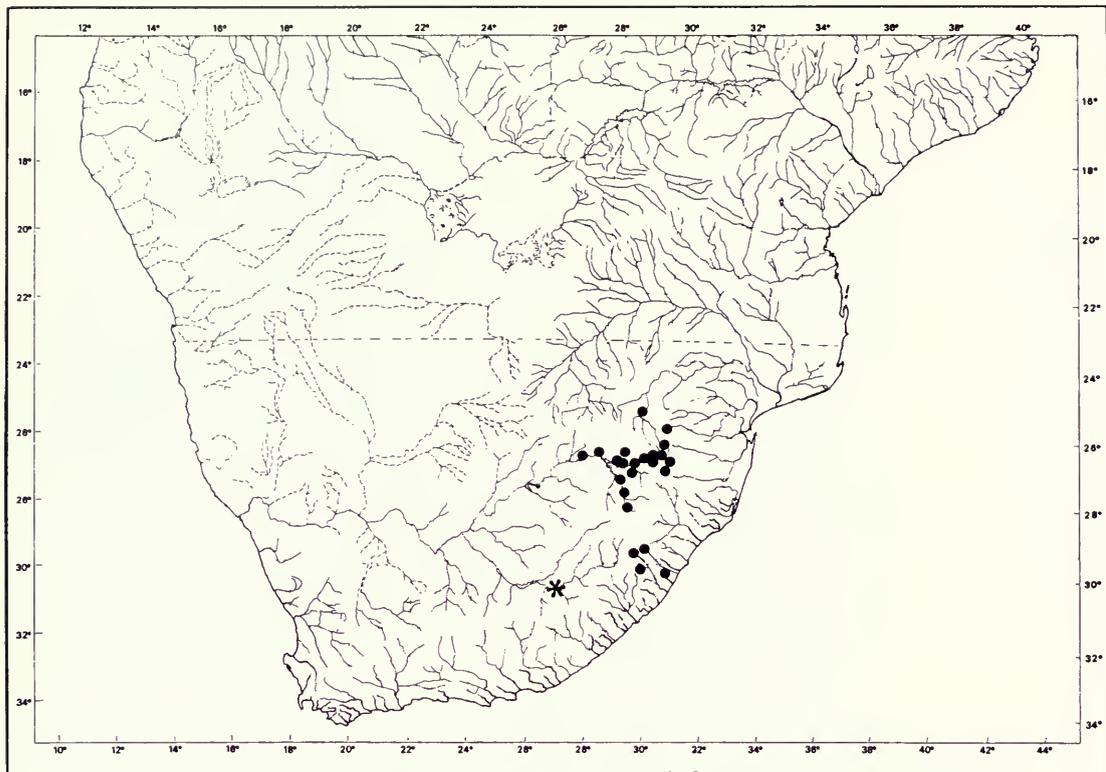


FIG. 63. Geographical distributions of *Parasthetops reflexus* (●) and *Parasthetops andreaei* (*).

the unilinearly granulate elytral intervals, the relatively strongly developed elytral carina, which ends beyond level of summit of elytral declivity, the ovate elytra, which are very convex at summit of posterior declivity, evenly strongly transversely arcuate from suture to margin, and the rather large body size (TL:EW c. 180:74).

DESCRIPTION—SIZE (mm × 100): Holotype TL: EL:EW 180:110:74; HW:PL:PW 44:42:56. **COLOR:** Rufo-testaceous, to rufo-brunneous; legs, maxillary palpi, and sides of pronotum lighter; disc of head darker. **HEAD:** Labrum apicomediaally narrowly angulately emarginate up to 0.5 labrum length, lobes barely margined and quite distinctly mcr. Clypeus shining at middle but mcr. at sides, finely but quite distinctly punctate. Frons shining and distinctly punctate on disc but rather more sparingly than clypeus, punctures c. 0.5 × ef, interstices 1–2 × pd; antecellar furrows rather broad and shallow, not attaining sides in front of eye, quite dull, minutely rugose-reticulate; area between furrow and eye rugose punctate. Ocelli distinct. **PRONOTUM:** Obcordate, widest just in front of middle, from widest point roundly atten-

uate to obtuse anterior angles, from widest point distinctly sinuately attenuate to rectangular basal angles. Anterior margin shallowly arcuate over median 0.70, without hyaline border. Discal reliefs shining, finely sparsely punctate like frons. Depressions mcr. and punctate, punctures varying in size, largest 3–4 × ef. Anterior median longitudinal sulcus and posterior rounded fovea distinctly delimited, round anterior and larger deeper oblique posterior admedian and large shallow anterior and small deep posterior adlateral fovea on each side. Sides finely crenulate. **ELYTRA:** Ovate, sides distinctly rounded; apices separately obliquely subtruncate, slightly less oblique in males. Series very weakly or not at all striate-impressed. Serial punctures on disc 1 × largest pronotal punctures, much larger than eye-facet and subcontiguous, distally decreasing in size and more separated; a minute granule formed at anterior rim of socket of each punctural seta, granules similar in size to those of intervals. Interval width on disc about 1–2 × puncture diameter, moderately shining, each interval with unilinear row of widely spaced, minute setigerous punctures, anterior rim of each puncture

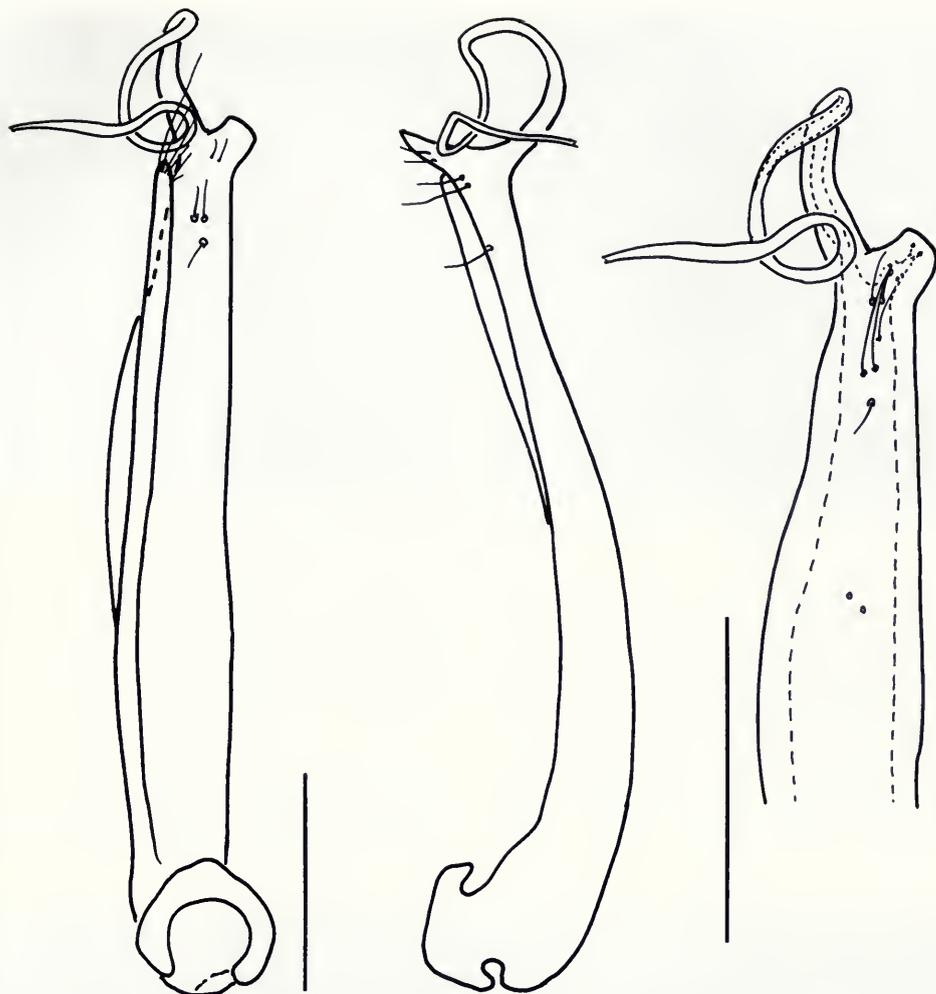


FIG. 64. *Parasthetops andreaei*, aedeagus of holotype. Scale lines = 0.1 mm.

raised in form of minute granule that is more developed than the puncture; 2nd interval sometimes with sparse random granules basally. **VENTER:** Mentum and submentum finely mcr., dull. Thoracic sterna and abdominal sterna 1-4 clothed with dense short setae, except glabrous midlongitudinal area (relatively wide and slightly raised) of prosternum, glabrous dull mesosternal plaques, and glabrous highly shining very narrow transverse band at base of metasternum. Metasternal disc moderately concave. Sternum 1 with sublateral and submedial basal carina on each side. Sternum 5 similarly clothed in proximal 0.5, glabrous and shining in distal 0.5. Sternum 6 shining, posterior margin shallowly emarginate (males) or roundly produced (females). **LEGS:** Male apical

protarsomere with two spiniform setae. Femora moderately thickened in both sexes. Femora and tibiae effacedly mcr. **WINGS:** Fully developed. **AEDEAGUS:** TL 56 (fig. 75).

DISTRIBUTION—South Africa, eastern Transvaal Province (fig. 76).

DISCUSSION—The illustration of the holotype given in the original description is misleading in that (1) the elytra are drawn too small compared to the size of the pronotum (PW:EL ratios of the specimen are about 56:110, not 56:93 as figured); (2) the club antennomeres are connate like the antennae of other members of the genus, not loosely articulate as illustrated; and (3) the elytral carina of the 8th interval is well developed on the specimen.

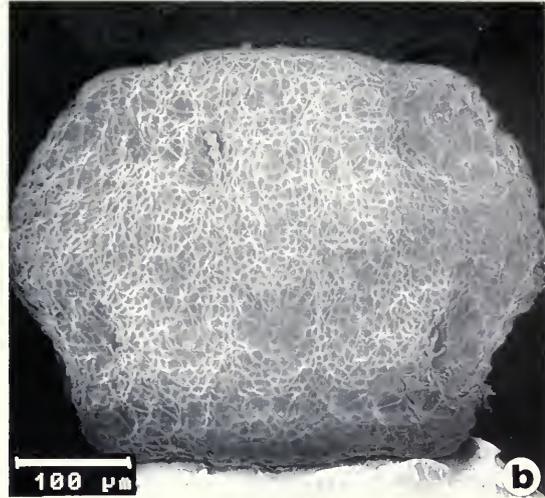
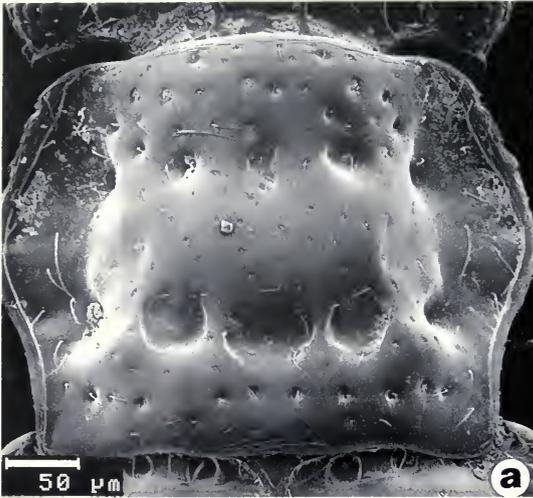


FIG. 65. *Mesoceration*, pronota. a. *M. rivulare*. b. *M. endroedyi*.

MATERIAL EXAMINED—South Africa: E. Transvaal, Welkom for. farm, 25.00S–30.53E, river stones, 7.XI.1980, Endrödy-Younga (#1725), (6 TMP). Transvaal, Nelshoogte, Knuckles rocks for., 25.47S–30.50E, intercept trap 66d, 4.XII.1986, Endrödy-Younga (#2351), (0/1 TMP). Transvaal, Uitsoek, Grootkloof ind. for., 25.15S–30.33E, water collection, 14.XII.1986, Endrödy-Younga (#2387), (1/2 TMP). E. Transvaal, junction to Ber-

lin FR, 25.32S–30.43E, water collection, 5.II.1987, Endrödy-Younga (#2420), (2/1 TMP). E. Transvaal, Berlin, 1200 m, 25.33S–30.43E, river stones, 11.XII.1986, Endrödy-Younga (#2376), (24 TMP).

Mesoceration rivulare Species Group

Recognized by the pronotal reliefs strongly shining and finely sparsely punctulate, the elytra with-

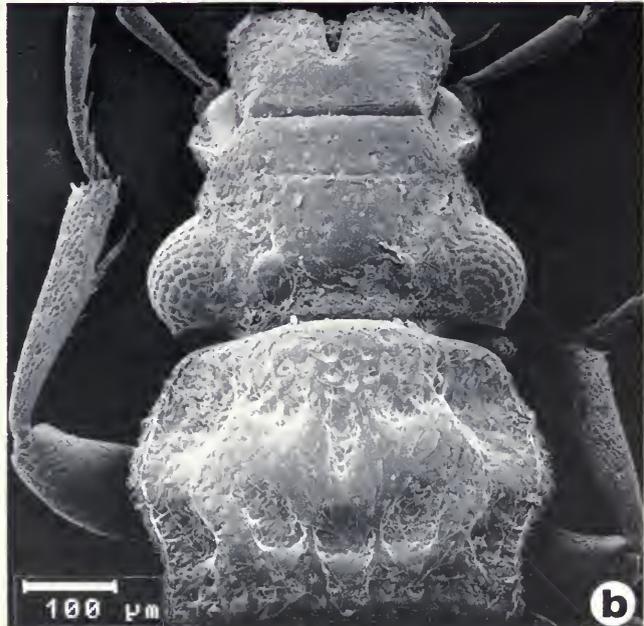


FIG. 66. *Mesoceration distinctum*. a. Dorsum. b. Head and pronotum.

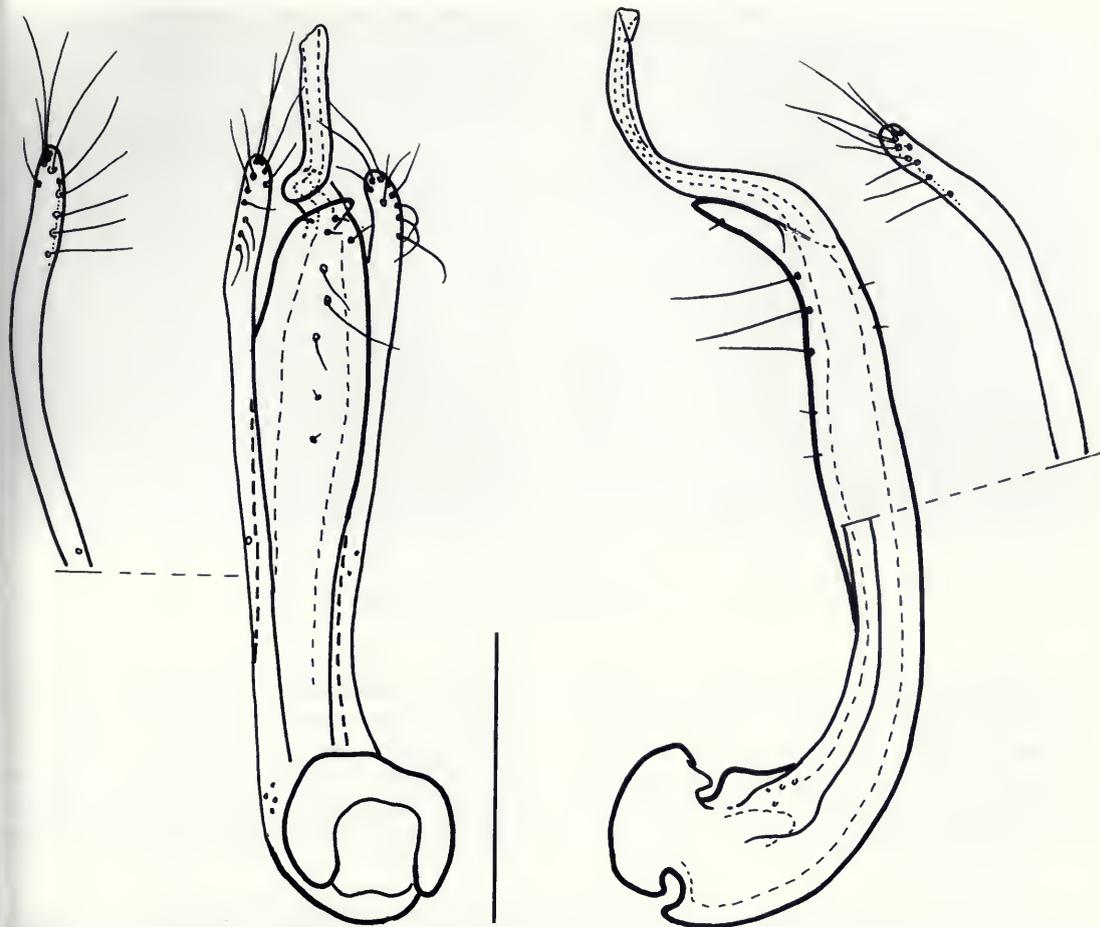


FIG. 67. *Mesoceration distinctum*, aedeagus of holotype. Scale line = 0.1 mm.

out granules, the posteriorly confluent 1st and 2nd elytral series, and the elytral disc with six series of punctures between the suture and the carina (5th and 6th series confluent basally).

***Mesoceration rivulare* new species**

Figures 7g, 16a, 65a, 77, 78, 79b

HOLOTYPE—Male, South Africa: Cape Province, Great Berg River, Franschhoek Forest Reserve, 1 mi above Assegaibos main stream, 33.59S–19.03E, stones in current, 30.X.1950, A. D. Harrison, (GBG Stn. 1: 116B); deposited in AMG.

DIAGNOSIS—Members of this very smooth, shining, and attractive species are distinguished from other members of the *rivulare* group by the elytral epipleuron attaining the sutural apices, the elytral series 1–2 confluent before summit of pos-

terior declivity (fig. 16a), the pronotal anteromedian fovea only slightly larger than each anteroadmedian fovea (figs. 65a, 77), the frons tumid, much more finely sparsely punctate than clypeus, the 5th sternum, in both sexes, with shining area transversely subrectangulate, and the 5th sternum, in males, with a small rounded papilla on each side of the midline near the distal margin.

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 164:104:64; HW:PL:PW 38:36:42. **COLOR**: Castaneous, head and pronotum infuscate, black or piceous, strongly shining; maxillary palpi piceo-testaceous; legs infuscate; venter piceous. **HEAD**: Ocelli distinct, piceo-castaneous. Labrum finely mcr., impunctate. Frons and clypeus finely, the former sparsely, the latter more closely punctulate, interstices c. 3–4 × pd on frons, 2 × pd on clypeus; strongly shining. Antecellar sulci deep, mcr. Maxillary palpomeres 2–4 ratio of lengths as

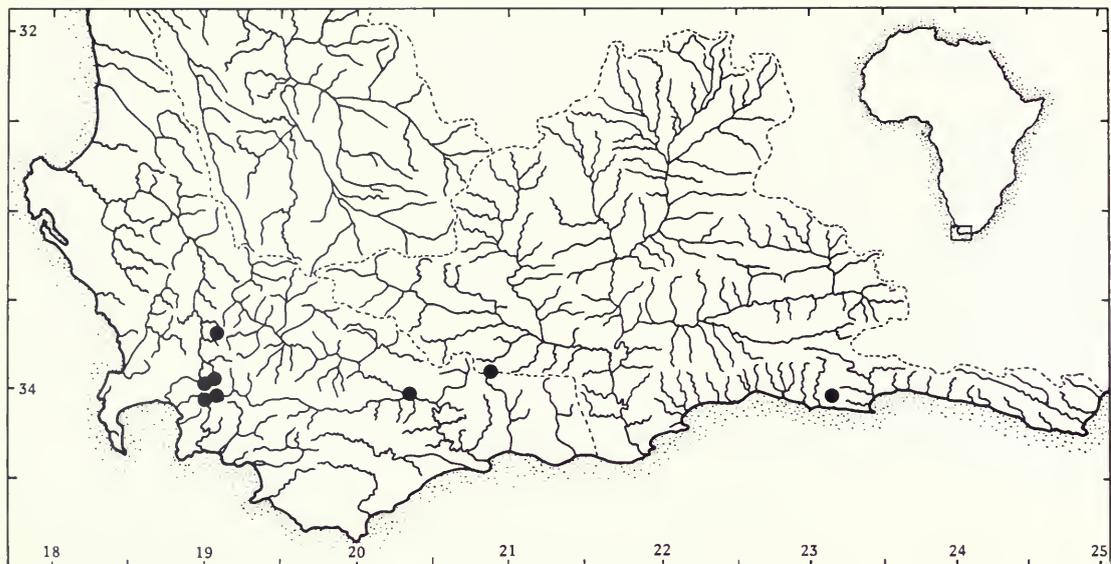


FIG. 68. *Mesoceration distinctum*, geographical distribution.

3:2:4. **PRONOTUM:** Cordate, widest just in front of middle, anterior margin shallowly arcuate over median 0.65, without hyaline border; anterior angles obsolete, posterior angles sharply rectangular; feebly convex, strongly shining, extremely finely and sparingly punctulate; with 10 distinct foveae

as follows: two in middle line, anterior elongate, posterior round, subequal anterior, and posterior admedian and a large, shallow anterior and small deep posterior sublateral, impressions strongly shining; sides finely margined, feebly crenulate. **ELYTRA:** Elongate-oval; apices truncate-rounded



FIG. 69. *Mesoceration rubidum*. a. Dorsum. b. Dorsum, oblique view.

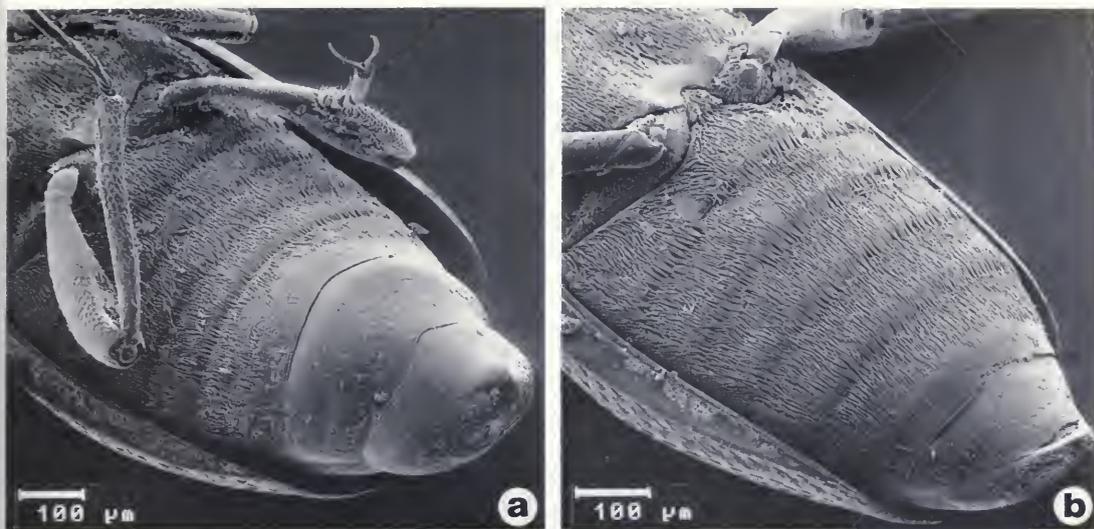


FIG. 70. *Mesoceration rubidum*, abdomen. a. Male. b. Female.

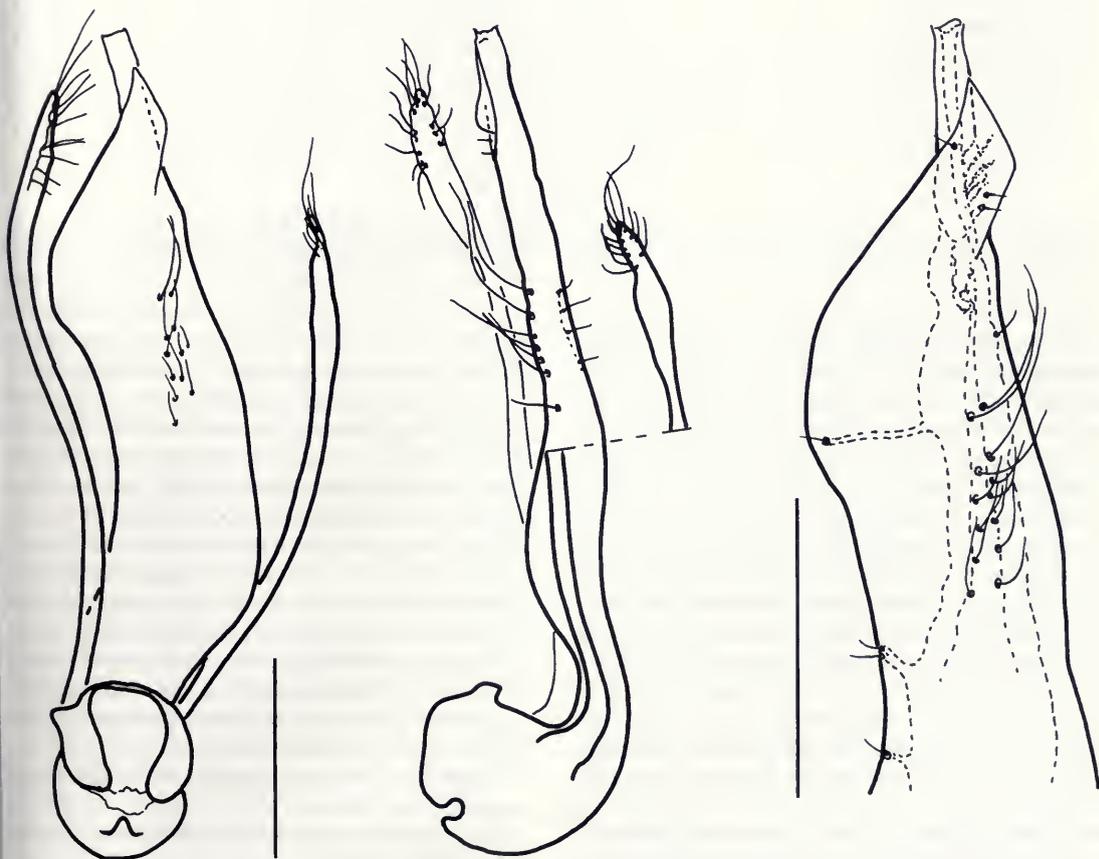


FIG. 71. *Mesoceration rubidum*, aedeagus of holotype. Scale lines = 0.1 mm.

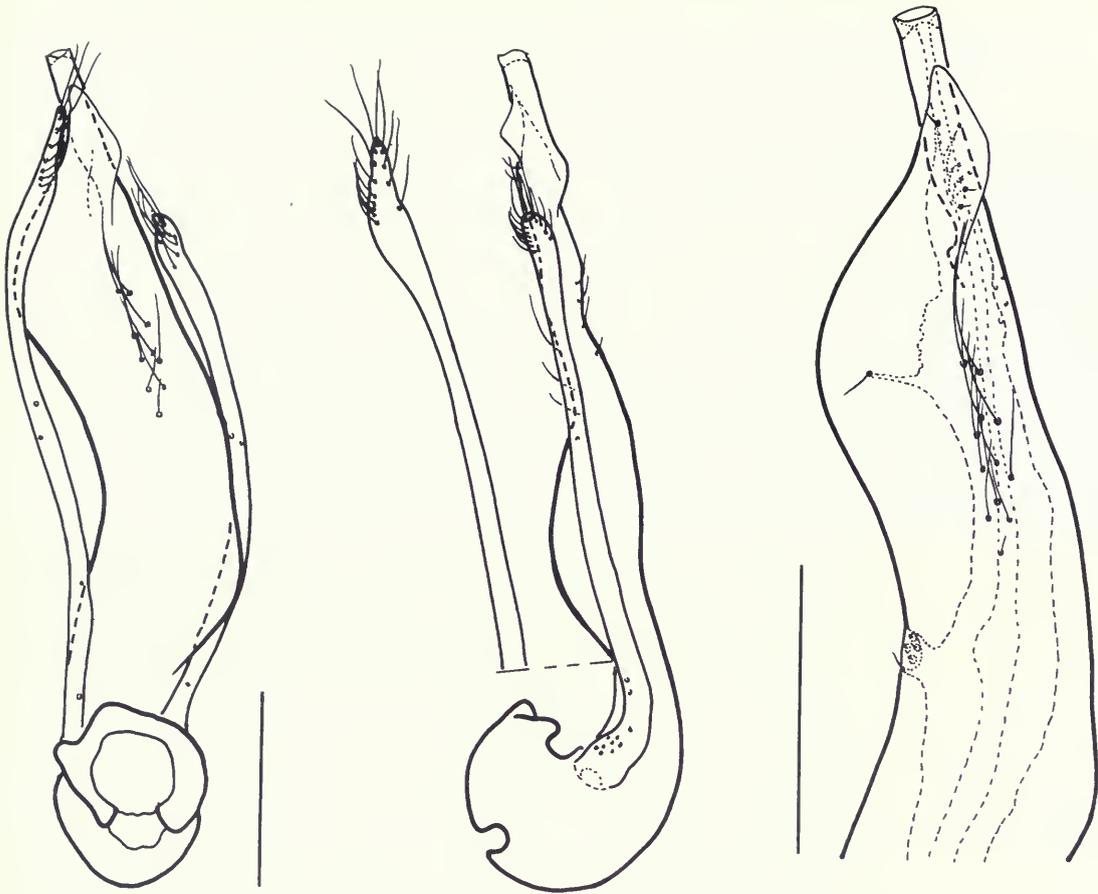


FIG. 72. *Mesocercaria rubidum*, aedeagal variant from Natal Province, Umkomaas River. Scale lines = 0.1 mm.

in male, broadly rounded in female; sutural apices rectangular, not excised nor denticulate; at base barely wider than base of pronotum, humeral angles widely rounded, sides quite smooth, distinctly explanate over most of length. Elytral epipleuron attaining sutural apices. Series not at all striate-impressed in male, feebly so in female; 1st and 2nd series confluent well before summit of posterior declivity; 5th and 6th confluent in basal 0.25. Each elytron at base slightly depressed and with transverse row of three very large punctures, each puncture much larger than largest punctures at base of pronotum, c. 4–5× size of largest punctures on elytral disc. Serial punctures fine on disc, posteriorly becoming finer and more distant; on disc punctures c. 1×ef, interstices 3–4×pd; punctures of series 1–2 less widely spaced longitudinally; cuticle very gradually sloping to punctures, therefore apparent size will vary according to light source. Intervals flat, intensely shining, 3–4×pd on disc.

8th interval strongly costate from shoulder almost to apex, steeper internally. **VENTER:** Mentum mcr. Thoracic sterna and abdominal sterna 1–4 and base of 5 densely clothed with short setae, except glabrous prosternal midlongitudinal ridge, glabrous dull mesosternal plaques, and glabrous strongly shining triangular basomedial area on metasternum. Mesosternal plaques contiguous, conjointly forming inverted V-shape. Sternum 1 with sublateral basal carina on each side. Median 0.33 of 5th sternum distally and 6th sternum wholly glabrous, shining. **LEGS:** Male apical protarsomere with three spiniform setae. Femora shining, tibiae alutaceous. **WINGS:** Fully developed. **AEDEAGUS:** TL 28 (fig. 78).

ETYMOLOGY—Latin, *rivulare* (of a brook), in reference to the habitat.

DISTRIBUTION—South Africa, the western Cape Region (fig. 79b).

DISCUSSION—The elytra, compared to the width

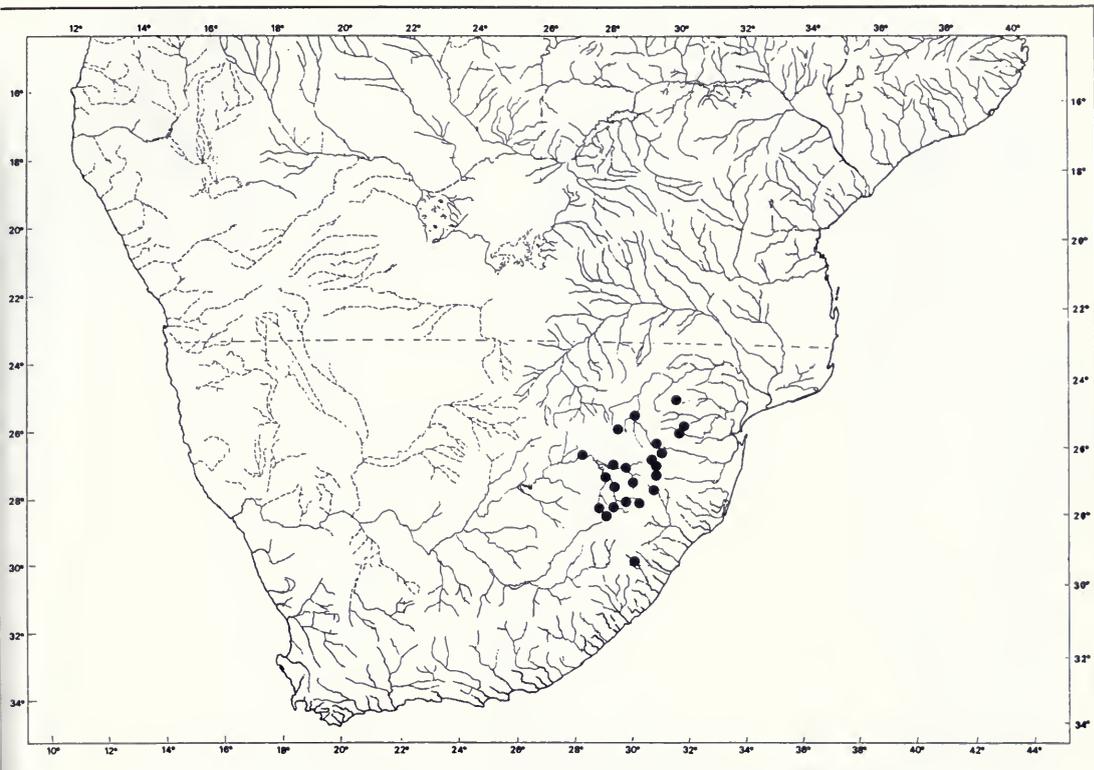


FIG. 73. *Mesoceration rubidum*, geographical distribution.

of the pronotum, are slightly larger in specimens of *rivulare* than in specimens of the other two species of the *rivulare* Group (PW:EL:EW): *rivulare* 42:104:64; *jucundum* 38:94:60; *splendorum* 42:100:62.

In females there is a curious asymmetry of the elytra. The left elytron is slightly longer than the right, and has the explanate margin slightly wider near its posterior extreme.

PARATYPES (208)—**South Africa:** Cape Province: S.W. Cape Mts., Hawequas SE, 1100 m, 33.41S–19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (143 TMP). W. Cape, Dwarsberge, 34.02S–19.01E, river stones, 15.XI.1973, Endrödy-Younga (#256), (1 TMP). W. Cape, Hawequas, 33.34S–19.08E, shore washing, 10.XI.1973, Endrödy-Younga (#226), (1 TMP). W. Cape, Cederberg Pass, 32.23S–19.06E, from river bed, 2.IX.1979, Endrödy-Younga (#1829), (6 TMP). Cape, Cederberg, Eikenboom, 900 m, 32.27S–19.10E, river stones, 29.X.1981, Endrödy-Younga (#1906), (8 TMP). W. Cape, Cederberg Pass, 32.23S–19.06E, from river bed, 2.IX.1979, Endrödy-Younga (#1829), (2 TMP). S.W. Cape, Hawequas

rad. tower, 33.41S–19.06E, shore washing, 27.X.1978, Endrödy-Younga (#1484), (7 TMP). S.W. Cape, Nuweberg For. Sta., 34.03S–19.04E, river stones, 14.XI.1973, Endrödy-Younga (#247), (16 TMP). Cape Province, Assegaibos stream (cold trib. of Great Berg River), 33.58S–19.04E, ex. dead leaves and detritus under stones, 24.V.1950, (GBG Stn. 2: 6X), (3 AMG). As above, stones in current, 30.X.1950, (GBG Stn. 2: 134H), (1 AMG). As above, 24.XI.1950, (GBG Stn. 2: 145D), (13 AMG). Great Berg River system, Lower Forest Reserve, Driefontein Bridge, 33.55S–19.03E, stones in current, 30.X.1950, (GBG Stn. 3: 130B), (1 AMG). Stellenbosch District, Fransch Hoek, Great Berg River, at roots of sedge in current, c. 33.55S–19.08E, 4.III.1954, J. Balfour-Browne, (2/4 BMNH).

***Mesoceration jucundum* new species**

Figures 4, 80, 81

HOLOTYPE—Male, South Africa: Cape Province (western), Cape District, Du Toit's Kloof, 33.43S–19.11E, under stones in tiny spring and among

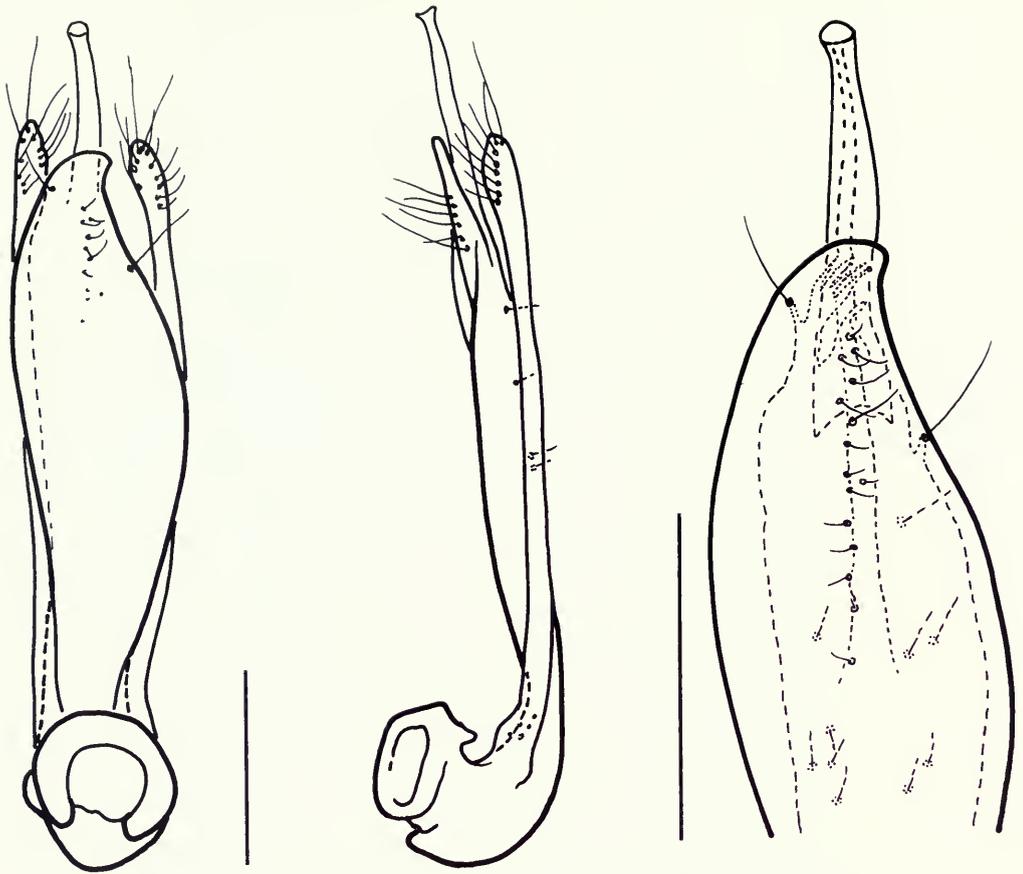


FIG. 74. *Mesoceration fusciceps*, aedeagus of holotype. Scale lines = 0.1 mm.

algae in bottom gravel, 22.XI.1949, B. Malkin; deposited in BMNH.

DIAGNOSIS—Distinguished from other members of the *rivulare* group by the elytral series 1–2 confluent beyond summit of posterior declivity in both sexes, the elytral apices, in males, conjointly rather broadly rounded, in females, obliquely subtruncate, the elytral series 1, in females, weakly striate-impressed and with punctures at least as large as largest punctures at base of pronotum, and the aedeagal form (fig. 80). In combination, and shared with *splendorum*, the elytral epipleuron ended at or only slightly beyond posterolateral angle, not attaining sutural angle, the pronotal anteromedian fovea 2–3× size of anteroadmedian foveae, attaining midlength of pronotum, the frons not tumid, with punctures only slightly smaller than clypeal punctures, and the 5th sternum with shining area sublunate, normal in both sexes.

DESCRIPTION—**SIZE** (mm × 100): Holotype TL:

EL:EW 148:94:60; HW:PL:PW 36:32:38. **COLOR**: Flavo-testaceous, head and pronotum piceous, strongly shining, legs testaceous. Maxillary palpi testaceous, distomere somewhat infuscate. **HEAD**: Ocelli distinct, testaceous. Labrum impunctate, minutely mcr. Frons and clypeus finely, not closely, punctulate, interstices 3–4×pd, punctures much smaller than eye-facet, interstices shining. Oblique sublateral impressions of frons well marked, finely mcr. Maxillary palpomeres 2–4 ratio of lengths as 11:8:15. **PRONOTUM**: Cordate, widest at anterior 0.33; anterior margin shallowly arcuate over median 0.65, without hyaline border; anterior angles rounded, posterior angles almost rectangular; feebly convex, strongly shining, very finely and sparsely punctulate; with 10 distinct foveae as follows: two in middle line, anterior elongate and quite deep, posterior round and quite shallow, one small round anterior and one large oval posterior admedian on each side and one large moderately shallow and one small deep pos-

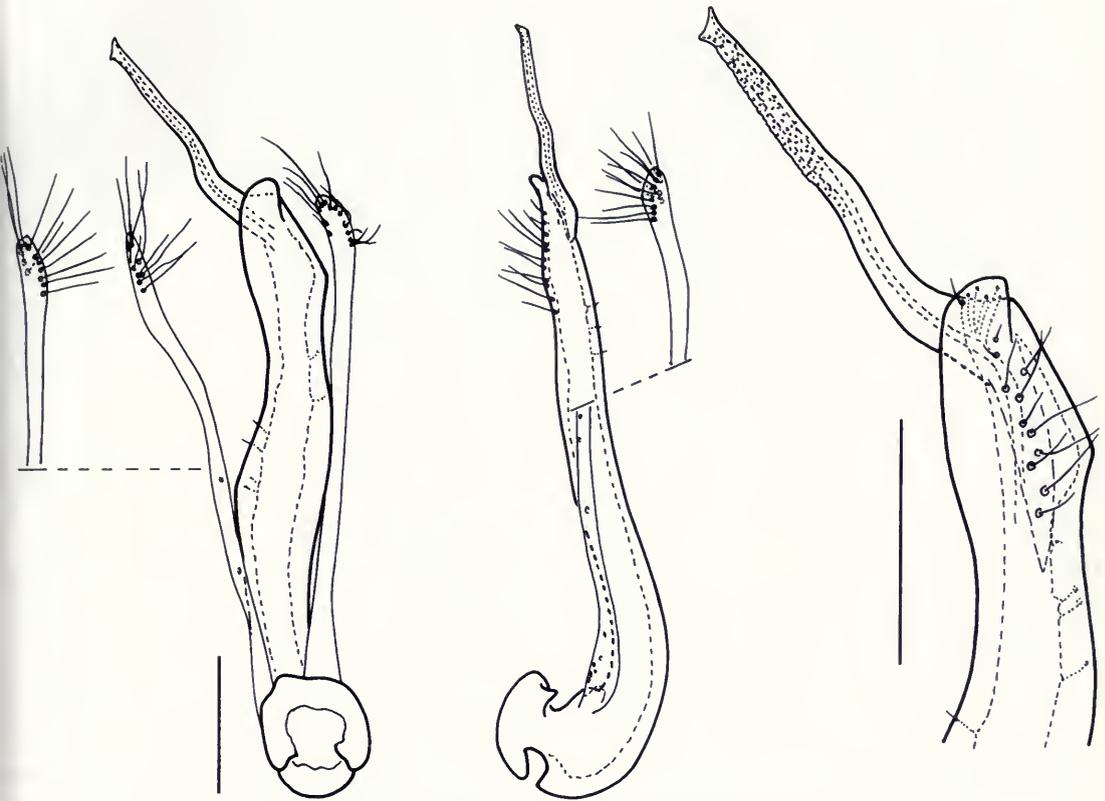


FIG. 75. *Mesoceration transvaalense*, aedeagus of holotype. Scale lines = 0.1 mm.

terior sublateral, all minutely reticulate; sides finely margined, feebly crenulate. **ELYTRA:** Elongate-oval; apices conjointly rather broadly rounded, sutural angle subacute, not excised nor denticulate; base slightly wider than base of pronotum; humeral angles rounded; sides smooth, not at all crenulate, feebly explanate over median 0.6. Each elytron at base slightly depressed and with transverse row of three large punctures, each c. $1 \times pd$ of largest on pronotal base and elytral disc. Serial punctures larger on disc, becoming smaller posteriorly, discal punctures c. $1.5-2 \times ef$, interstices, c. $1 \times pd$, not at all striate-impressed in male, very feebly so in female. Series 1-2 confluent at or behind posterior declivity in both sexes, punctures of each slightly smaller and more closely longitudinally spaced than other series. Series 1 in basal 0.25, in females, with punctures larger than largest punctures at base of pronotum. Series 5-6 confluent in basal 0.25. Intervals flat except 8th, c. $2-3 \times pd$ on disc, strongly shining in male, less so in female; 8th interval sharply costate from shoulder almost to apex, the costa steeper on internal side.

VENTER: Mentum mcr. with a few sharp punctures. Submentum strongly shining, sparsely punctate. Remainder of ventral portion of head glabrous except for narrow band of pubescence immediately behind gular suture. Thoracic sterna and abdominal sterna 1-4 entirely clothed with dense short setae, except glabrous prosternal mid-longitudinal ridge, glabrous dull mesosternal plaques, and glabrous strongly shining with subtriangular area at base of metasternal disc. Sternum 1 with sublateral basal carina on each side. Base of 5th sternum similarly clothed, apex of 5th and all of 6th entirely glabrous, shining. **LEGS:** Male apical protarsomere with two spiniform setae. Femora shining, tibiae alutaceous. **WINGS:** Fully developed. **AEDEAGUS:** TL 26 (fig. 80).

ETYMOLOGY—Latin, *jucundum* (agreeable, pleasant), in reference to the attractively shining dorsum.

DISTRIBUTION—South Africa, the western and central Cape Region (fig. 81).

PARATYPES (112)—**South Africa:** Cape Province: Same data as holotype, (7 BMNH). S.W. Cape

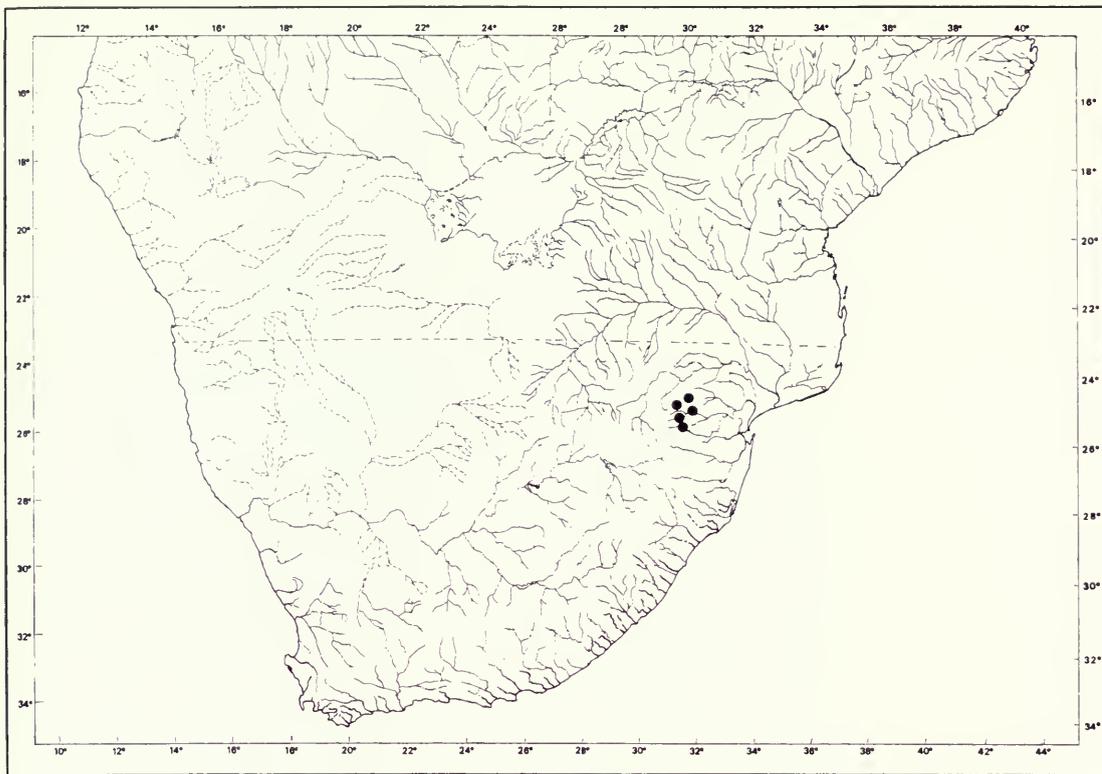


FIG. 76. *Mesoceration transvaalense*, geographical distribution.

Mts., Hawequas SE, 1100 m, 33.41S–19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (72 TMP). S.W. Cape, Hawaquas rad. tower, 33.41S–19.06E, shore washing, 27.X.1978, En-

drödy-Younga (#1484), (3 TMP). Cape, Cederberg, Eikenboom, 900 m, 32.27S–19.10E, river stones, 29.X.1981, Endrödy-Younga (#1906), (1 TMP). W. Cape, Cederberg Pass, 32.23S–19.06E, from river



FIG. 77. *Mesoceration rivulare*. a. Head and pronotum. b. Elytra.

bed, 2.IX.1979, Endrödy-Younga (#1829), (7 TMP). Assegaibos stream, cold trib. of Great Berg River, 33.58S–19.04E, stones in current, 24.XI.1950, (GBG Stn. 2: 145D), (14 AMG). Cape Province, Wit River (trib. of Gamtoos River), 33.39S–24.31E, stones in current, 13.VIII.1986, F. de Moor & N. Köhly, (GAM Stn. 1: 3BD), (1/0 AMG). Fransch Hoek, Great Berg River, at roots of sedge in current, c. 33.55S–19.08E, 4.III.1954, J. Balfour-Browne, (1/5 BMNH). Swellendam, Wolfkloof, in mountain stream in deep gorge, c. 43.01S–20.26E, 12.III.1954, J. Balfour-Browne, (0/1 BMNH).

***Mesoceration splendorum* new species**

Figures 82, 83

HOLOTYPE—Male, South Africa: Cape Province (southern), Keurbooms River on Uniondale road, 33.45S–22.58E, (FRW 165H), 9.III.1960, A. D. Harrison & J. Agnew; deposited in AMG.

DIAGNOSIS—Among *rivulare* group species, distinguished from *jucundum* by the elytral series 1–2 confluent at or before summit of posterior declivity, from *rivulare* by the elytral epipleuron not attaining the sutural angle, and other characteristics given in the diagnosis for *rivulare*. Similar to *jucundum* in many characteristics (see Diagnosis).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 160:100:62; HW:PL:PW 38:34:42. **COLOR**: Head and pronotum rufo-piceous, maxillary palpi and legs rufo-testaceous, venter rufo-piceous except rufo-brunneous mentum. **HEAD**: Ocelli distinct, rufo-testaceous. Labrum impunctate, minutely mcr. Frons disc finely sparsely, clypeus more densely punctulate, punctures much smaller than eye-facet, interstices very effacedly mcr., slightly shining on frons, less so on clypeus. Oblique sub-lateral impressions of frons well marked, densely finely punctulate, subrugulose. Maxillary palpo-meres 2–4 ratio of lengths as 11:10:20. **PRONOTUM**: Cordate, widest at anterior 0.33; anterior margin shallowly arcuate over median 0.65, without hyaline border; anterior angles rounded, posterior angles almost rectangular; feebly convex, strongly shining, more finely sparsely punctulate than frons; with 10 distinct foveae as follows: two in middle line, anterior narrower than posterior, one small round anterior and one large oval posterior admedian on each side and one large moderately shallow and one small deep posterior sub-lateral, all minutely mcr. or punctulate; sides finely

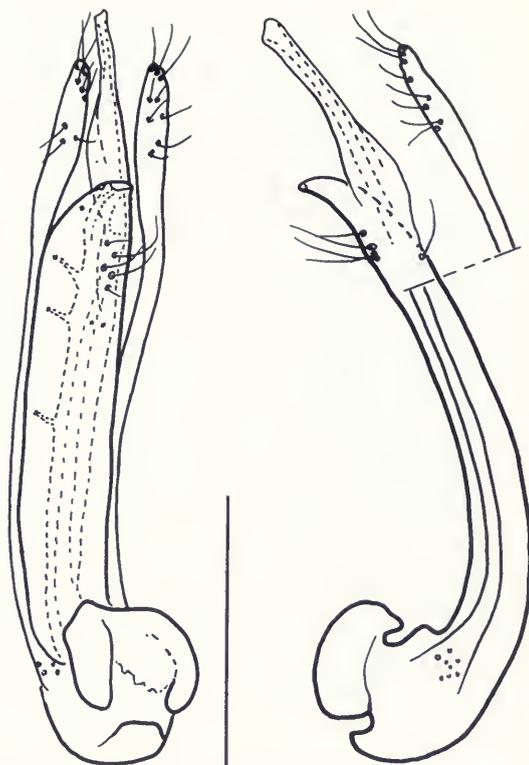


FIG. 78. *Mesoceration rivulare*, aedeagus of holotype. Scale line = 0.1 mm.

margined, not crenulate, with short decumbent setae. **ELYTRA**: Elongate-oval; apices, in males, transversely narrowly truncate; sutural angle right angle, in females, conjointly rounded; base slightly wider than base of pronotum; humeral angles rounded; sides smooth, not at all crenulate, feebly explanate over median 0.6. Each elytron at base slightly depressed and with transverse row of three large punctures, each c. 1 × pd of largest on pronotal base and elytral disc. Serial punctures largest on disc, 2–3 × ef, becoming smaller both posteriorly and anteriorly from disc, decrease in size in anterior especially pronounced in series 2–3; largest serial punctures separated by about their own diameter. Series 1–2 becoming confluent before summit of posterior declivity. Series 1, in all females and in most males, not striate-impressed, with punctures finer than largest punctures at base of pronotum. Confluency of series 5–6 very discrete, of four completely serial punctures, confluency length equal to separation from base. Intervals flat, strongly shining, except 8th interval sharply costate from shoulder almost to apex, costa steeper on internal side; interval width on disc

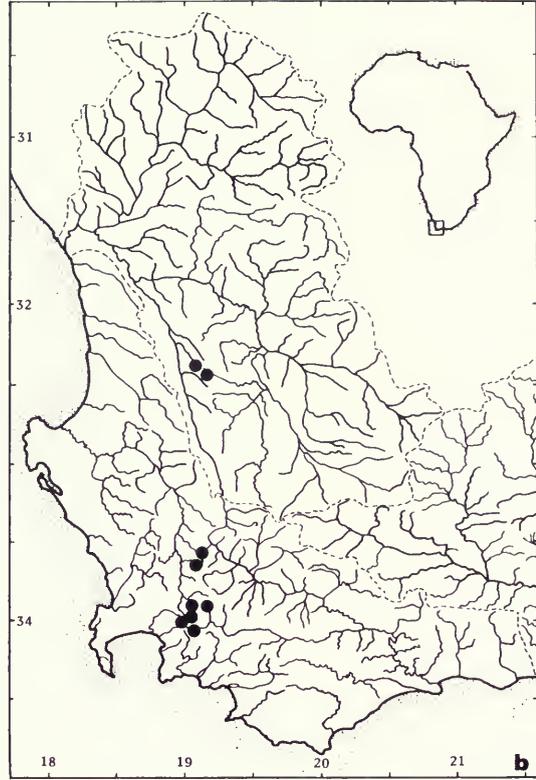
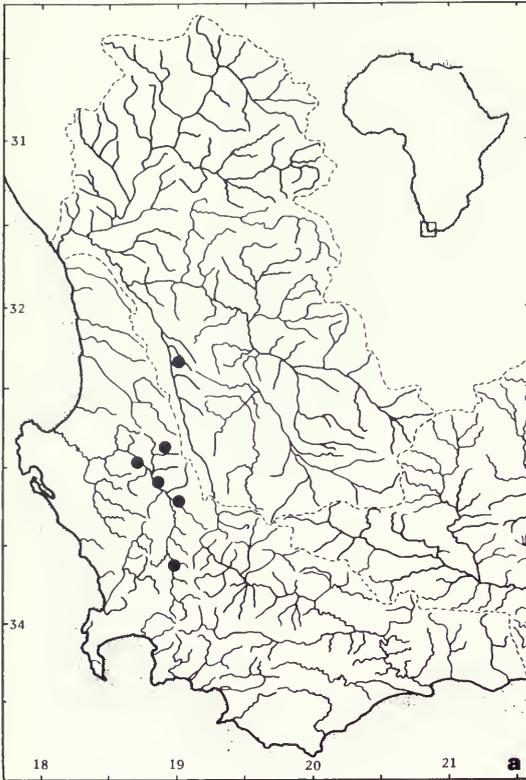


FIG. 79. Geographical distributions of *Mesoceration* species. a. *M. fusciceps*. b. *M. rivulare*.

c. $2 \times pd$. **VENTER:** Mentum mcr., faintly punctulate. Thoracic sterna and abdominal sterna 1–4 clothed with dense short setae, except glabrous prosternal midlongitudinal ridge, glabrous dull mesosternal plaques, glabrous strongly shining small triangular basomedial area on metasternum, glabrous arcuate posterior area of 5th sternum, and all of 6th sternum glabrous, shining. Sternum 1 with sublateral basal carina on each side. **LEGS:** Male apical protarsomere with two spiniform setae. Femora shining, tibiae alutaceous. **WINGS:** Fully developed. **AEDEAGUS:** TL 36 (fig. 82).

ETYMOLOGY—Latin, *splendorum* (luster, brilliance), in reference to the brilliantly shining pronotum and elytra.

DISTRIBUTION—Disjunct localities in the western, central and eastern Cape Region (fig. 83).

PARATYPES (68)—**South Africa:** Cape Province: Cape-Swartberg, Seweweekspoort Klf, 33.24S–21.21E, river stones, 18.XI.1973, Endrödy-Younga (#269), (10 TMP). Cape, Cederberg, Eikenboom, 900 m, 32.27S–19.10E, river stones, 29.X.1981, Endrödy-Younga (#1906), (1/0 TMP). Wit River (trib. of Gamtoos River), 33.39S–24.31E, stones

in current, 18.VI.1986, F. de Moor, (GAM Stn. 1: 1B), (2/0 AMG). As above, 24.II.1987, F. de Moor & N. Köhly, (GAM Stn. 1: 11AW), (3/1 AMG). As above, 18.XII.1986, F. de Moor & N. Köhly, (GAM Stn. 1: 8BA), (2/0 AMG). As above, 13.VIII.1986, F. de Moor & N. Köhly, (GAM Stn. 1: 3BD), (4/7 AMG). Wit River (trib. of Gamtoos River), 33.38S–24.30E, stones in current, 19.VI.1986, F. de Moor, (GAM Stn. 2: 2BC), (1/0 AMG). As above, 18.XII.1986, F. de Moor & N. Köhly, (GAM Stn. 2: 10AI), (1/0 AMG). S. Cape Prov., Swartberg Pass/river, 33.19S–22.03E, river stones at bridge, 26.III.1975 (WB 136), W. Breytenbach, (36 TMP).

Mesoceration truncatum Species Group

Recognized by the rather broad elytra with moderately to well-developed posterolateral angles and transversely or subobliquely truncate apices, the elytral epipleuron usually ended near or before middle of 5th sternum, the 5th sternum never thickened or bent downward, the pronotal reliefs

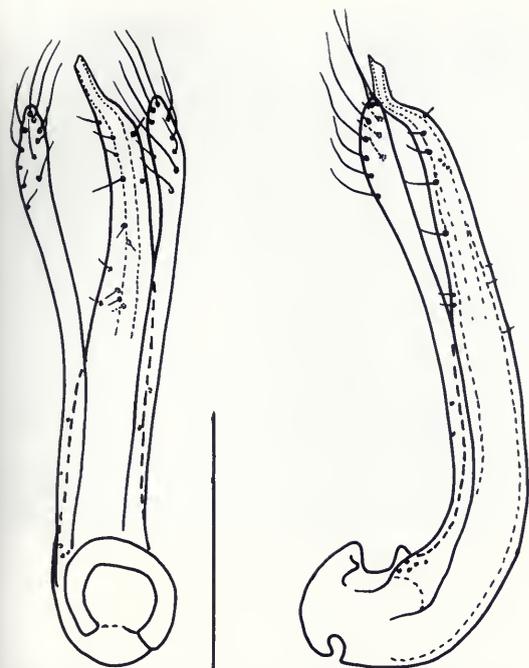


FIG. 80. *Mesoceration jucundum*, aedeagus of holotype. Scale line = 0.1 mm.

microreticulate, at least laterally, the elytral intervals granulate and nontectiform, and the elytral disc with six series of punctures between the suture and the carina (5th and 6th series confluent basally, 6th interval not continuing to base).

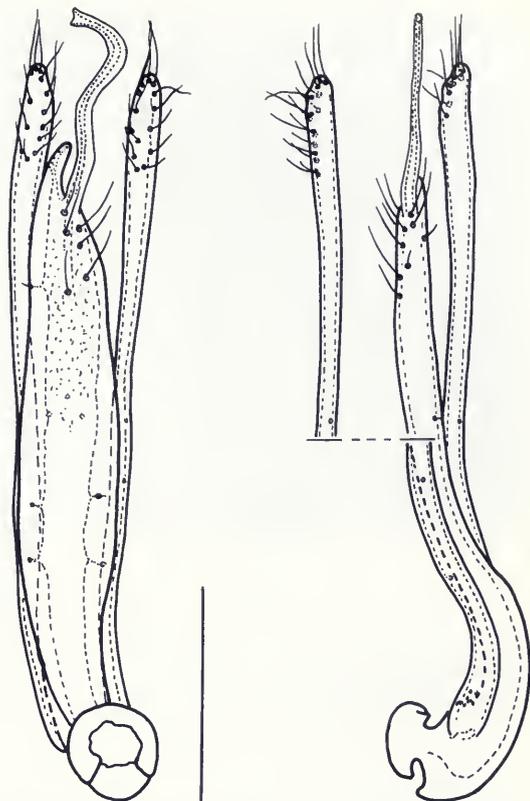


FIG. 82. *Mesoceration splendorum*, aedeagus of holotype. Scale line = 0.1 mm.

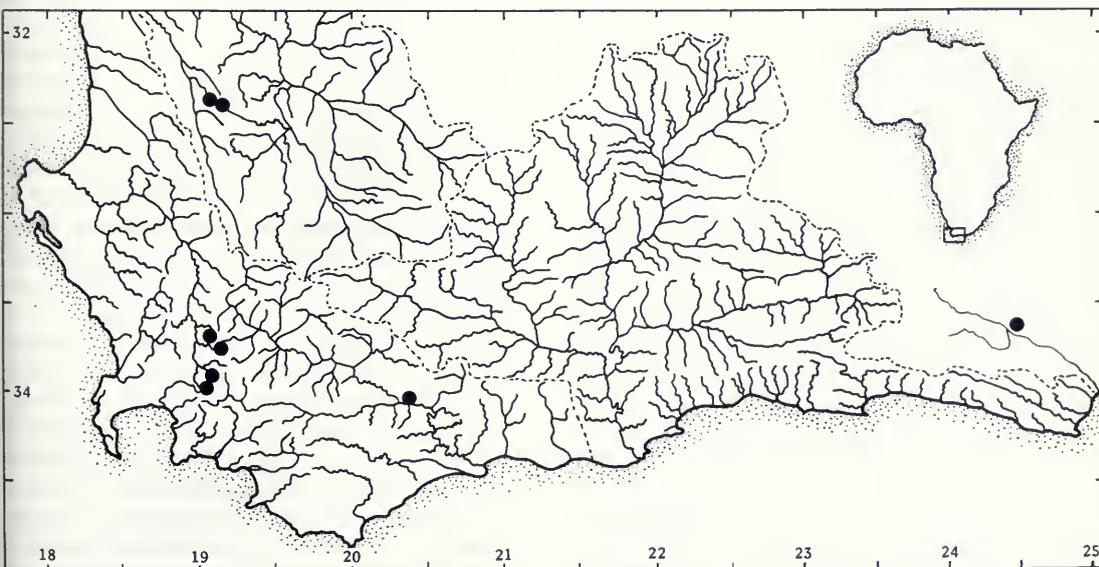


FIG. 81. *Mesoceration jucundum*, geographical distribution.

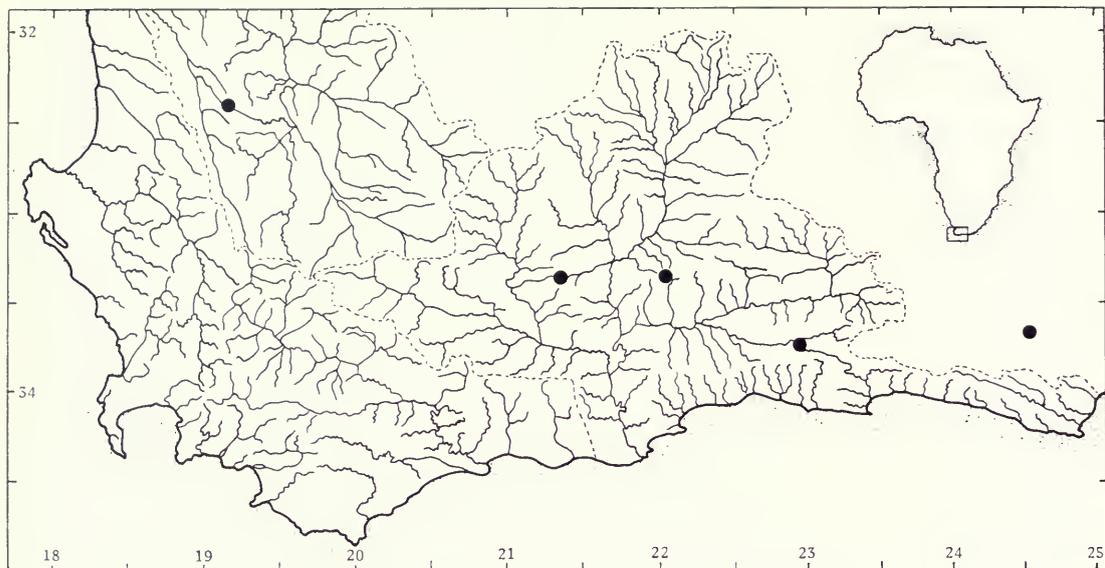


FIG. 83. *Mesoceration splendorum*, geographical distribution.

***Mesoceration truncatum* new species**

Figures 7h, 16b, 84, 85, 86a

HOLOTYPE—Male, South Africa: Cape Province, Assegaibos stream, cold trib. of Great Berg River, 33.58S–19.04E, stones in current, 24.V.1950, A. D. Harrison, (GBG Stn. 2: 145D); deposited in AMG.

DIAGNOSIS—Recognized among other members of the *truncatum* group by the combination of the piceous to brunneopiceous dorsum, the nongranulose pronotal reliefs, the elytral carina, in lateral view, not distinctly arcuate in posterior 0.66, and the distinct, deep punctures of the 7th elytral series. Similar to *rufescens* in most dorsal cuticular features, but differing therefrom by the larger size (TL c. 158 vs. 144), the piceous dorsal coloration, the elytral carina shape, the shape of the glabrous area of the 5th sternum, the less transverse and smaller pronotum, and the form of the aedeagus (figs. 85, 87).

DESCRIPTION—**SIZE** (mm × 100): Holotype TL: EL:EW 158:94:61; HW:PL:PW 39:36:42. **COLOR**: Black or piceous, subnitid, maxillary palpi piceo-testaceous, mentum and prosternum rufescent, venter piceous, legs testaceous. **HEAD**: Labrum shining, punctate. Clypeus finely somewhat obsoletely mcr., obsoletely finely punctulate. Frons feebly gibbous, on disc punctulate, interstices c. 2 × pd, finely obsoletely mcr.; anteocellar sulci distinctly mcr. **PRONOTUM**: Cordate, widest at anterior 0.33; anterior margin shallowly arcuate over

median 0.65, without hyaline border; anterior angles obsolete, posterior angles rectangular; feebly convex, with 10 foveae as follows: an elongate anterior and round posterior median, a small round anterior and larger oval posterior admedian and a large shallow anterior and small round deep posterior adlateral on each side, foveae distinctly mcr.; reliefs distinctly rather closely punctate, punctures c. 1 × ef, interstices shining, narrow walls to 1 × pd; sides finely margined, feebly crenulate. **ELYTRA**: Rather flattened, oblong; base barely wider than base of pronotum; humeral angles rounded; sides subparallel, posterior external angles very widely rounded, apices almost transversely truncate in male, widely subtruncate rounded in female; sides broadly explanate, quite smooth. Serial punctures shallowly striate-impressed, each with slender short seta, anterior rim of setal socket raised in form of minute granule; punctures on disc moderately large and subcontiguous, c. 1 × pd of largest pronotal. Series 5–6 confluent in basal 0.25. Intervals not much wider than serial punctures, nearly flat but with broken reflections, except 8th longitudinally costate from humerus to shortly before apex; each interval with unilinear row of widely spaced minute granules, granules largest on disc. **VENTER**: Mentum shining, densely subrugosely punctate. Thoracic sterna and abdominal sterna 1–4 densely clothed with short setae, except glabrous midlongitudinal prosternal ridge, glabrous dull mesosternal plaques, and small glabrous shining spot basomedially on metasternum. Sternum 1 with

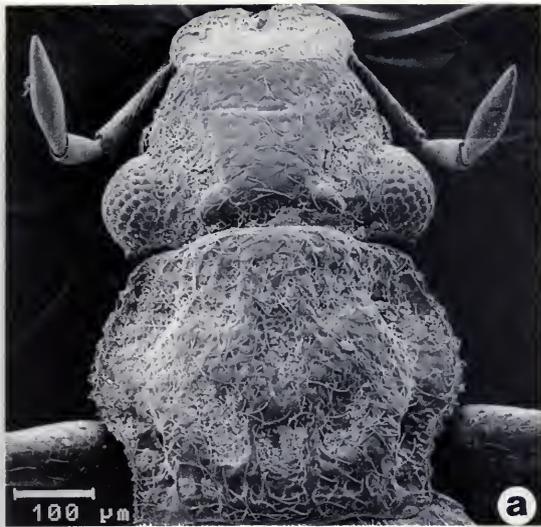


FIG. 84. *Mesoceration truncatum*. a. Head and pronotum. b. Elytra.

sublateral basal carina on each side. Sternum 5 similarly clothed except for a small semicircular distal median glabrous area; 6th sternum mcr., subnitid, glabrous but with numerous distal piliferous punctures in male; in female glabrous area of 5th sternum more extensively and 6th sternum entirely glabrous, intensely shining. **LEGS:** Male apical protarsomere with two spiniform setae. Femora and tibiae mcr. **WINGS:** Fully developed. **AEDEAGUS:** TL 30 (fig. 85).

ETYMOLOGY—Latin, *truncatum* (truncate), in reference to the truncate elytral apices.

DISTRIBUTION—South Africa, the western Cape Region (fig. 86a).

DISCUSSION—The pronotum is relatively narrow in this species (HW:PW c.): *truncatum* 39:42 (0.93), *brevigranum* 43:48 (0.90), and *rufescens* 36:43 (0.84). In contrast, the HW:TL ratio is c. 0.25 in all three species.

PARATYPES (72)—**South Africa:** Cape Province: Same data as holotype, (2/0 AMG). As above, 30.X.1950, (GBG Stn. 2: 132K, 134H), (3/2 AMG). Great Berg River system, Lower Forest Reserve, Driefontein Bridge, 33.55S–19.03E, stones in current, 8.XII.1950, (GBG Stn. 3: 154G), (0/2 AMG). Great Berg River, main river, railway bridge above Groot Drakenstein, 33.52S–19.02E, stones in current, 13.I.1951, (GBG Stn. 5: 167D), (1/0 AMG). Great Berg River, Franschhoek Forest Reserve, 1 mi above Assegaibos main stream, 33.59S–19.03E, stones in current, 24.V.1950, A. D. Harrison, (GBG Stn. 1: 1Q), (2/7 AMG). Middle Berg River, Daljosaphat, near Paarl sewage works, 33.42S–18.59E,

marginal vegetation, 14.IX.1951, (GBG Stn. 11: 352A), (0/1 AMG). Cape Prov., Franschhoek Bio-reserve, Upper Berg River, 1.XI.1950, Brinck-Rudebeck, (6 LUM). S.W. Cape Mts., Hawequas SE,

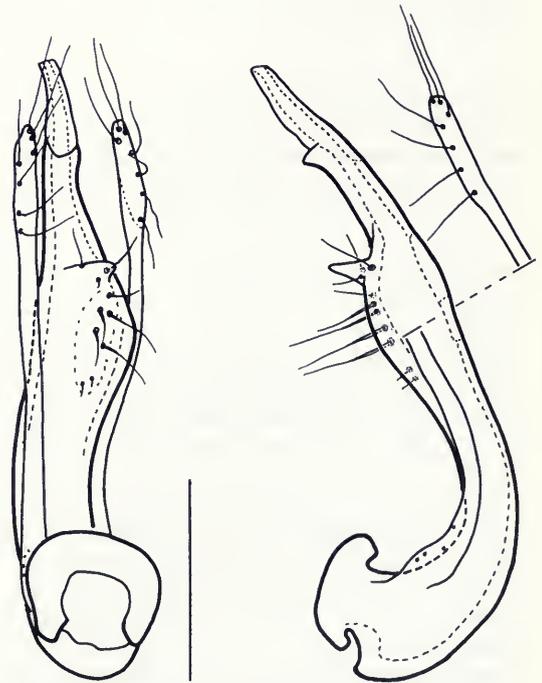


FIG. 85. *Mesoceration truncatum*, aedeagus of holotype. Scale line = 0.1 mm.

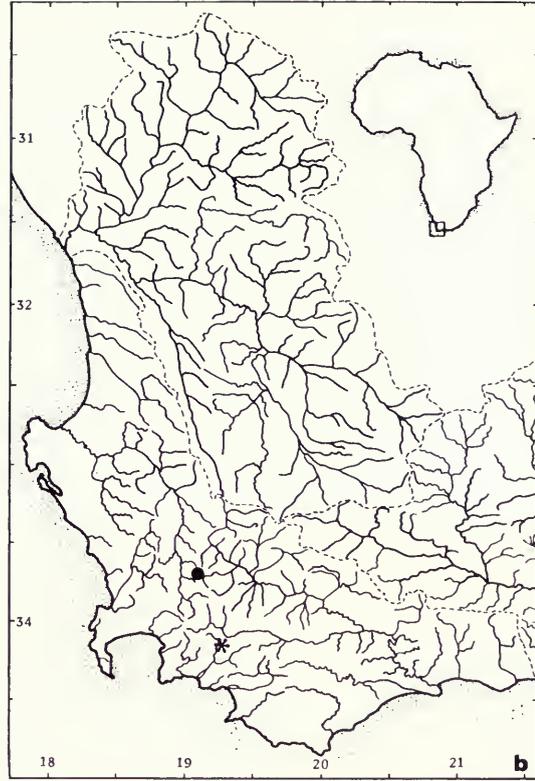
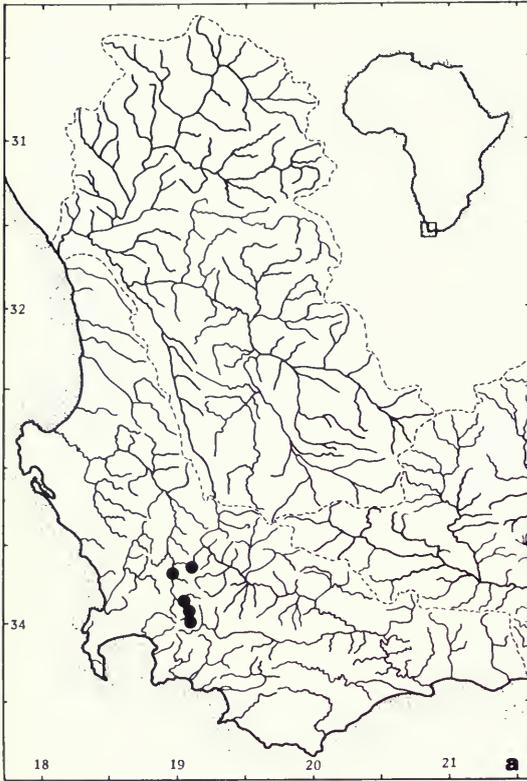


FIG. 86. Geographical distributions of *Mesoceration* species. a. *M. truncatum*. b. *M. endroedyi* (●) and *M. brevigranum* (*).

1100 m, 33.41S–19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (43 TMP). W. Cape, Dwarsberge, 34.02S–19.01E, river stones, 15.XI.1973, Endrödy-Younga (#256), (3 TMP).

Mesoceration rufescens new species

Figures 87, 88

HOLOTYPE—Male, South Africa: Cape Province, Bridgetown, (lower) Great Berg River, 33.06S–18.51E, marginal vegetation, 26.IV.1951, A. D. Harrison, (GBG Stn. 16: 239C); deposited in AMG.

DIAGNOSIS—Distinguished from other members of the *truncatum* group by the rufotestaceous pronotum and elytra, the nongranulose pronotal reliefs, and the elytral carina, in lateral view, distinctly arcuate in posterior 0.66. Refer to the diagnosis of *truncatum*.

DESCRIPTION—**SIZE** (mm × 100): Holotype TL: EL:EW 140:86:56; HW:PL:PW 36:32:43. **COLOR**: Rufo-testaceous or brownish; maxillary palpi

and legs flavous; venter rufescent. **HEAD**: Labrum mcr., impunctate, apicomediaally sharply angulately emarginate to 0.5 length of labrum. Clypeus transverse, finely mcr., punctate. Frons gibbous, antecellar sulci wide and deep, alutaceous; disc finely mcr., fairly densely punctate. **PRONOTUM**: Cordate, widest at anterior 0.33; anterior margin shallowly arcuate over median 0.70, without hyaline border; anterior angles obtusely rounded; sides behind widest point sinuate, posterior angles rectangular; very weakly convex with 10 dorsal foveae disposed as follows: an elongate anterior deeply impressed barely separated behind from a rounded less deep posterior median, a shallow oval anterior and small rounded posterior admedian and a wide saucer-shaped anterior and small deep round posterior adlateral on each side; foveae distinctly alutaceous; reliefs shining, obsoletely mcr. and finely punctulate, punctures c. 0.5 × ef, interstices c. 1–2 × pd; sides very weakly crenulate. **ELYTRA**: Almost parallel-sided, apices subtruncate. Serial punctures barely striate-impressed, basal punctures 1 × ef, linearly separated

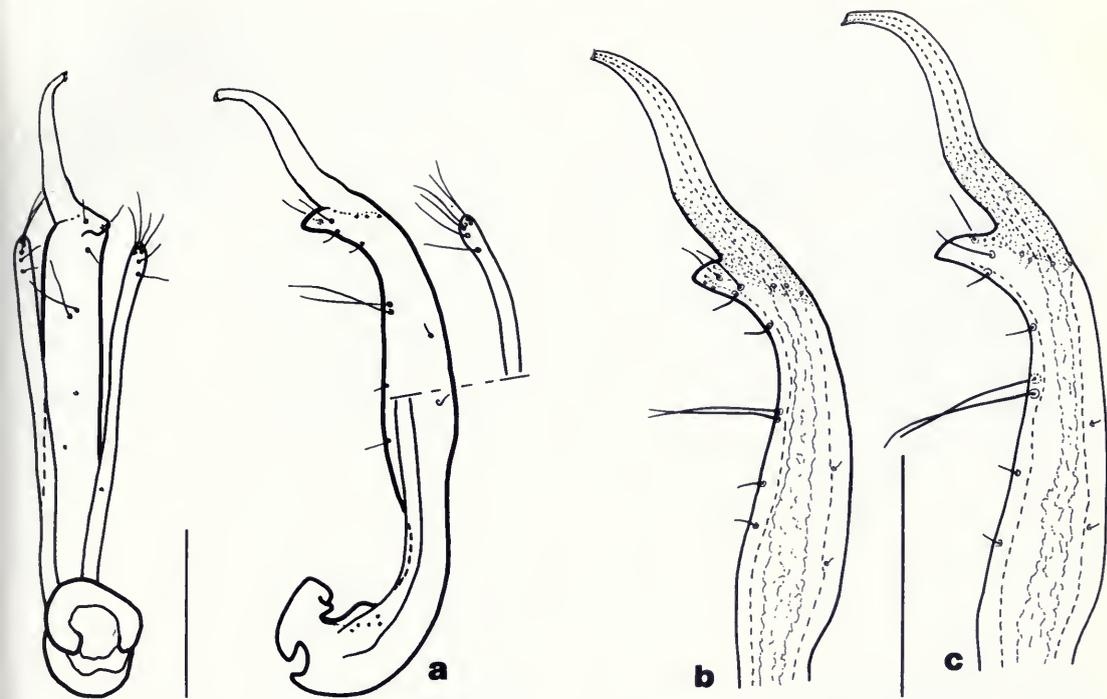


FIG. 87. *Mesoceration rufescens*, aedeagi. a-b. Holotype. c. Variant from Cape Province, Harkerville Forest. Scale lines = 0.1 mm.

by c. $1 \times$ pd, distally becoming only slightly smaller; each puncture with minute seta, anterior rim of setal socket raised in form of minute granule. Series 1-4 distally confluent before apex, 5th and 6th basally confluent. Intervals, except 8th, flat and little more than diameter of basal serial punctures, each unilinearly minutely granulate; 8th interval costate, in lateral view arcuate in posterior 0.66. **VENTER:** Mentum distinctly alutaceous. Thoracic sterna and abdominal sterna 1-4 clothed with dense short setae, except glabrous midlongitudinal prosternal ridge, glabrous dull mesosternal plaques, and small triangular glabrous strongly shining area basomedially on metasternum. Sternum 1 with sublateral basal carina on each side. Sternum 5 similarly clothed except glabrous shining narrow transverse band at posterior margin. Sternum 6 glabrous, shining. **LEGS:** Male apical protarsomere with two spiniform setae. Femora and tibiae mcr. **WINGS:** Fully developed. **AE-DEAGUS:** TL 38 (fig. 87).

ETYMOLOGY—Latin, *rufescens* (somewhat reddish), in reference to the dorsal coloration.

DISTRIBUTION—South Africa, the western and (one locality) eastern Cape Region (fig. 88).

DISCUSSION—The aedeagus (fig. 88) of the only

male known from the eastern Cape Region (Harkerville Forest) does not differ significantly from that of the holotype. The Harkerville male is slightly larger than the holotype in body size (TL c. 153 vs. 140). The specimens from Citrusdal are darker in coloration than other specimens and have the prosternum rather distinctively basomedially tumid; the aedeagus of the male of this pair, however, does not differ significantly from that of the holotype.

PARATYPES (22)—**South Africa:** Cape Province: Same data as holotype, (0/1 AMG). Klein Berg River (tributary of middle Great Berg River), 33.13S-18.58E, marginal vegetation, 26.IV.1951, (GBG Stn. 15: 243A), (1/0 AMG). Wellington, Lady Lock Bridge, (middle) Great Berg River, 33.37S-18.59E, marginal vegetation, 14.IX.1951, (GBG Stn. 12: 348A), (0/1 AMG). Great Berg River system, Lower Forest Reserve, Driefontein Bridge, 33.55S-19.03E, stones in current, 13.X.1953, (GBG Stn. 3: 726B), (1/0 AMG). Cape-Cedarberg, Olifants R., Boshof, 32.20S-18.59E, shore washing, Endrödy-Younga, Penrith (#1951), (9 TMP). As above, river stones, (4 TMP). Cape Province, 2 mi SW Citrusdal, 150 m, c. 32.37S-19.00E, 30.IV.1958, E. S. Ross & R. E. Leech, (1/2 CAS). S. Cape, Harkerville

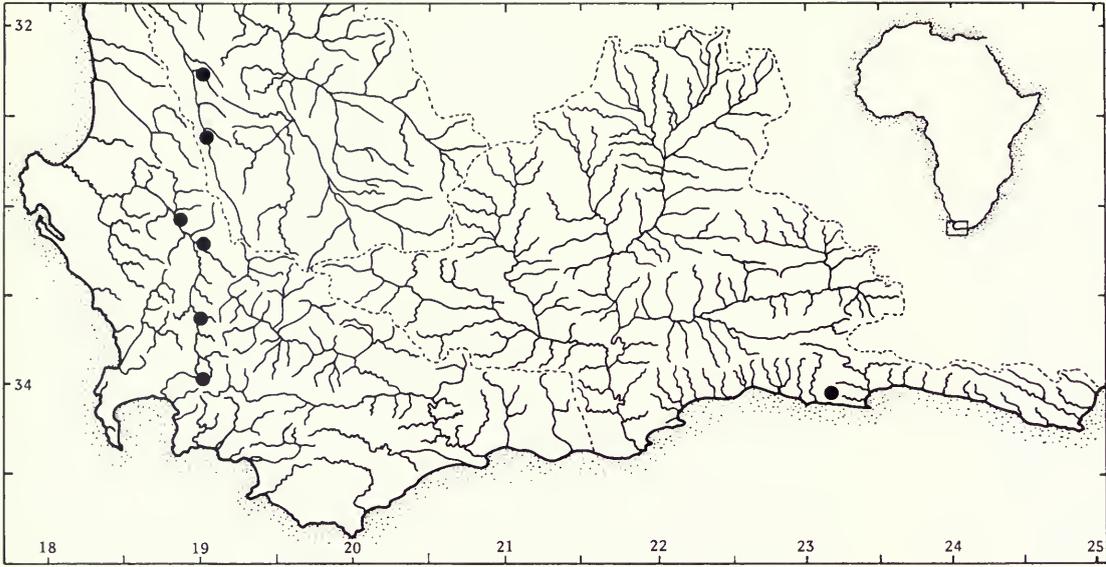


FIG. 88. *Mesoceration rufescens*, geographical distribution.

Forest, 34.04S–23.10E, river stones, 7.XII.1976, Endrödy-Younga (#1298), (1/1 TMP).

10 mi WSW Grabouw, c. 34.10S–19.15E, 8.VII.1951, (Swedish S.A. Exped. #354); deposited in LUM.

***Mesoceration brevigranum* new species**
 Figures 86b, 89, 90

DIAGNOSIS—Distinguished from other members of the *truncatum* group by the granulose pronotal reliefs (fig. 89), the black or dark rufopiceous dorsum, the dull head and pronotum, contrasting with moderately shining elytra, and the rather large size (TL c. 172).

HOLOTYPE—Male, South Africa: Cape Province, Somerset West District, Steenbras Dam area,

DESCRIPTION—**SIZE** (mm × 100): Holotype TL:

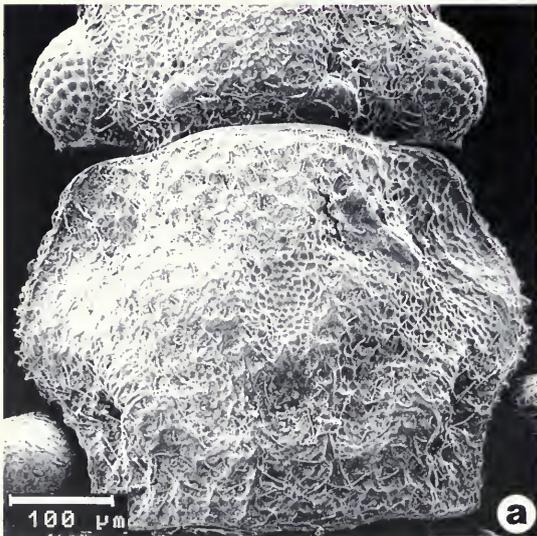


FIG. 89. *Mesoceration brevigranum*. a. Head and pronotum. b. Elytra.

EL:EW 172:104:70, HW:PL:PW 43:40:48. **COL-OR:** Dorsum black or dark rufo-piceous, maxillary palpi and legs flavo-testaceous, venter piceous, mentum and apical abdominal sterna rufescent. **HEAD:** Dull, distinctly mcr. Labrum apicomediaally deeply angulately emarginate, lobes rounded, impunctate. Clypeus strongly transverse, sides attenuate to anterior angles, strongly mcr., apparently impunctate. Frons weakly gibbous, surface with sparse not very distinct shining granules on alutaceous ground sculpture, antecellar sulci distinct. **PRONOTUM:** Widest just before middle, cordate; sides from widest point concavely arcuate to rectangular posterior angles; anterior margin shallowly arcuate over median 0.68, without hyaline border; disc with 10 foveae as follows: anterior elongate median and small round posterior median, very indistinct anterior and posterior admedian and oval deeper anterior and shallow rounded posterior adlaterals; sides finely margined, crenulate; distinctly mcr., dull with irregular shining granules, particularly anteriorly and posteriorly; relief punctures very indistinct, obscured by strong mcr. **ELYTRA:** Widest slightly behind middle, apex broadly rounded, sutural apices rectangular, sides weakly explanate. Serial punctures large and distinct in basal 0.5, posteriorly decreasing in size to almost evanescent before apex, each with a short decumbent seta, anterior rim of setal socket raised in form of minute granule. Sutural series basally striate-impressed; 5th and 6th series confluent toward base. Intervals, except 8th, flat, shining, each with unilinear row of rather widely spaced granules; 8th interval longitudinally costate from shoulder. **VENTER:** Mentum quite dull, distinctly alutaceous. Submentum more obsoletely alutaceous, rather shining. Thoracic sterna and abdominal sterna 1-4 clothed with dense short setae, except glabrous midlongitudinal prosternal ridge, glabrous dull mesosternal plaques, and small glabrous shining spot basomedially on metasternum. Sternum 1 with sublateral and submedial basal carina on each side. Sternum 5 similarly clothed except median distal semicircular glabrous mcr. area. Sternum 6 glabrous, mcr. **LEGS:** Male apical protarsomere with two spiniform setae. Moderately elongate, femora and tibiae mcr. **WINGS:** Fully developed. **AEDEAGUS:** TL 35 (fig. 90).

ETYMOLOGY—Latin, *brevigranum* (short, grain), in reference to the truncate elytra and granulose dorsum.

DISTRIBUTION—Currently known from only the type locality in the southwestern Cape Region, South Africa (fig. 86).

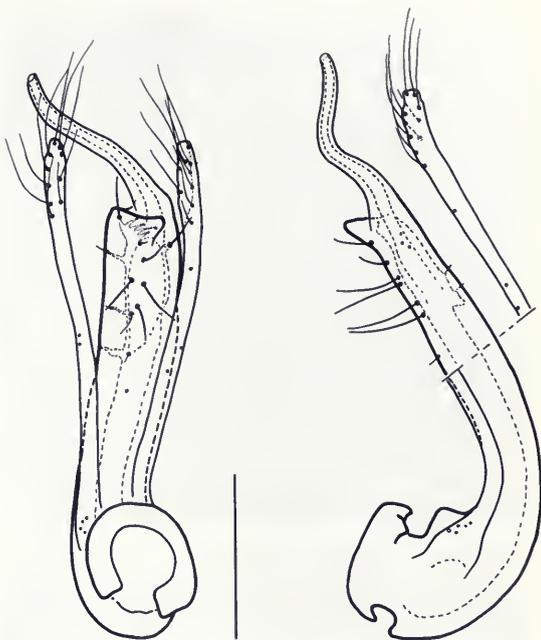


FIG. 90. *Mesoceration brevigranum*, aedeagus of holotype. Scale line = 0.1 mm.

PARATYPES (13)—Same data as holotype, (4/9 LUM).

Mesoceration endroedyi Species Group

Recognized by the discal elytral intervals flat or only very slightly transversely rounded, with granules, the discal elytral series not striate-impressed, with or without granules, the elytra attenuate from near middle to apices, posterolateral angles obsolete or narrowly separated from the sutural angle, the elytral epipleuron ended at or beyond posterior margin of 5th sternum, the 5th sternum, in females, thickened and (in some members) bent downward at posterior margin (figs. 91b,d), the pronotum microreticulate, at least laterally, and the elytral disc with six series of punctures between the suture and the carina (5th and 6th series confluent basally, 6th interval not continuing to base).

Mesoceration endroedyi new species

Figures 16d, 65b, 86b, 91c,d, 92

HOLOTYPE—Male, South Africa: Cape Province (southwestern), Hawaqua rad. tower, 33.41S—

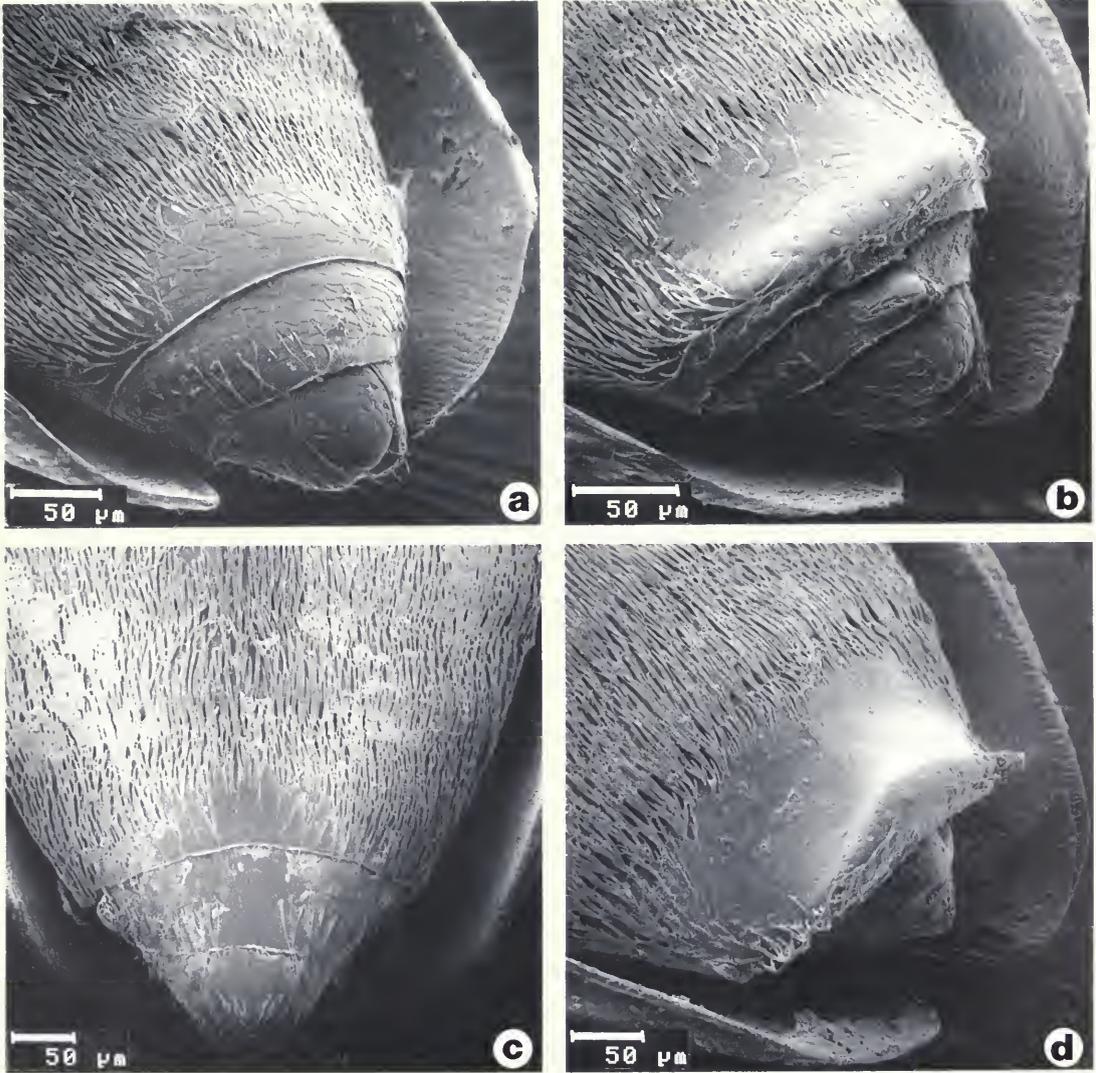


FIG. 91. *Mesocercaria*, abdominal apex. a. *M. languidum*, male. b. *M. languidum*, female. c. *M. endroedyi*, male. d. *M. endroedyi*, female.

19.06E, shore washing, 27.X.1978, Endrödy-Younga (#1484); deposited in TMP.

DIAGNOSIS—Distinguished from other members of the *endroedyi* group by the strongly mcr. and weakly granulose pronotal reliefs and the elytral intervals, which are strongly granulose and uneven (figs. 16d, 65b). Females further distinguished by the 5th sternum, which is posteriorly markedly thickened, is strongly bent downward, and bears a fringe of setae arching toward the midline; the 6th sternum is greatly reduced in size, held in repose under the 5th sternum except for small setose apical margin (fig. 91d).

DESCRIPTION—**SIZE** (mm × 100): Holotype TL: EL:EW 172:100:70; HW:PL:PW 40:40:50. **COLOR**: Dorsum and femora black or piceous. Maxillary palpi brunneous, ultomere distinctly darker than remainder. Tibiae and tarsi brunneous. Venter piceo-brunneous. **HEAD**: Dull, entirely strongly mcr., punctation obscured. Eyes small, quite convex, in dorsal aspect six convex facets in longest series. Frons transversely quite convex on disc, anteocellar depressions deep, wide. Ocelli very distinct. Labrum apicomedialely angulately emarginate to nearly 0.5 of labrum length. Maxillary palpomeres 2–4 ratio of lengths as 1:2:1. **PRO-**

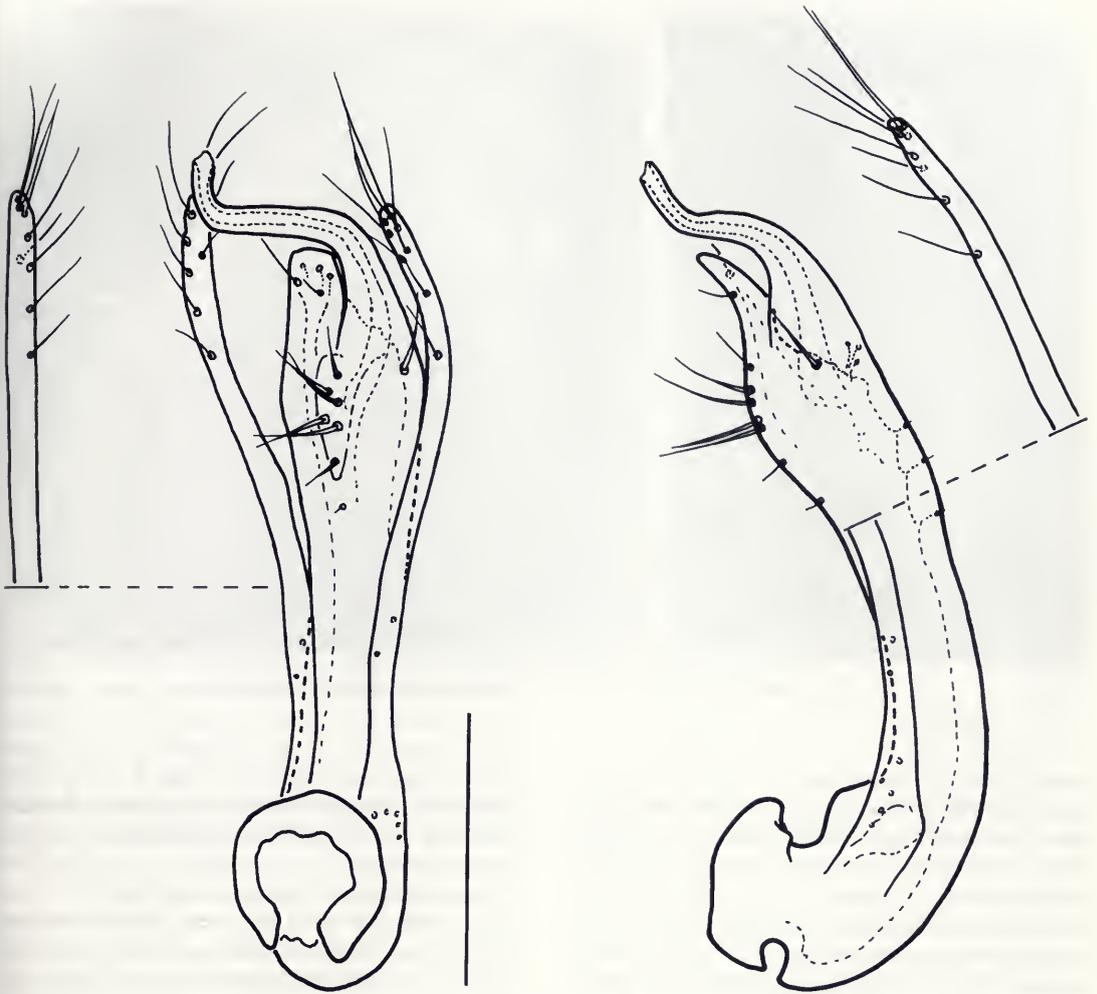


FIG. 92. *Mesoceration endroedyi*, aedeagus of holotype. Scale line = 0.1 mm.

NOTUM: Subcordate, widest near anterior third, anterior angles obtuse, posterior angles rectangular; anterior margin shallowly arcuate over median 0.65, without hyaline border; 10 dorsal foveae as follows: elongate anterior obsoletely joined with round posterior median, oval anterior and oval posterior admedian and large deep anterior and deep posterior adlateral on each side; disc dull, entirely strongly mcr. and weakly granulate, each granule with a fine whitish seta posteriorly; sides finely crenulate. **ELYTRA:** Widest at about midlength; widening sharply from humerus to about 0.1 of length then gradually to midlength, behind midlength gradually roundly attenuate to sharply rounded apices; sides weakly explanate. Cuticle shining, but reflections very irregular due to uneven surface. Shining round granules on intervals

and between punctures of series; granules on discal intervals randomly and closely spaced; granules between serial punctures each with the punctural seta emerging from posterior margin of granule; largest granules only slightly smaller than eye-facet. Series 1-4 with punctures large, very weakly substrate-impressed on disc, becoming nearly obsolete at summit of posterior declivity; series 5-6 confluent in basal 0.33; series 1-2 becoming confluent slightly beyond summit of posterior declivity. Interval 8 strongly costate from shoulder. Serial punctures in basal 0.5 large, 2-3 × pd largest pronotal punctures, moderately strongly impressed but margins gradual, setae weakly developed, recumbent. **VENTER:** Submentum and mentum dull, strongly mcr. Metathoracic disc rather flat, with midlongitudinal impression in

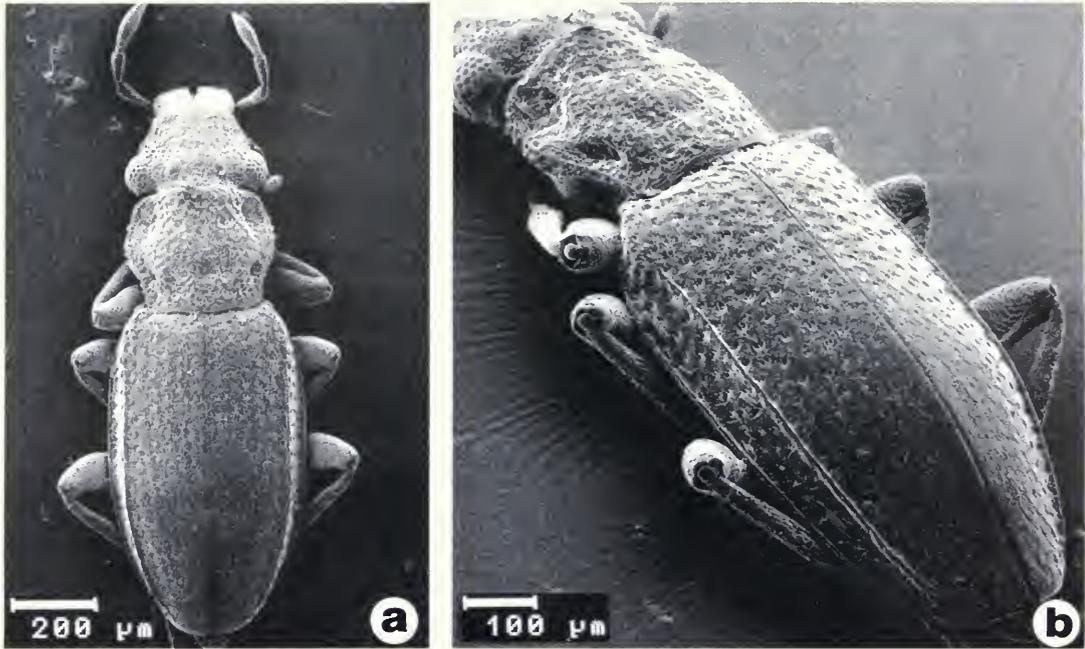


FIG. 93. *Mesoceration languidum*. a. Dorsum. b. Dorsum, oblique view.

basal 0.5, impression length $2 \times$ width. Thoracic sterna and abdominal sterna 1–4 clothed with dense setae except glabrous midlongitudinal prosternal ridge, glabrous dull mesosternal plaques and small glabrous strongly shining inverted V-shaped basomedian area on mesosternum in front of intercoxal sternite; setae of pro-, meso-, and metasternum erect or decumbent; setae of abdominal sterna appressed. Sternum 1 with sublateral and submedial basal carina on each side. Males (fig. 91c): 5th sternum similarly clothed except for a semilunulate distal glabrous shining area, 6th shining, laterally sparsely pubescent. Females (fig. 91d): 5th sternum posteriorly thickened and strongly bent downward, free margin with fringe of setae arching toward midline, glabrous area large; 6th sternum greatly reduced in size, held beneath 5th except apical setose margin. **LEGS:** Male apical protarsomere with four spiniform setae. Femora and tibiae dull, distinctly alutaceous. **WINGS:** Reduced, length about $0.66 \times$ length of elytron. **AEDEAGUS:** TL 31 (fig. 92).

ETYMOLOGY—Dedicated to the collector, Sebastian Endrödy-Younga.

DISTRIBUTION—Currently known from only the type locality in the southwestern Cape Region, South Africa (fig. 86b).

DISCUSSION—The elytra of this species are ab-

solutely large and relatively broad, EW:EL c. 70:100 (0.70); the range in other members of the species group is 48:78 (0.62) (*languidum*) to 66:100 (0.66) (*capense*).

PARATYPES (58)—Same data as holotype, (51 TMP). **South Africa:** S.W. Cape Mts., Hawequas SE, 1100 m, 33.41S–19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (7 TMP).

Mesoceration languidum new species

Figures 91a,b, 93–95

HOLOTYPE—Male, South Africa: Cape Province, Great Berg River system, Lower Forest Reserve, Driefontein Bridge, 33.55S–19.03E, marginal vegetation, 24.V.1950, A. D. Harrison, (GBG Stn. 3: 8K); deposited in AMG.

DIAGNOSIS—Recognized among members of the *endroedyi* group by the small size (TL c. 132), the rather large head (HW:EW c. 34:48, 0.71) and proportionally large maxillary palpi, the elytra, which are very weakly arcuate between the carinae, uniformly so for the entire length, the posterior declivity very gradual and weak, the series 1–2 confluent, or becoming obsolete, beyond summit of posterior declivity (fig. 93); females further recognized by the posteriorly thickened 5th and apicomediaally produced 6th sterna (fig. 91b).

DESCRIPTION—SIZE (mm × 100): Holotype TL: EL:EW 132:78:48; HW:PL:PW 34:30:37. **COLOR:** Black or piceous, maxillary palpi flavous, venter mostly piceous, mentum testaceous, legs flavous. **HEAD:** Entirely dull, mcr. Eyes small, convex, in dorsal aspect six convex facets in longest series. Ocelli very distinct. Frons very finely sparsely indistinctly punctate, punctures much smaller than eye-facet, disc weakly convex, antecellar depressions shallow, subrugulose. Clypeus punctures slightly sparser than frons. Labrum apicomediaally angulately emarginate to about mid-length of labrum. **PRONOTUM:** Narrowly cordate, widest at anterior 0.33, sides in posterior 0.5 sinuately emarginate; anterior margin shallowly arcuate from side to side; anterior angles obsolete, posterior angles rectangular; dorsum entirely alutaceous, dull; median and admedian foveae very shallow almost obsolete, adlateral foveae distinct, anterior large, rounded and deep, posterior small, oval and deep, more sharply impressed on inner side; sides very obsolete margined, feebly crenulate. **ELYTRA:** Elongate, oval, narrow, widest at middle, sides almost straight; apex subobliquely truncate, sutural angle slightly less than a right angle, entire; sides very feebly explanate, quite smooth; posterior declivity very slight and very gradual. Series not striate-impressed, punctures large at base, progressively smaller to apex; 5th and 6th series confluent in basal 0.25 where interval 6 is absent. Intervals about equal to diameter of serial punctures, flat, obsolete mcr., dull; 8th interval longitudinally distinctly costate almost to apex. **VENTER:** Mentum mcr., subrugose. Submentum strongly alutaceous. Thoracic sterna and abdominal sterna 1–4 entirely clothed with short setae, except glabrous prosternal mid-longitudinal ridge, glabrous dull mesosternal plaques, and glabrous strongly shining small triangular basomedian area on metasternum. Sternum 1 with sublateral basal carina on each side. Sternum 5 in male similarly pubescent except for a distal semicircular glabrous shining effacedly mcr. patch, 6th sternum conical, glabrous, mcr. Sternum 5 of female basally and laterally with pubescence, distally a large glabrous area, mcr., distal margin rather thickened and truncated, 6th glabrous shining, distally produced into a median blunt point bearing sparse patch of setae. **LEGS:** Male apical protarsomere with two spiniform setae. Femora and tibiae mcr., femora more shining. **WINGS:** Fully developed. **AEDEAGUS:** TL 37 (fig. 94).

ETYMOLOGY—Latin, *languidum* (weak, faint,

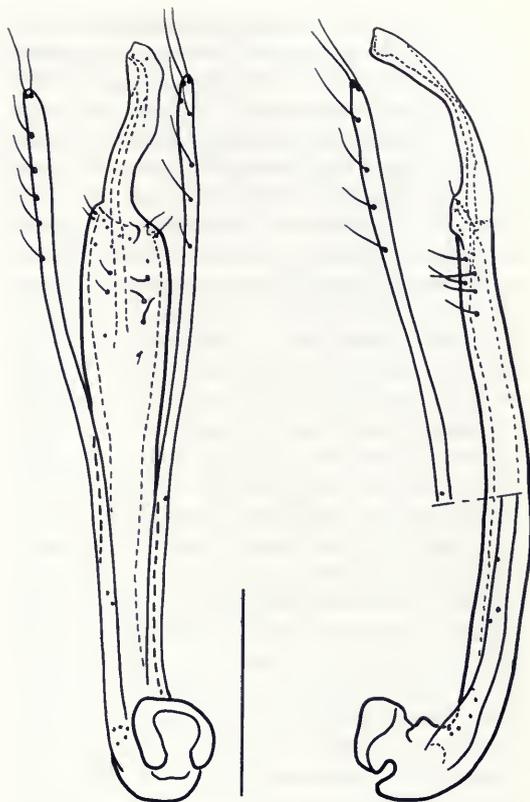


FIG. 94. *Mesoceration languidum*, aedeagus of holotype. Scale line = 0.1 mm.

dull), in reference to the small body compared to the large head, the extremely gradual, faint posterior declivity of the elytra, and the dull pronotum with weakly developed impressions.

DISTRIBUTION—South Africa, the western and (one locality) eastern Cape Region (fig. 95).

DISCUSSION—This is a distinctive species by virtue of the enlarged head with proportionally enlarged maxillary palpi. The pronotum and elytra appear narrowed in comparison to the head; however, the values for the elytral proportions (EW:EL) do not differ as markedly from those of other species as do the HW:EW values. The HW:EW ratio in *languidum* is c. 0.71; the range in other members of the species group is 0.57 (*endroedyi*) to 0.63 (*dissonum*). The HW:*x* values for the pronotum and elytra of *languidum* are the largest in the genus.

The pronotum, though smaller in absolute size than that of the other members of the *endroedyi* group, lies within the range of proportionality for the species group (PL:PW): *capense* 42:48 (0.88), *languidum* 30:37 (0.81), and *dissonum* 34:43 (0.79).

PARATYPES (377)—South Africa: Cape Province: Same data as holotype, (30 AMG). Assegaibos stream, cold trib. of Great Berg River, 33.58S–19.04E, stones in current, 21.IX.1950, (GBG Stn. 2: 137P), (1/0 AMG). Wellington, Lady Lock bridge, (middle) Great Berg River, 33.37S–18.59E, marginal vegetation, 12.X.1950, (GBG Stn. 12: 113B), (0/1 AMG). As above, in vegetation, 20.X.1951, (GBG Stn. 12: 396A), (0/1 AMG). Great Berg River, main river, railway bridge above Groot Drakenstein, 33.52S–19.02E, stones in current, 11.IV.1951, (GBG Stn. 5: 231C), (0/1 AMG). As above, 10.XII.1951, (GBG Stn. 5: 464A), (0/1 AMG). As above, 30.VII.1952, (GBG Stn. 5: 599B), (0/1 AMG). Great Berg River system, Lower Forest Reserve, Driefontein Bridge, 33.55S–19.03E, stones in current, 18.IX.1951, (GBG Stn. 3: 365B), (0/2 AMG). Great Berg River, 33.49S–18.58E, farm, Watergat, Simondium, stones in current, 19.X.1951, (GBG Stn. 9: 393J), (0/1 AMG). S.W. Cape Mts., Hawequas SE, 1100 m, 33.41S–19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (214 TMP). S.W. Cape, Hawaquas rad. tower, 33.41S–19.06E, shore washing, 27.X.1978, Endrödy-Younga (#1484), (1 TMP). W. Cape, Cedarberg Pass, 32.23S–19.06E, from river bed, 2.IX.1979, Endrödy-Younga (#1629), (40 TMP). Cape-Cedarberg, Olifants R., Boshof, 32.20S–18.59E, river stones, Endrödy-Younga, Penrith (#1952), (44 TMP). S.W. Cape, Nuweberg, 10 km NE, 34.00S–19.06E, water plankton, 13.XI.1973, Endrödy-Younga (#239), (1 TMP). S.W. Cape, Bainskloof, Breë R., 33.30S–19.10E, shore washing, 10.XI.1973, Endrödy-Younga (#227), (2 TMP). S.W. Cape, Nuweberg For. Sta., 34.03S–19.04E, river stones, 14.XI.1973, Endrödy-Younga (#247), (2 TMP). W. Cape, Dwarsberge, 34.02S–19.01E, river stones, 15.XI.1973, Endrödy-Younga (#256), (16 TMP). W. Cape, Hawequas, 33.34S–19.08E, shore washing, 10.XI.1973, Endrödy-Younga (#226), (1/0 TMP). S. Cape, Harkerville Forest, 34.04S–23.10E, shore washing, 7.XII.1976, Endrödy-Younga (#1299), (1 TMP). Cape, Table Mount., Oranje Kloof, c. 33.58S–18.25E, humus, XI.1960, N. Leleup, (5 TMP). Cape District, Table Mountain, Blinkwater Falls, c. 33.58S–18.25E, on algae under stones, 21.XI.1949, B. Malkin, (1/4 BMNH). Fransch Hoek Forest Reserve, Great Berg River, at roots of sedge in current, c. 33.55S–19.08E, 4.III.1954, J. Balfour-Browne, (2/4 BMNH). Cape District, Hout Bay, 100 ft, on stones in small stream, c. 34.03S–18.21E, 8.III.1954, J. Balfour-Browne, (0/1 BMNH).

Mesoceration concessum new species

Figures 96, 97

HOLOTYPE—Male, South Africa: Cape Province, Cape District, Table Mountain, stream, c. 33.58S–18.25E, 10.VI.1951, A. D. Harrison (Misc. 9D); deposited in AMG.

DIAGNOSIS—Distinguished from other members of the *endroedyi* group by the elytra, which have series 1–2 confluent at or before summit of posterior declivity. In combination, and shared with *capense*, the head width less than pronotum length, the elytral medial intervals with unilinear row of granules becoming obsolete at or before summit of posterior declivity, the frons and clypeus equally mcr., punctulate and dull, the elytral carina, in males, distinctly thickened at posterior extreme, and (shared with both *dissonum* and *capense*) the elytra depressed on disc, humped at summit of posterior declivity. The 5th sternum, in females, is posteriorly thickened on each side of slightly depressed middle, but not bent downward, appearing arcuate in posterior view.

DESCRIPTION—SIZE (mm × 100): Holotype TL: EL:EW 156:92:57; HW:PL:PW 34:36:42. COLOR: Black; maxillary palpi and mentum testaceous, venter piceous, legs rufo-testaceous. HEAD: Entirely mcr., dull. Eyes small, in dorsal aspect five convex facets in longest series. Ocelli distinct, shining. Frons tumid at vertex, disc indistinctly finely sparsely punctate, punctures much smaller than eye-facet, antecellar sulci deep, cuticle between sulcus and ante rugulose. Clypeus apparently impunctate, labroclypeal suture extremely slightly bisinuate. Labrum apicomediaally angulately emarginate to 0.4 length of labrum. PRONOTUM: Cordate, widest at anterior third; anterior margin shallowly arcuate over median 0.70, without hyaline border; anterior angles obsolete, posterior angles rectangular, sides in basal 0.5 sinuate; weakly convex with 10 foveae as follows: an elongate anterior and small round posterior median, an anterior round deep and larger oval shallow posterior admedian, and a large shallow reniform anterior and small deep oval posterior adlateral on each side; both reliefs and foveae mcr., reliefs very obsoletely sparsely punctulate, punctures with a very short fine seta; basal band of much larger deeper punctures, each c. 1–2 × ef, interstices c. 0.5–1 × pd. ELYTRA: Oblong-ovate, widest at middle; sides very widely rounded, almost straight over median third, distinctly explanate, minutely serrate; apices transversely roundly truncate, similar in both sexes, sutural apical angle rectangular.

Conjoint elytra widely shallowly impressed between costae in front of middle, distinctly humped at top of apical declivity at suture. Serial punctures basally 1–2×ef, sharply impressed, interstices 1×pd, progressively smaller and less impressed to apex; socket of each short fine punctural seta simple, not raised in form of granule. Series 1–2 confluent at summit of posterior declivity, 5–6 confluent in basal 0.25. Intervals shining, flat except 8th; discal intervals each with unilinear row of widely spaced short fine setae, anterior rim of each setal socket raised to form minute granule. Interval 8 sharply costate from shoulder almost to apex. **VENTER:** Mentum mcr. Thoracic sterna clothed with decumbent setae, except glabrous prosternal midlongitudinal ridge, glabrous dull mesosternal plaques, and glabrous strongly shining triangular basomedial area on metasternum. Sternum 1 with very faint sublateral basal carina on each side. Abdominal sterna 1–4 clothed with short appressed setae; 5th sexually dimorphic, in male transverse, short, clothed as on preceding sterna but with a distal median semicircular glabrous patch, in female elongate, distally rounded, with a large rectangular posteromedian glabrous patch, posterior edge slightly tumid at either side of middle, area between tumidities rather flattened, very strongly shining. **LEGS:** Femora and tibiae alutaceous. **WINGS:** Reduced, attaining distal 0.25 of elytron. **AEDEAGUS:** TL 41 (fig. 96).

ETYMOLOGY—Latin, *concessum* (give up, concede), in reference to the contrast caused by the depression of the elytral disc and the inflation of the summit of the posterior declivity.

DISTRIBUTION—Known only from Table Mountain, Cape Province (fig. 97).

PARATYPES (9)—Same data as holotype, (0/1 AMG). **South Africa:** Cape Province: Cape District, Table Mountain, Vulcan Ravine, 1000 ft, in moss on stones in rapid stream, (Stn. 351), 8.VIII.1954, J. Balfour-Browne, (3/5 BMNH).

Mesoceration dissonum new species

Figures 97, 98

HOLOTYPE—Male, South Africa: Cape Province, Great Berg River, Franschoek Forest Reserve, 1 mi above Assegaibos main stream, 33.59S–19.03E, stones in current, 18.IX.1951, A. D. Harrison, (GBG Stn. 1: 371H); deposited in AMG.

DIAGNOSIS—Recognized among members of the *endroedyi* group by the elytral medial intervals with unilinear row of granules continued beyond

summit of posterior declivity, the frons at most effacedly mcr., more shining than mcr. clypeus, the relatively transverse pronotum, PL:PW c. 34:43 (0.79) (range in other members of the species group c. 0.80–0.88), the head width greater than pronotum length, HW:PL c. 35:34, and the elytral carina, in males, gradually decreasing in size at posterior extreme. The 5th sternum, in females, has the posterior margin bent downward and thickened on each side of middle, appearing angulate in posterior view. In combination, and shared with *concessum* and *capense*, the elytra depressed on disc, humped at summit of posterior declivity.

DESCRIPTION—**SIZE** (mm × 100): Holotype TL: EL:EW 136:86:56; HW:PL:PW 35:34:43. **COLOR:** Black, maxillary palpi and legs rufo-testaceous, apical edge of abdominal sterna narrowly testaceous. **HEAD:** Eyes small, in dorsal aspect five convex facets in longest series. Ocelli distinct, shining. Frons weakly gibbous, mcr. and dull on disc, non-mcr. and shining on vertex, distinctly finely sparsely punctulate, 0.5×ef, interstices 2–4×pd; anteoocellar impressions broad, shallow, dull, strongly mcr. and densely punctulate. Clypeus dull, alutaceous, finely sparsely punctulate. Labrum dull, apicomediaally angulately emarginate to 0.4 length of labrum. **PRONOTUM:** Weakly transverse, subcordate, widest just before middle; anterior margin shallowly arcuate over median 0.70, without hyaline border; anterior angles obtuse, posterior angles rectangular, sides from widest point to base sinuate, sides finely margined, feebly crenulate; dorsally mcr., subnitid; with 10 foveae disposed as follows: an elongate anterior and rounded posterior median, two admedian oval shallow almost obsolete on each side and a large shallow oval and round deep posterior adlateral; foveae distinctly, reliefs effacedly mcr.; reliefs distinctly punctate, size and interstices c. 0.5×ef; transverse band of larger and deeper punctures behind anterior edge and before base, 1×ef, interstices less than puncture diameter. **ELYTRA:** Elongate-oval, sides behind shoulders subparallel to middle thence to subtruncate apex very weakly attenuate; sutural angle rectangular; sides feebly explanate in male, more explanate in female. Series consisting of basal large sharply impressed punctures separated by about their own diameter and becoming less close and less sharply impressed posteriorly; 1st and 2nd series confluent at summit of posterior declivity; 5th and 6th confluent in basal 0.25. Intervals, except 8th, basally scarcely elevated, and particularly internal ones with a linear series of not much

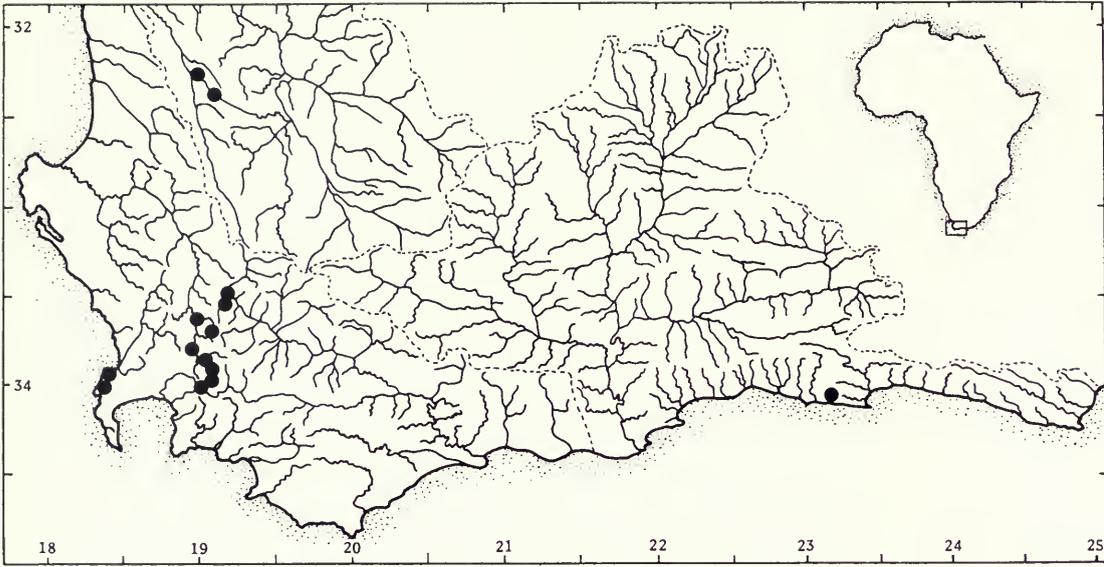


FIG. 95. *Mesoceration languidum*, geographical distribution.

smaller punctures giving a distinctly dull rugose aspect to scutellary region; medial intervals unilinearly granulate, granules continuing beyond summit of posterior declivity; 8th interval longitudinally costate from humeral region to shortly before apex. Conjointly elytra widely very shallowly impressed between carinae in front of middle, weakly humped at suture at summit of posterior declivity. **VENTER:** Mentum strongly alutaceous, dull. Thoracic sterna and abdominal sterna 1–4 clothed with short setae, except glabrous prosternal midlongitudinal ridge, glabrous dull mesosternal plaques, and glabrous strongly shining triangular basomedial area on metasternum. Sternum 1 with sublateral basal carina on each side. Sternum 5 of male distally smoothly rounded, base narrowly and sides more widely clothed leaving a semicircular posteromedian glabrous area; 6th sternum conical, glabrous. Fifth sternum of female subtruncate and rather thickened at posterior edge, base very narrowly and sides more widely clothed with setae leaving a large quadrate area glabrous and strongly shining; 6th sternum conical, not produced at middle. **LEGS:** Male apical protarsomere with two spiniform setae. Femora and tibiae mcr., femora more shining. **WINGS:** Reduced, length about 0.3× length of elytron. **AEDEAGUS:** TL 29 (fig. 98).

ETYMOLOGY—Latin, *dissonum* (discordant, different), in reference to the unusual shape of the aedeagal distal piece.

DISTRIBUTION—South Africa, the western, central, and eastern Cape Region (fig. 97).

DISCUSSION—There is a moderate amount of variation in the shape of the aedeagal apex. Illustrated (fig. 98) are two aedeagal variants from the same locality at the northwestern extreme of the distribution: Cedarburg, Eikeboom (Endrödy-Younga #1906). The aedeagal forms of specimens from the easternmost localities were very similar to that of the type.

PARATYPES (94)—**South Africa:** Cape Province: Same data as holotype, (1/0 AMG). As above, 28.IX.1951, (GBG Stn. 1: 373K), (0/2 AMG). S.W. Cape Mts., Hawequas SE, 1100 m, 33.41S–19.06E, water coll. in rapid, 5.XI.1973, Endrödy-Younga (#203), (4 TMP). W. Cape, Cedarberg Pass, 32.23S–19.06E, from river bed, 2.IX.1979, Endrödy-Younga (#1629), (7 TMP). S. Cape Mt., Helderfontein, 1150 m, 33.55S–20.52E, river stones, 31.X.1978, Endrödy-Younga (#1497), (33 TMP). Langeberge, Helderfont, 1150 m, 33.56S–20.52E, river stones, 8.III.1979, Endrödy-Younga (#1565), (13 TMP). S. Cape Prov., Nature's Valley Res., 33.58S–23.34E, river stones, 10.XII.1977, Endrödy-Younga (#1416), (1 TMP). As above, shore washing, (1 TMP). Cape, Cederberg, Eikenboom, 900 m, 32.27S–19.10E, river stones, 29.X.1981, Endrödy-Younga (#1906), (6 TMP). S.W. Cape, Nuweberg For. Sta., 34.03S–19.04E, river stones, 14.XI.1973, Endrödy-Younga (#247), (1 TMP). Wit River (trib. of Gamtoos River), 33.39S–24.31E,

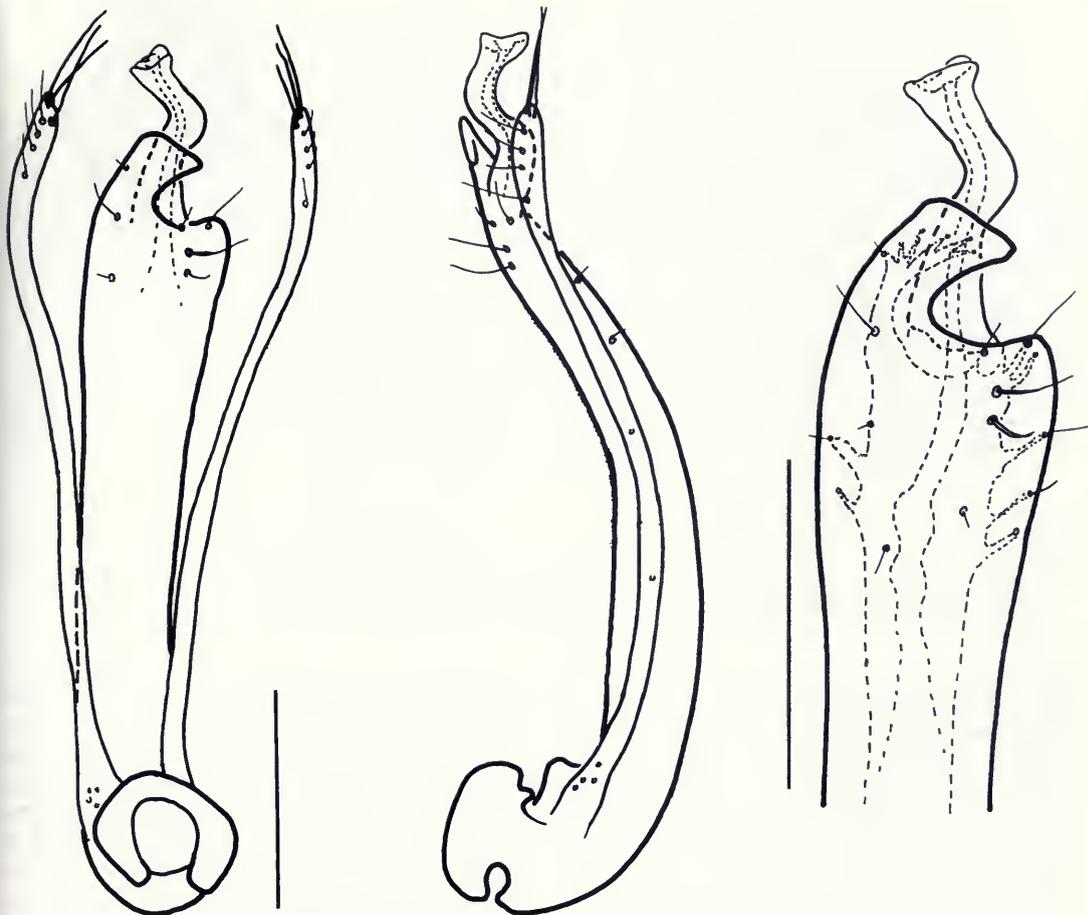


FIG. 96. *Mesoceration concessum*, aedeagus of holotype. Scale lines = 0.1 mm.

stones in current, 24.II.1987, F. de Moor & N. Köhly, (GAM Stn. 1: 11AW), (0/1 AMG). Wit River (trib. of Gamtoos River), 33.38S–24.30E, stones in current, 19.VI.1986, F. de Moor & N. Köhly, (GAM Stn. 2: 2BC), (2/1 AMG). Paarl District, Du Toit's Kloof, on stones and roots in stream through rotten granite, 2500 ft, 33.43S–19.11E, 5.III.1954, J. Balfour-Browne, (8/11 BMNH). Swellendam District, Swellendam, in rapid stream at roadside, c. 34.01S–20.26E, 12.III.1954, J. Balfour-Browne, (1/1 BMNH).

Mesoceration capense Janssens

Figure 99

Mesoceration capense Janssens, 1967: 11 (n. sp., desc., fig.).

HOLOTYPE—Male, South Africa: “Cap de Bonne Espérance”; deposited in ISNB.

DIAGNOSIS—Recognized among other members of the *endroedyi* group by the elytra, which have series 1–2 confluent beyond the summit of posterior declivity, the relatively elongate pronotum, PL:PW c. 42:48 (0.88) (range in other members of the species group c. 0.79–0.86), the relatively large body size, TL c. 172, and the aedeagus (fig. 99). Refer also to the diagnosis of *concessum*. Females are not yet known.

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 172:100:66; HW:PL:PW 38:42:48. **COLOR**: Dorsum piceous, elytral sides and apices and posterior border of pronotum very narrowly rufo-brunneous; maxillary palpi and legs rufo-brunneous; venter rufo-piceous. **HEAD**: Entirely mcr. and densely punctulate, dull, subrugulose. Eyes small, in dorsal aspect five convex facets in longest series. Ocelli small, c. 1.5 × ef. Frons subtumid at vertex, anteocellar sulci deep. Labrum apicome-

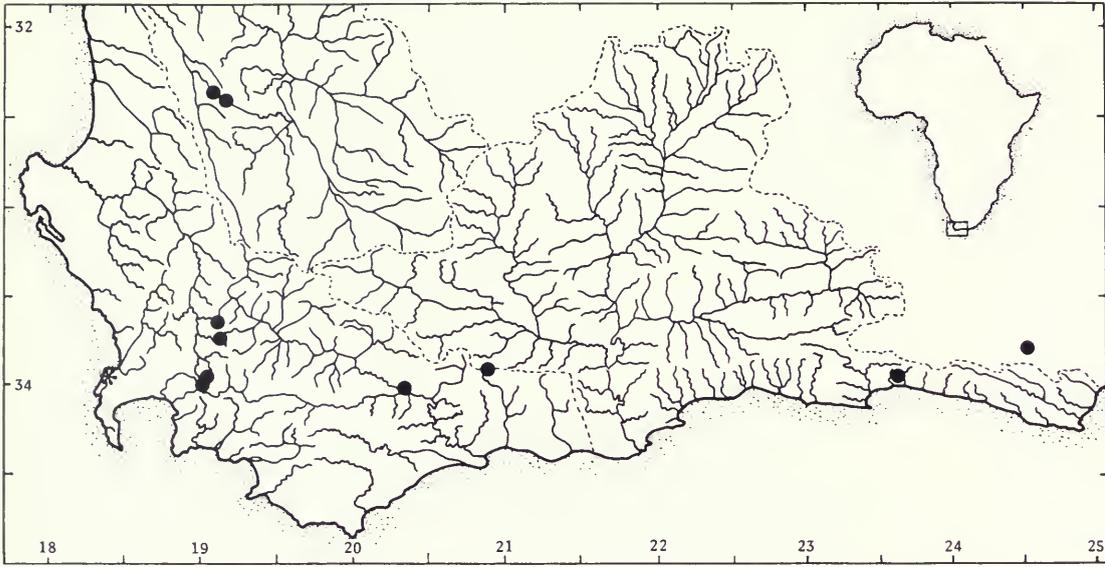


FIG. 97. Geographical distributions of *Mesoceration dissonum* (O) and *Mesoceration concessum* (*).

dially angulately emarginate to 0.4 length of labrum. **PRONOTUM:** Cordate, widest at anterior third; anterior margin shallowly arcuate over median 0.70, without hyaline border; anterior angles oblique, posterior angles rectangular, sides in basal 0.5 sinuate; weakly convex with 10 foveae as follows: an elongate anterior shallowly joined with wider oval posterior median, an anterior round and larger deeper oblique oval posterior admedian, and a large shallow anterior and small deep oval posterior adlateral on each side; both reliefs and foveae distinctly mcr.; relief punctures distinct, c. $0.5 \times ef$, interstices $1 \times pd$; basal band of larger deeper punctures, $1 \times ef$, interstices less than puncture diameter. **ELYTRA:** Oblong-ovate, widest at middle, sides narrowly rounded, almost straight over median third, distinctly explanate, minutely serrate; apices transversely roundly truncate, very slightly dehiscent at sutural apical angle, and markedly apically declivous. Serial punctures basally $1 \times ef$ and sharply impressed, interstices $1 \times pd$, progressively smaller and less impressed to apex. Series 1–2 confluent beyond summit of posterior declivity, 5–6 confluent in basal 0.25. Intervals shining, flat except 8th, each with unilinear row of widely spaced fine punctures, anterior rim of each raised in minute granule, all punctures with a very obscure short fine seta; 8th interval sharply costate from shoulder almost to apex, thickened and punctulate at posterior extreme. Conjoint elytra widely shallowly impressed between costae in

front of middle, distinctly humped at top of apical declivity at suture. **VENTER:** Mentum mcr. Thoracic sterna and abdominal sterna 1–4 clothed with dense setae, except midlongitudinal prosternal carina, mesosternal plaques, and very small glabrous shining basomedial spot on metasternum. Sternum 5 similarly clothed except distal median semicircular shining glabrous area. Sternum 6 totally shining. **LEGS:** Femora and tibiae alutaceous. **WINGS:** Reduced. **AEDEAGUS:** TL 50 (fig. 99).

DISTRIBUTION—Presently known only from the type specimen; the precise locality within the Cape of Good Hope is unknown.

DISCUSSION—The elytra differ from the figure given by Janssens (1967) as follows: the apices of the specimen are narrowly transversely truncate and very weakly dehiscent (not separately sharply rounded as illustrated); the elytral carina at posterior extreme extends beyond the posterolateral angle, is arcuate toward the sutural angle, and is thickened (not nearly straight and gradually disappearing). Also, the figure does not show the confluences of series 1 with 2 and 5 with 6.

Mesoceration apicalum Species Group

Recognized by the discal elytral intervals 2–5 raised slightly, transversely rounded, very discrete, without granules, the series striate-impressed,

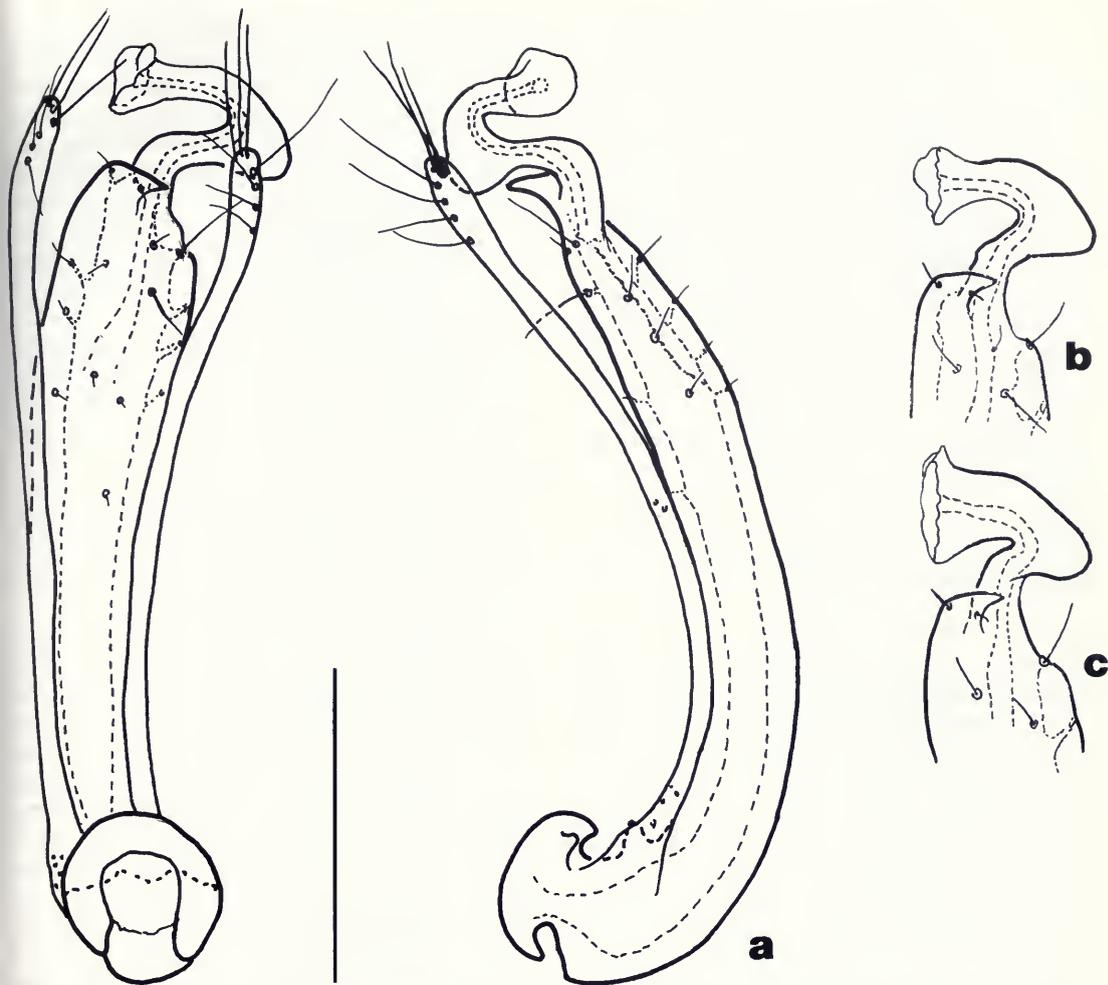


FIG. 98. *Mesoceration dissonum*, aedeagi. a. Holotype. b-c. Variants, both from Cedarburg, Eikeboom. Scale line = 0.1 mm.

without granules, the 5th sternum normal in both sexes, the elytra attenuate from near middle to apices, posterolateral angles obsolete or narrowly separated from the sutural angle, the elytral epipleuron ended at or beyond posterior margin of 5th sternum, the pronotum microreticulate, at least laterally, and the elytral disc with six series of punctures between the suture and the carina (5th and 6th series confluent basally, 6th interval not continuing to base).

Mesoceration apicalum new species

Figures 100-102

HOLOTYPE—Male, South Africa: Cape Province (southern), Harkerville Forest, 34.04S-23.10E,

river stones, 7.XII.1976, S. Endrödy-Younga (#1298); deposited in the TMP.

DIAGNOSIS—In addition to the group characteristics, recognized by the elytral serial punctures, which are large, 2-3 × largest pronotal punctures, and strongly impressed in the basal 0.5, but very fine and lightly impressed in apical 0.5, the mesosternal plaques contiguous and slightly raised to form inverted V-shaped prominence, subfoveate behind, and the elytral apices, which are acute, very narrowly dehiscent, each produced as a minute point (but see Discussion, below).

DESCRIPTION—SIZE (mm × 100): Holotype TL: EL:EW 156:96:61; HW:PL:PW 36:36:44. COLOR: Rufo-brunneous, anterior margin of pronotum narrowly rufous; maxillary palpi and legs rufous; venter piceous except mentum and 5th and

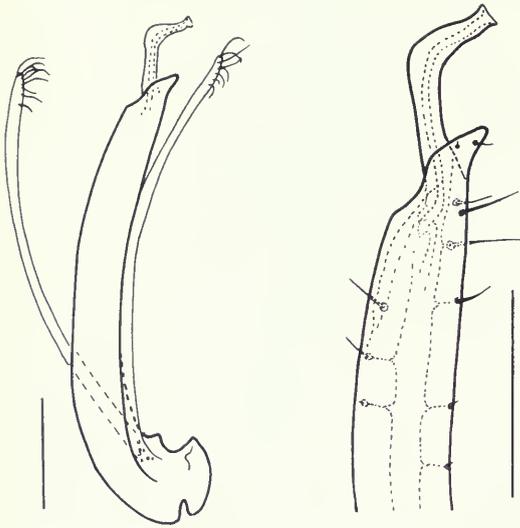


FIG. 99. *Mesoceration capense*, aedeagus of holotype. Scale line = 0.1 mm.

6th sterna rufo-piceous. **HEAD:** Dull, entirely finely mcr. Frons antecellar sulci deep, wide, bordered in front of eye with sharp ridge. Ocelli very distinct. Maxillary palpus ultomere elongate-fusiform, length $2\times$ penultomere. **PRONOTUM:** Subcordate, widest near anterior third; anterior margin shallowly arcuate over median 0.70, without hyaline border; anterior angles obtuse, posterior angles rectangulate; 10 dorsal foveae as follows: a rather shallow elongate anterior obsoletely joined with round posterior median, a round anterior and oval posterior admedian and large shallow anterior and deep posterior adlateral on each side; disc entirely mcr., quite dull; sides finely crenulate. **ELYTRA:** Widest at about midlength; widening sharply from humerus to about 0.1 of length then gradually to midlength, behind midlength gradually roundly attenuate to apices; sutural apices very narrowly dehiscent, each produced as minute point where dehiscent angle meets side margin; sides weakly explanate. Series 1–4 striate-impressed on disc, becoming nearly obsolete at summit of posterior declivity; series 5–6 confluent in basal 0.33; series 1–2 becoming confluent at summit of posterior declivity. Intervals all dull, mcr., on disc transversely rounded and about as wide as punctures; 8th interval strongly costate from shoulder. Serial punctures in basal 0.5 large, $2\text{--}3\times$ largest pronotal punctures, strongly impressed, setae very weakly developed, recumbent. **VENTER:** Submentum and mentum strongly alutaceous, dull. Metathoracic disc slightly concave

and with weak median longitudinal impression. Thoracic sterna and abdominal sterna 1–4 clothed with dense setae, except glabrous prosternal mid-longitudinal ridge, glabrous dull mesosternal plaques, and glabrous strongly triangular area basomedially on metasternum. Mesosternal plaques contiguous and slightly raised to form inverted V-shaped prominence, subfoveate behind. Sternum 1 with sublateral and submedial basal carina on each side. Sternum 5 similarly clothed except for a semilunar distal glabrous area that is mcr., 6th glabrous, shining, mcr. **LEGS:** Male apical protarsomere with two spiniform setae. Femora and tibiae dull, distinctly alutaceous. **WINGS:** Fully developed. **AEDEAGUS:** TL 31 (figs. 100, 101).

ETYMOLOGY—Latin, *apicalum* (apex), in reference to the pointed apices of the elytra and the variably expanded apex of the aedeagal distal piece.

DISTRIBUTION—The western, central, and eastern Cape Region, South Africa (fig. 102).

DISCUSSION—The specimens from the Langeberge Mountains are slightly larger (TL c. 164 vs. 156), are darker in dorsal coloration, have the strial impressions slightly more apparent, and have the minute point at the elytral apices less apparent than the specimens from the type locality near Knysna. The Langeberge specimens also differ in having the aedeagal apex not expanded to form a small cup shape, as is present in the aedeagi of specimens from the type locality (figs. 100, 101); for these reasons these specimens were originally assigned to another species. However, the two males from Stormsrivier, which is east of Knysna, have an external appearance like the Knysna series, but the aedeagus is more similar to that of the Langeberge specimens. These differences are interpreted as intraspecific variation. This hypothesis needs to be tested when more material from this geographical area is available for taxonomic study.

PARATYPES (110)—**South Africa:** Cape Province: Same data as holotype (37 TMP). Langeberge, Helderfontein, 33.56S–20.52E, 1160 m, river stones, 9.III.1979, S. Endrödy-Younga (#1565), (66 TMP). S. Cape Mt., Helderfontein, 33.55S–20.52E, 1150 m, 31.X.1978, Endrödy-Younga, (2 TMP). Outeniqua Mountains, Montagu Pass, 33.47S–20.07E, (SSAE 187), 28.II.1951, Brinck & Rudebeck, (0/1 LUM). Knysna, Diepwalle, 450 m, mixed *Podocarpus* forest, window-malaise traps, c. 34.03S–23.03E, 12–30.XII.1981, S. & J. Peck (155), (2 FMNH). Cape Province, Stormsrivier, Skuinsbos, mixed *Podocarpus* forest, window traps, c. 33.59S–

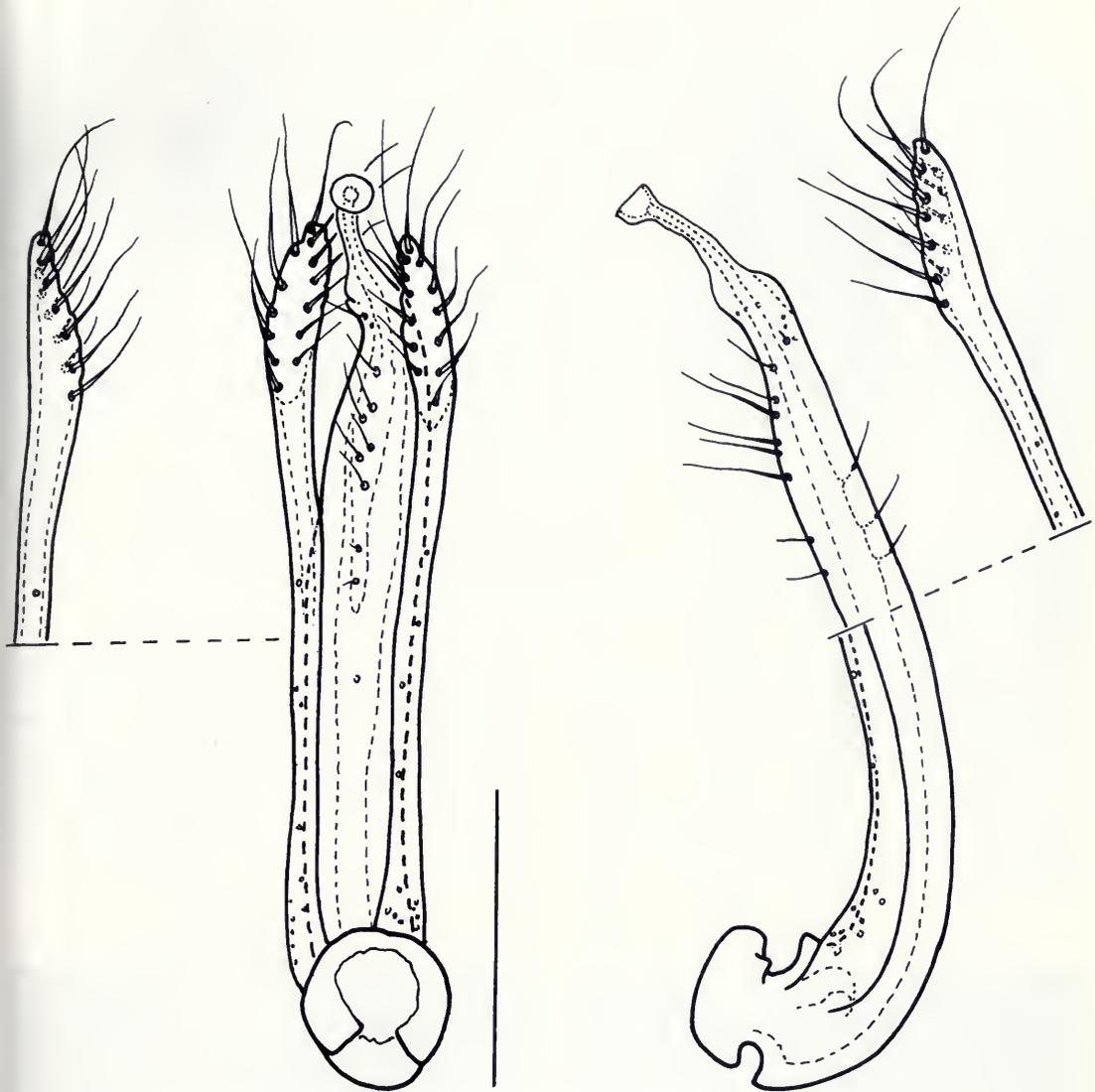


FIG. 100. *Mesoceration apicalum*, aedeagus of holotype. Scale line = 0.1 mm.

23.52E, 6-30.XII.1981, S. & J. Peck (144), (1/1 FMNH).

***Mesoceration pallidum* Species Group**

Recognized by the elytral form, widest just behind shoulders, then regularly attenuate to apices, the flat, shining, nongranulate discal elytral intervals, the summit of the posterior declivity being near midlength, the moderately to sharply acute elytral apices, and the elytral disc with six series between the suture and the carina (5th and 6th

series confluent basally, 6th interval not attaining the base).

***Mesoceration pallidum* new species**

Figures 16c, 103, 105a, 106a

HOLOTYPE—Male, South Africa: Cape Province, Assegaibos stream, cold trib. of Great Berg River, 33.58S-19.04E, bottom sample, 19.VII.1950, A. D. Harrison, (GBG Stn. 2: 29C); deposited in AMG.

DIAGNOSIS—An extremely distinct species be-

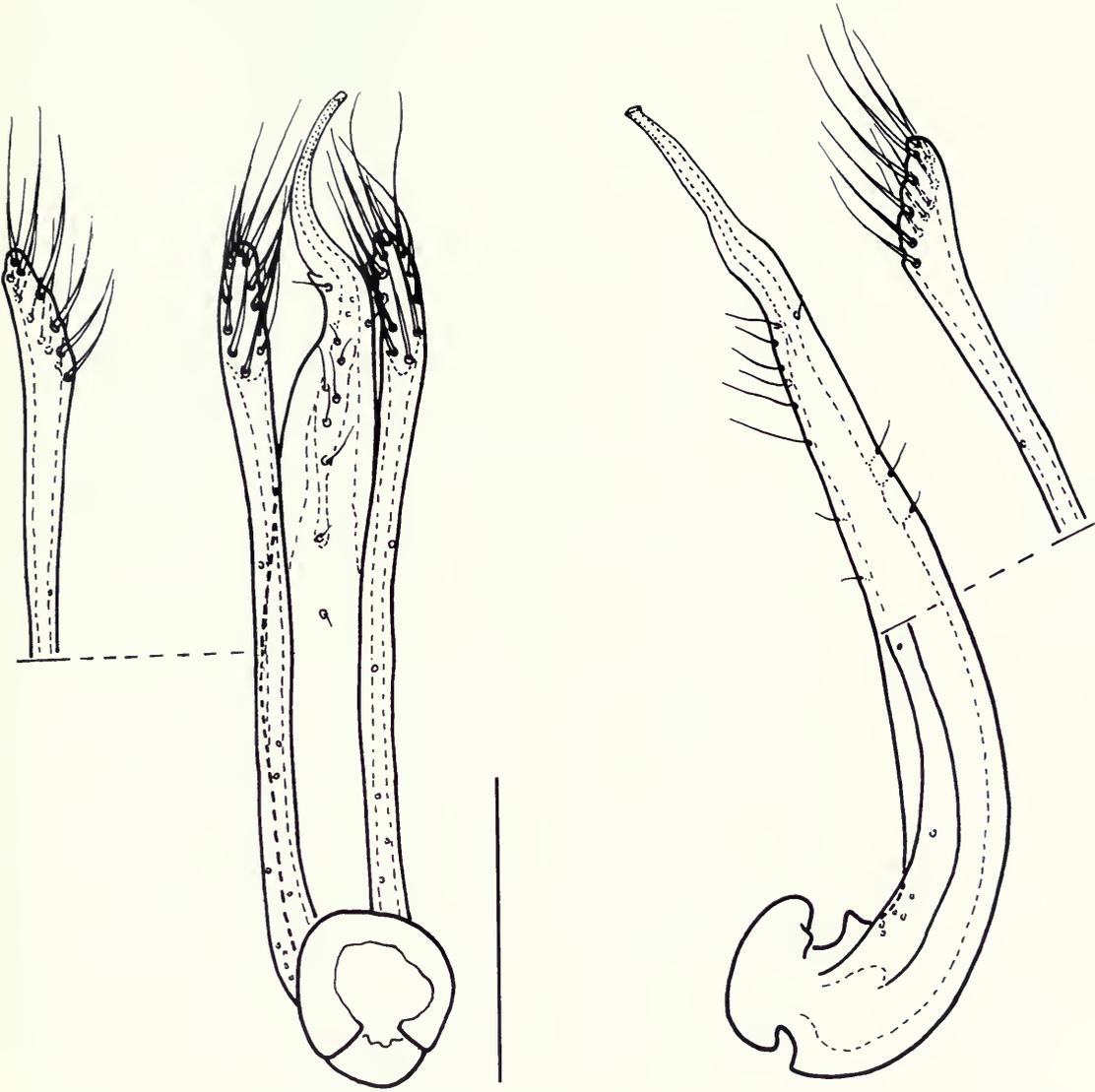


FIG. 101. *Mesoceration apicalum*, aedeagal variant from Langeberge Mountains. Scale line = 0.1 mm.

cause of the posteriorly attenuate, shining elytra, which are nearly flat basally between the carinae, the small and coarsely faceted eyes, and the pale testaceous coloration (figs. 16c, 103).

DESCRIPTION—**SIZE** (mm \times 100): Holotype TL: EL:EW 136:80:52; HW:PL:PW 34:32:39. **COLOR**: Testaceous; head rufo-testaceous, disc of frons more or less piceous. **HEAD**: Obsolete mcr., subnitid, with a few very fine punctures. Clypeus finely but quite copiously punctulate, rather obsolete mcr. at middle, more distinctly so toward sides. Frons longitudinally gibbose, antecellar sulci wide and deep; entirely shining; disc finely

but quite distinctly punctulate, punctures much smaller than eye-facet. Ocelli distinct. Eyes small, in dorsal aspect 4 quite convex facets in longest series. Maxillary palpomeres 2-4 ratio of lengths c. 1:2:1. **PRONOTUM**: Cordate, widest at about anterior 0.33; anterior margin shallowly arcuate from side to side; anterior angles widely obtuse-rounded, sides from widest point to base strongly sinuate, basal angles rectangular; sides finely margined, barely visibly crenulate; with 10 dorsal foveae disposed as follows: an elongate anterior and rounded posterior median, a rather deep small rounded anterior and a larger shallower oval pos-

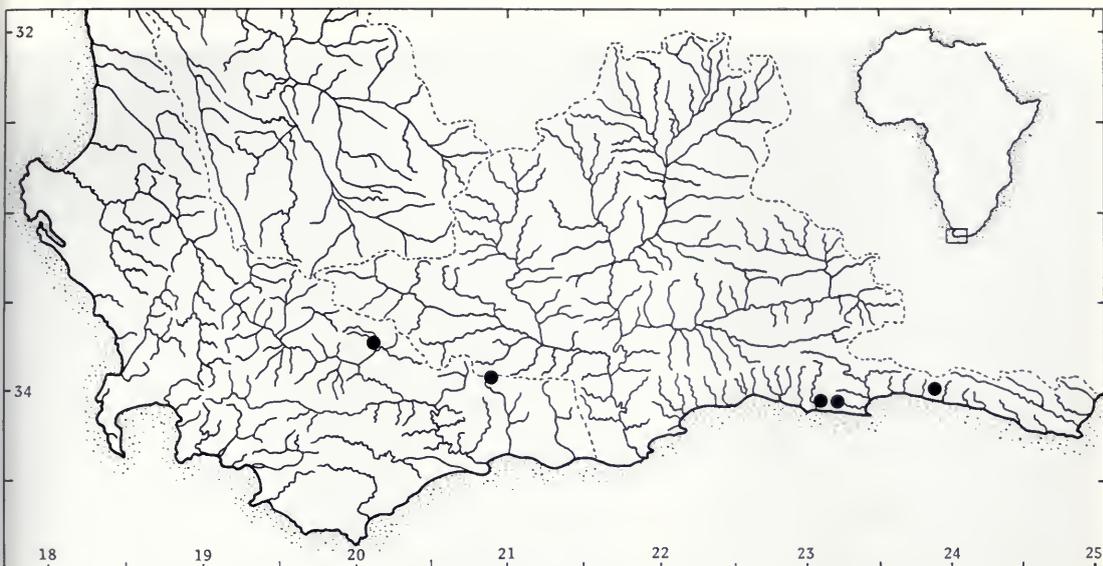


FIG. 102. *Mesoceration apicalum*, geographical distribution.

terior admedian, a large saucer-shaped anterior and small deeper posterior adlateral on each side; reliefs, posterior median and posterior admedian foveae finely mcr.; an anterior and a posterior sub-basal transverse band of large deep punctures, punctures at least as large as eye-facet. **ELYTRA:** Ovate, broadest at anterior 0.25, from widest point roundly attenuate to moderately conjoint apices;

sides quite strongly explanate. Serial punctures basally strong and deeply impressed becoming less impressed and smaller about middle and evanescent posteriorly; 5th and 6th series confluent in basal 0.25. Intervals, except 8th, narrower than serial punctures near base, strongly shining, lacking granules; 8th interval strongly costate from shoulder but not quite attaining apex. **VENTER:**



FIG. 103. *Mesoceration pallidum*. a. Head and pronotum. b. Elytra.

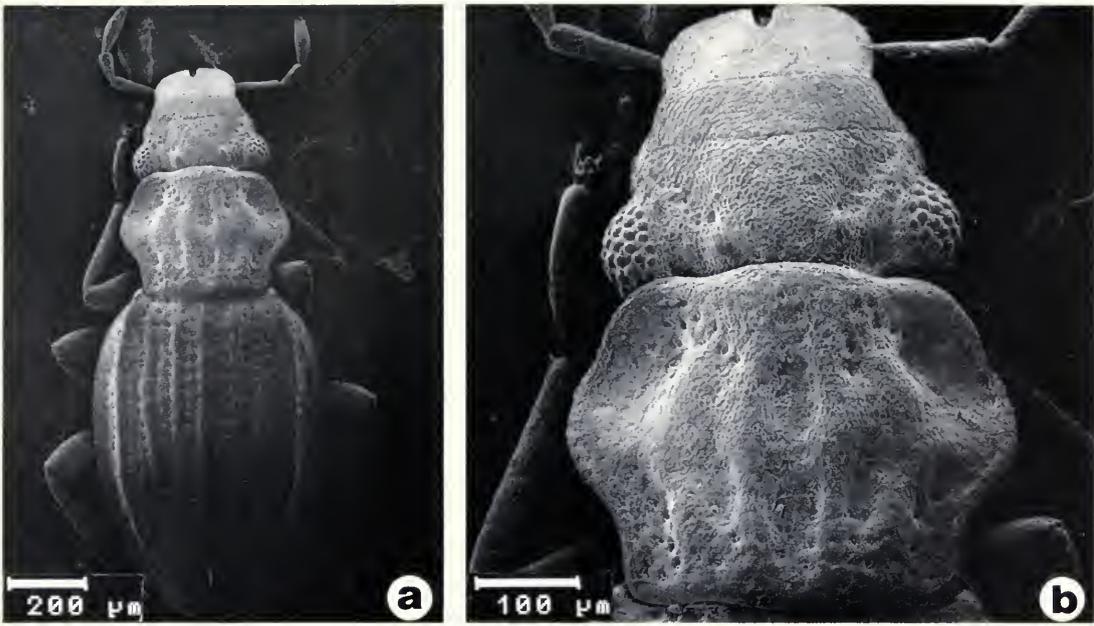


FIG. 104. *Mesoceration sulcatulum*. a. Dorsum. b. Head and pronotum.

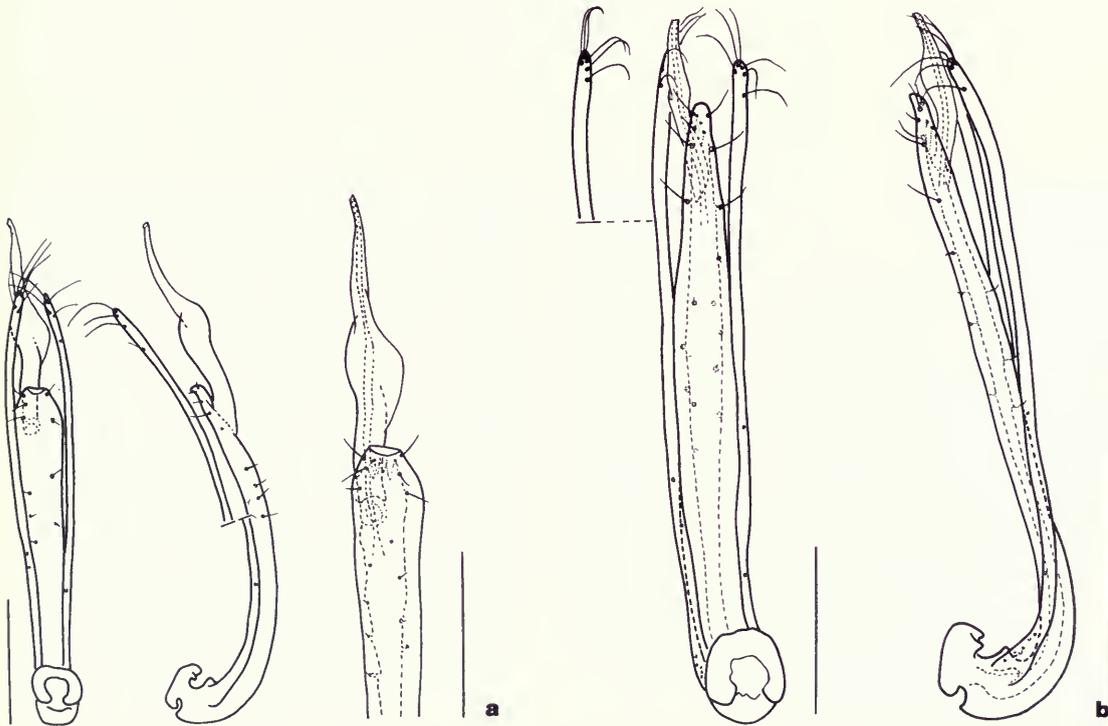


FIG. 105. *Mesoceration*, aedeagi of holotypes. a. *M. pallidum*. b. *M. sulcatulum*. Scale lines = 0.1 mm.

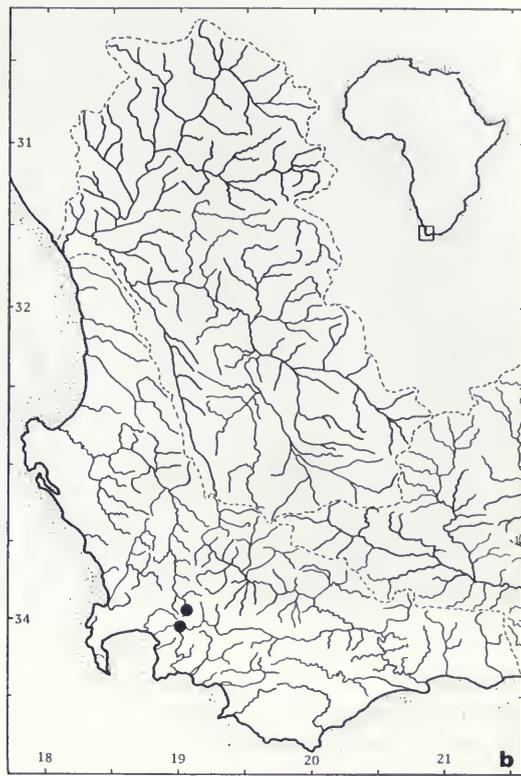
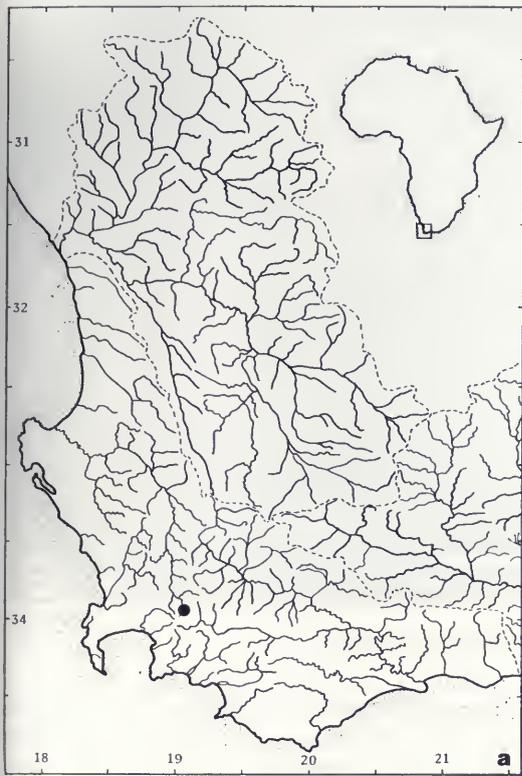


FIG. 106. Geographical distributions of *Mesoceration* species. a. *M. pallidum*. b. *M. sulcatulum*.

Mentum dull, strongly alutaceous. Thoracic sterna and abdominal sterna 1–4 clothed with dense setae, except glabrous prosternal midlongitudinal ridge, glabrous dull mesosternal plaques, and glabrous shining minute basomedial spot on metasternum. Metasternal disc in basal 0.5 slightly concave. Sternum 1 with sublateral and very faint submedial basal carina on each side. Fifth sternum in male clothed quite narrowly at sides with similar setae leaving a broad strongly shining median glabrous area. **LEGS:** Male apical protarsomere with two spiniform setae. Elongate, femora thickened, tibiae shining. **WINGS:** Reduced. **AEDEAGUS:** TL 41 (fig. 105a). Female unknown.

ETYMOLOGY—Latin, *pallidum* (pale), in reference to the dorsal coloration.

DISTRIBUTION—Currently known only from type locality in the western Cape Region (fig. 106a).

PARATYPES (2)—Same locality as holotype, but stones in current: 30.VIII.1950, (GBG Stn. 2: 74C), (1/0 AMG); 13.I.1951, (GBG Stn. 2: 169A), (1/0 AMG).

Mesoceration sulcatulum Species Group

Recognized by the elytral disc with intervals 1, 3, and 5 tectiform, the elytra very broad at the shoulders, regularly attenuate from about mid-length to the apices, the nondenticulate pronotal sides, and the elytral disc with six series between the suture and the carina (5th and 6th series confluent basally, 6th interval not attaining the base).

Mesoceration sulcatulum new species

Figures 15b, 104, 105b, 106b

HOLOTYPE—Male, South Africa: Cape Province (western), Dwarsberge, 34.02S–19.01E, river stones, 15.XI.1973, Endrödy-Younga (#256); deposited in TMP.

DIAGNOSIS—Recognized from other members of the genus by the elytral disc having the 1st, 3rd, and 5th intervals tectiform, the elytral shape, the nondenticulate pronotal sides, the head width less



FIG. 107. *Mesoceration abstrictum*. a. Dorsum. b. Head and pronotum.

than the pronotal length (HW:PL c. 35:36), and the small, finely but convexly faceted eyes (fig. 15b, 104). Females further recognized by the large transversely concave glabrous very shining quadrate area of the 5th sternum, the posterior edge of which is markedly thickened, and the apicomediaally excised 6th sternum.

DESCRIPTION—SIZE (mm × 100): Holotype TL: EL:EW 138:82:55; HW:PL:PW 35:36:44. **COLOR:** Black; pronotum anteriorly and posteriorly and elytra posteriorly rufescent; maxillary palpi and legs flavous; venter piceous. **HEAD:** Entirely mcr., almost impunctate, antecellar sulci shallow. Eyes small, in dorsal aspect 5 facets in longest series; facets small, convex. **PRONOTUM:** Obcordate, length slightly greater than width of head (c. 35:36), widest slightly before middle; anterior margin shallowly arcuate over median 0.70, without hyaline border; anterior angles obtusely rounded, posterior angles rectangular, sides from widest point to base sinuate; weakly convex, with 10 dorsal foveae as follows: an elongate anterior median confluent with nearly similar elongate posterior median, a small round anterior and larger oval posterior admedian and a large oval and fairly large elongate oval posterior adlateral on each side; surface reliefs and foveae finely mcr., finely punctulate except punctures slightly larger in anterior admedian foveae. Sides unmarginated and not at all

crenulate. **ELYTRA:** Broadly oval, shoulders widely rounded, median 0.33 almost parallel-sided, posterior 0.33 regularly attenuate to sutural apices. Sides explanate. Serial punctures as large as eye-facet at base and fairly well impressed, finer but still well impressed distally; series 1–4 confluent apically, 5–6 confluent in basal 0.25. Intervals basally dull, mcr., apically shining; sutural slightly, 1st, 3rd, and 5th in basal 0.5 distinctly roundly tectiform, 8th sharply carinate from shoulder almost to apex; other intervals quite flat. **VENTER:** Mentum mcr. Thoracic sterna and abdominal sterna 1–4 clothed with dense setae, except glabrous prosternal midlongitudinal ridge, glabrous dull mesosternal plaques, and glabrous strongly shining small basomedial spot on metasternum. Sternum 1 with sublateral and submedial basal carina on each side. Male: 5th sternum similarly clothed except semilunulate distal glabrous area alutaceous, dull; 6th sternum similarly alutaceous, dull. Female: 5th sternum similarly clothed very narrowly at base and quite narrowly laterally leaving a large transversely concave glabrous very shining quadrate area, posterior edge markedly thickened; 6th sternum glabrous, longitudinally impressed, apicomediaally excised. **LEGS:** Male apical protarsomere with four spiniform setae. Femora and tibiae strongly mcr., dull. **WINGS:** Reduced, length about 0.3 × length of elytron. **AE-**

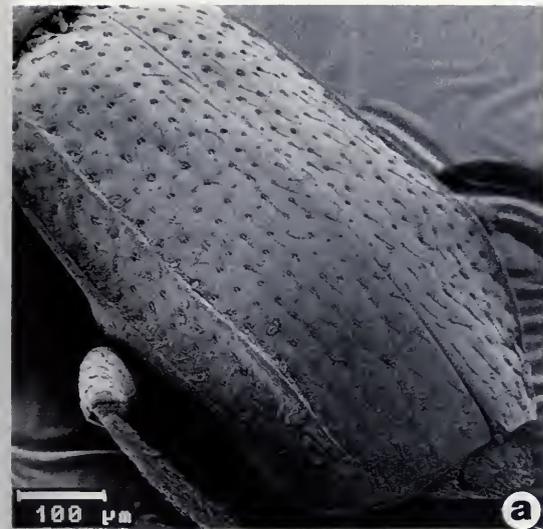


FIG. 108. *Mesoceration abstrictum*, female. a. Elytra, oblique view. b. Metasternum and abdomen, oblique view.

DEAGUS: TL 41 (fig. 105b).

ETYMOLOGY—Latin, *sulcatulum* (little furrow), in reference to the elytral structure.

DISTRIBUTION—South Africa, the southwestern Cape Region (fig. 106b).

PARATYPES (28)—**South Africa:** Cape Province: Same data as holotype, (27 TMP). Assegaibos stream, cold trib. of Great Berg River, 33.58S–19.04E, stones in current, 20.XI.1950, A. D. Harrison, (GBG Stn. 2: 138F), (0/1 AMG).

Mesoceration abstrictum Species Group

Recognized by the elytron basally having five series of punctures between the suture and the carina, the 5th and 6th series beginning together at about midlength of elytron, the extremely truncate elytra, and the small coarsely faceted eyes.

Mesoceration abstrictum new species

Figures 7j, 15d, 107–110

HOLOTYPE—Male, South Africa: Cape Province, Great Berg River, main river, railway bridge above Groot Drakenstein, 33.52S–19.02E, stones in current, 13.I.1951, A. D. Harrison (GBG Stn. 5: 167E); deposited in AMG.

DIAGNOSIS—Distinguished from other members of the genus by the testaceous color, the shining head, pronotum and elytra, the markedly trun-

cate elytral apices, the small, coarsely faceted eyes, and the large inverted V-shaped shining glabrous area of the metasternum (figs. 15d, 107). Females are further recognized by the highly modified elytral epipleuron with trisinate free margin (fig. 108).

DESCRIPTION—**SIZE (mm × 100):** Holotype TL: EL:EW 116:66:45 (length to apices); HW:PL:PW 28:28:34. **COLOR:** Testaceous, maxillary palpi flavo-testaceous. **HEAD:** Labrum very obsoletely mcr., almost impunctate. Clypeus shining, very sparingly finely punctulate, punctures much smaller than eye-facet. Frons weakly gibbose, shining, very finely sparsely punctulate, antecellar sulci wide and shallow, dull, alutaceous. Ocelli indistinguishable. Eyes small, in dorsal aspect 3–4 facets in longest series, facets coarse. Maxillary palpomeres 2–4 ratio of lengths c. 1:2:1. **PRONOTUM:** Widest just in front of middle; anterior margin extremely shallowly emarginate over median 0.5; anterior angles obtuse, sides behind widest point feebly sinuate, posterior angles rectangular; sides feebly margined and very weakly crenulate; discal foveae disposed as follows: an elongate fairly deep anterior very shallowly confluent with a shallow rounded posterior median, a deep oval anterior and a slightly shallower short oval posterior admedian, a rather large shallow saucer-shaped anterior and deeper elongate-oval posterior adlateral on each side; foveae vaguely mcr., reliefs strongly shining and very finely sparsely punctulate; a transverse subbasal band of quite large, distinct punctures almost size of eye-

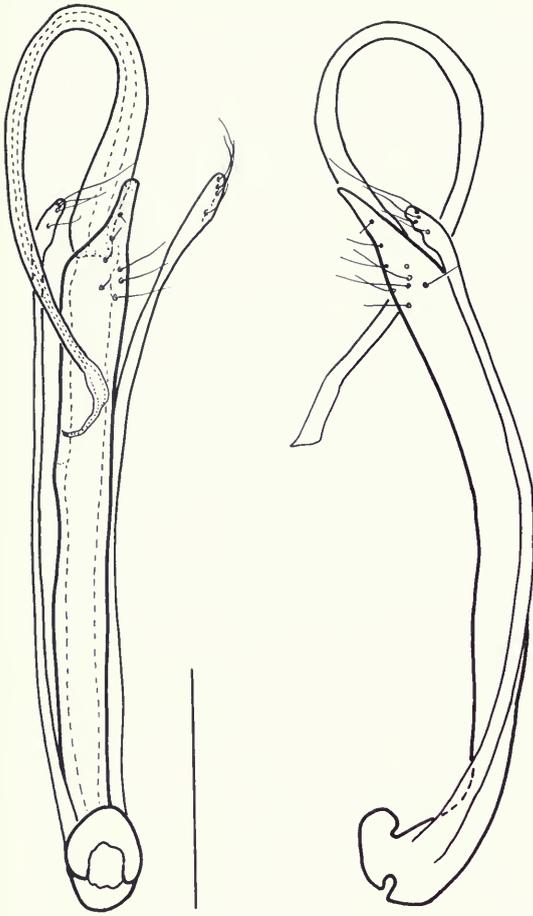


FIG. 109. *Mesoceration abstrictum*, aedeagus of holotype. Scale line = 0.1 mm.

facet. **ELYTRA:** Short, oblong, apically transversely truncate; greatest width just behind middle in male, close to apex in female; sides feebly explanate in male from behind shoulder to about 0.2 of length from apex, sides behind widest point weakly rounded attenuate to almost rectangular-rounded external apical angles; in female strongly explanate from behind shoulder right to quite sharply rectangulate-rounded external apical angles. Elytral epipleuron free margin normal in males, markedly trisinuate in females. Series not at all striate-impressed, punctures basally as large as or larger than eye-facet, progressively slightly smaller and less impressed but distinct toward apex; basally with five series between suture and costa; 2nd and 3rd series confluent with 1st before apex, 5th and 6th beginning together at about midlength of elytron, then continuing separately and attain-

ing apex. Intervals, except 8th, flat, strongly shining; 8th sharply acutely costate from shoulder almost to apex. Sutural apical angles rectangular. **VENTER:** Mentum subnitid, finely mcr. Prosternum clothed with dense setae anteriorly and laterally, glabrous in front of procoxae for 0.5 length of prosternum, and glabrous on midlongitudinal ridge. Mesosternum clothed with dense setae, except glabrous confluent, minutely raised mesosternal plaque area, and glabrous dull mesosternal sutures. Metasternum clothed with appressed setae except large inverted V-shaped shining glabrous area extended from near base of mesosternum to hind margin, occupying all of disc, with shallow midlongitudinal depression. Sternum 1 with very faint sublateral basal carina on each side. Abdominal sterna 1-4 clothed with appressed setae, except glabrous intercoxal sternite and disc of 1st sternum. Sternum 5 similarly clothed except very narrow band at posterior border glabrous, very dull, lighter in coloration than remainder of sternum. Sternum 6 glabrous except for a subterminal belt of piliferous punctures, rather obsoletely mcr., less shining in male than in female. **LEGS:** Male apical protarsomere with two spiniform setae. Meso- and metatibiae of male arcuately excised over about middle 0.33 of length on lower face, of female simple. **WINGS:** Reduced, barely attaining posterior edge of metanotum. **AEDEAGUS:** TL 37 (fig. 109).

ETYMOLOGY—Latin, *abstrictum* (off, straight), in reference to the markedly truncate elytral apices.

DISTRIBUTION—Presently known from three localities in the western Cape Region and one disjunct locality in the eastern Cape Region (fig. 110).

DISCUSSION—The aedeagus of this species is relatively long compared to the body length. In the few males available, the base of the aedeagus was found to be, curiously, in the middle of the metasternum, not in the abdomen as in all other species of the genus.

PARATYPES (11)—**South Africa:** Cape Province Same data as holotype, (0/2 AMG). Franschhoek Stream, trib. of Great Berg River, bridge at La Motte, 33.53S-19.03E, stones in current, 5.II.1951 (GBG Stn. 4: 187G), (0/1 AMG). As above 11.IV.1951, (GBG Stn. 5: 231C), (0/2 AMG). Lower Forest Reserve, Driefontein Bridge, 33.55S-19.03E, stones in current, 13.II.1952, (GBG Stn 3: 512A), (0/1 AMG). S. Cape Prov., Nature's Valley Res., 33.58S-23.34E, river stones, 10.XII.1977 Endrödy-Younga (#1416), (3 TMP). S.W. Cape Bainskloof, Breë R., 33.30S-19.10E, shore wash-

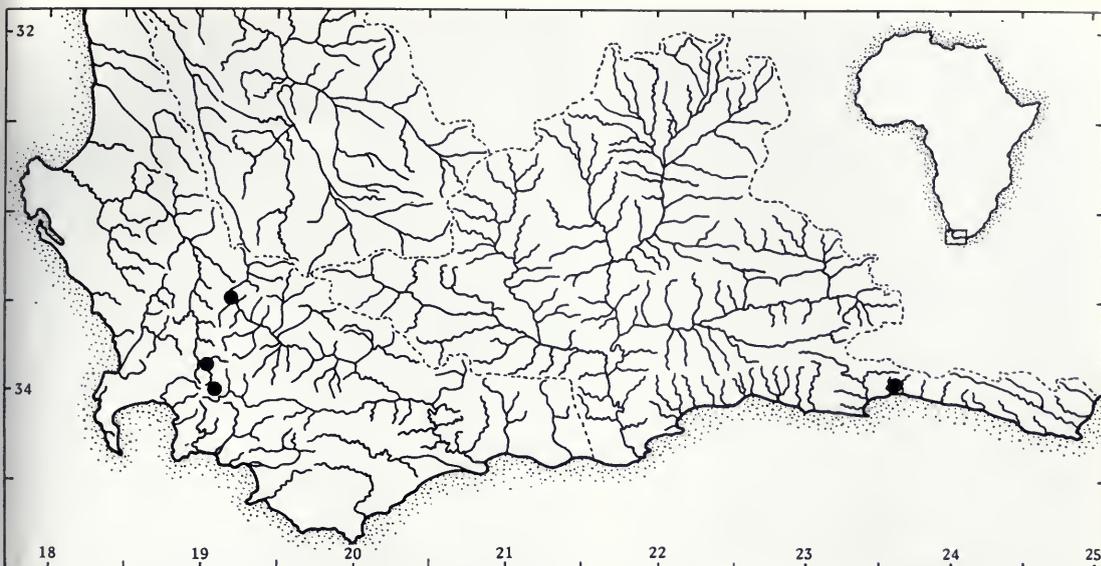


FIG. 110. *Mesoceration abstrictum*, geographical distribution.

ing, 10.XI.1973, Endrödy-Younga (#227), (1 TMP). S.W. Cape, Nuweberg, 10 km NE, 34.00S–19.06E, shore washing, 13.XI.1973, Endrödy-Younga (#240), (1 TMP).

Discozantaena
Perkins & Balfour-Browne
New Genus

Type species: *Discozantaena genuvela* new species.

DIAGNOSIS—Recognized by the broad habitus with transversely convex elytra, the explanate pronotum, which is notched on each side just before the acute posterior angle, the short maxillary palpi and legs, the 10 articles of the antenna, the absence of stiff or erect setae at the margin of the prothoracic antennal cavity, the reduced hydrofuge pubescence, the two brush-like clusters of setae on the last abdominal tergum of both sexes, and the form of the aedeagus, with very short parameres.

DESCRIPTION—Form broadly ovate, elytral disc transversely convex, pronotum explanate. Length about 1.65 mm, width 0.95 mm. Head broad, width about twice length. Labrum set under anterior margin and at an angle to very broad clypeus. Ocelli moderately developed, subtriangular. Labroclypeal suture arcuate or weakly bisinuate. Maxillary palpus short, shorter than antenna, palpomeres 2–4 length ratios about 3:2:5; last pal-

pomere penicillate, length 0.5 basal width of mentum. Mentum length about 0.5 basal width; anterior margin obscured by dense setae. Genae rounded, divided by median groove, a distinct lateral sulcus for reception of each antenna. Antennomeres 10 (5 + 5); pubescent club loosely articulated. Pronotum very transverse, length about 0.5 width; sides arcuate, more strongly so near base, then turning outward to form acute process at each posterolateral angle; sides denticulate; anterior margin nearly straight except for median 0.33 broadly and shallowly emarginate, narrow hyaline border in emargination; posterior margin median 0.33 produced slightly and with very narrow hyaline border; disc with anterior transverse depression and posterior U-shaped depression; lateral depressions broad, median area of each with low rounded relief; surface with setigerous granules. Prosternum with procoxae contiguous, apex of intercoxal process apparent behind coxae; area in front of procoxae nearly flat, lacking median carina, on each side with small cluster of stiff spines; antennal cavity broad, shallow and mcr., lacking stiff or erect marginal setae; low ridge separating cavity from inflexed margin of pronotum, ridge becoming obsolete posteriorly; no carina separating pubescent prosternal area from nonpubescent inflexed margin of pronotum; coxal cavities nearly completely closed behind. Mesosternum with longitudinal ridge on each side; intercoxal process moderately wide. Metasternum with anterior intercoxal ridge contiguous with mesosternal inter-

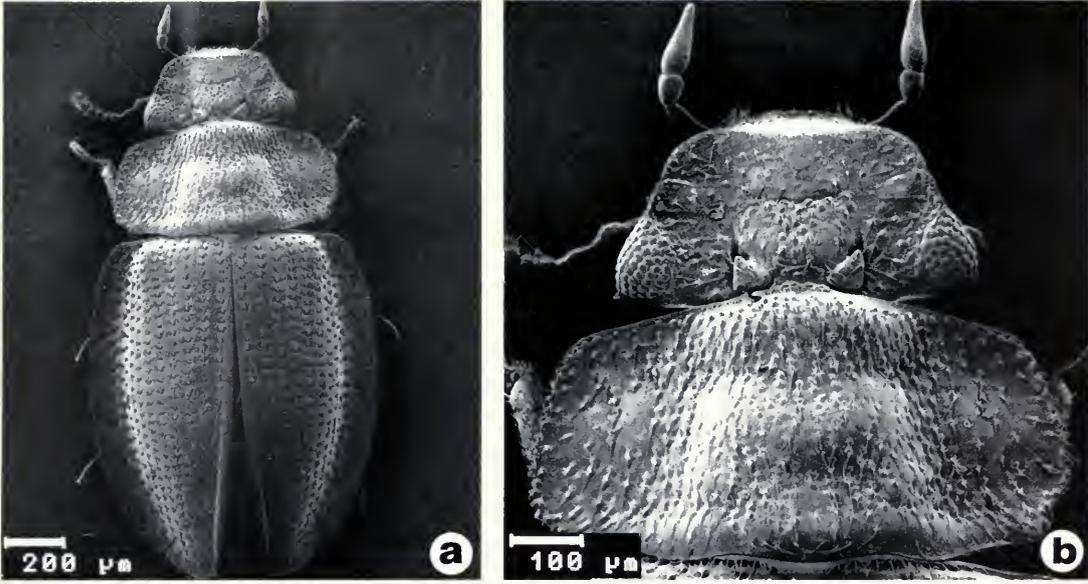


FIG. 111. *Discozantaena genuvela*. a. Dorsum. b. Head and pronotum.

coxal process; metasternum short, length about equal to length of mesocoxa in brachypterous forms, longer in fully winged forms; median area depressed. Each elytron with 10 rows of punctures plus 2 rows on explanate margin. Elytra conjointly quite transversely convex. Humeri absent in brachypterous forms. Sutural stria in posterior 0.5. All sterna rather flat. Hydrofuge pubescence very sparse medially, denser laterally. Intercoxal sternite small, triangular. Both sexes with last tergum bearing on each side a marginal brush-like cluster of setae. Legs short and stout, all femora thickened. Metafemora lateral margin arcuate. Meta-trochanter elongate, length slightly greater than twice width. All tarsi short. Aedeagus with very short parameres, inserting near base. Spermatheca elongate, tubular.

ETYMOLOGY—Greek, *disco* (disc) plus *zantes* (one using a comb for carding wool), plus *aena* as in *Parhydraena*. Named in reference to the disc-shaped body and the cluster of stiff spines on each side of the prosternum.

Microhabitats

Specimens of *Discozantaena genuvela* have been sifted from humus substrates, including leaf litter in a kloof, marsh shore debris, and humus near a bat cave. A few specimens were collected by the shore washing technique.

Discozantaena genuvela new species

Figures 1, 111, 112

HOLOTYPE—Male, South Africa: S.W. Cape Mts., Hawequas SE, 1100 m, 33.34S–19.08E, sifted, 5.XI.1973, Endrödy-Younga (#202); deposited in TMP.

DIAGNOSIS—Recognized by the wide explanate margin of the elytra, which cover the tibiofemoral articulations (“knees”) of the middle and hind legs, and the generic characters (fig. 111).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 162:113:92; HW 50; PL:PW:PA:PB 39: 72:60:63. **COLOR**: Dorsum brunneo-testaceous, head and disc of pronotum piceous; venter piceo-testaceous. **HEAD**: Eyes rather small, in dorsal aspect 8 convex facets in longest series. Temples each produced as minute tooth. Ocelli subtriangular, distinct. Frons flattened but feebly gibbous between oblique foveae, disc moderately shining; decumbent pubescence short but rather dense, small granule at base of each seta, on disc setae directed posteriad, near eyes setae directed mediad. Clypeus very transverse, anterior angles very widely rounded, sculptured and clothed as frons, but slightly less densely. Labrum finely mcr., and moderately shining, pubescence very short and sparse; sinuation of anterior margin slightly reflexed. **PRONOTUM**: Very transverse; anterior margin weakly arcuate, median 0.5 with narrow hyaline border; anterior angles sharply rounded:

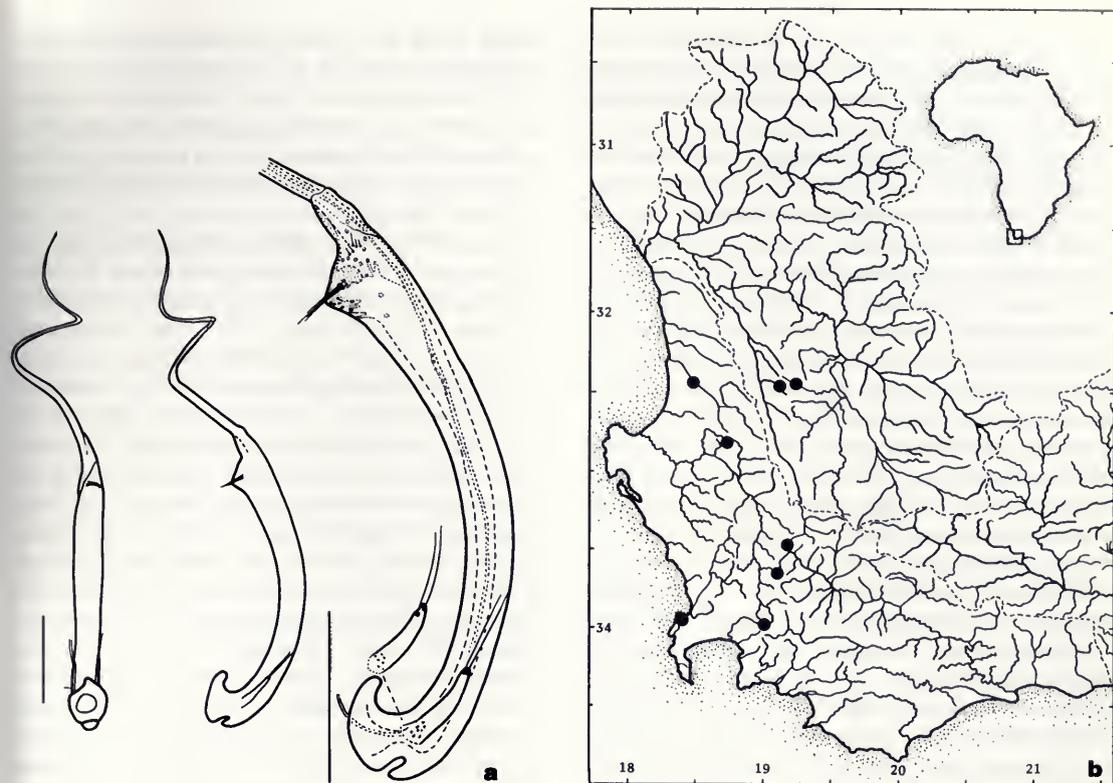


FIG. 112. *Discozantaena genuvela*. a. Aedeagus of holotype. b. Geographical distribution. Scale lines = 0.1 mm.

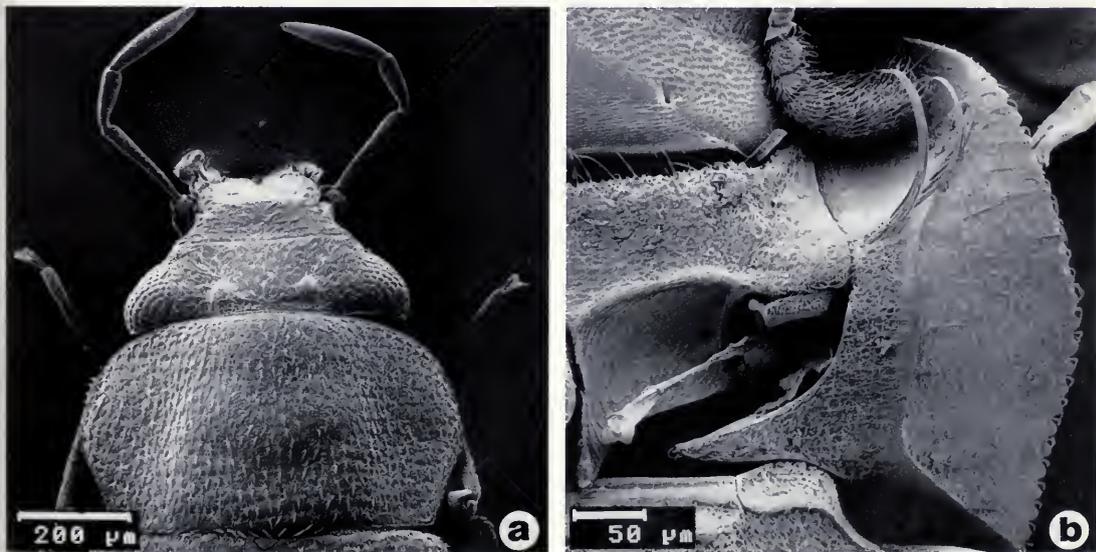


FIG. 113. *Parhydraena* sp. a. Head and pronotum. b. Prosternum, left side.

sides weakly arcuate except emarginate before acute, tooth-like posterior angles; posterior margin arcuate except emarginate near posterior angles. Sides minutely denticulate. Disc quite strongly roundly elevated between anterior and posterior broadly U-shaped transverse impressions, clothed with moderately dense, short decumbent golden setae, socket of each seta very indistinct but anterior rim raised to form distinct oblong granule, some granules appearing 8-shaped; interstices strongly shining, but usually covered with debris. Lateral depressions dull, with setae and granules less dense than those on disc. **ELYTRA:** Anterior angles sharply rounded, sides weakly arcuate to middle, then markedly attenuate to very narrowly truncate apices, sutural apex very minutely produced; external to 10th series broadly explanate almost to apex, moderately shining; sides minutely serrate, pubescence dense and short. Ten-seriate punctate, but two additional series on explanate margin, series barely striate-impressed, punctures transversely oval, those near base contiguous longitudinally posteriorly becoming little more separated and slightly smaller, each with distinct short subdecumbent seta. Intervals impunctate, shining in clean specimens, flat, slightly narrower than serial punctures. **VENTER:** Mentum subquadrate, rather thickly and sharply punctate, punctures setiferous, becoming progressively larger from apex to base, at base size and interstices c. $1 \times ef$, interstices shining. Submentum triangular, punctate similar to base of mentum. Antennal cavities of hypomeron broad and shallow, mcr., lacking setae at margins. Mesosternum with feebly raised reversed pentagonal median plate. Metasternum posteriorly with narrow but sharply impressed median furrow. Thoracic sterna and abdominal sterna 1–4 entirely clothed with sparse short pubescence, especially sparse medially, cuticle micropunctulate. Sternum 5 narrowly at sides of base similarly clothed, remainder of 5th and 6th glabrous, mcr., shining but distally with fairly copious piliferous punctation. Sternum 6 apical margin in males narrowly emarginate, in females broadly emarginate. Sternum 7 in male about as wide as long, laterally pubescent, in female distinctly transverse, entirely pubescent. In both sexes, last tergum marginally on each side of midline bearing fine brush-like cluster of setae. **LEGS:** Short, tarsi very short, slightly shorter than maxillary palpi, three basomeres connate, claws short and stout. Femora thickened. **AEDEAGUS:** TL 60 (fig. 112a).

ETYMOLOGY—Latin, *genuvela* (*genu*, knees; *vela*,

cover, veil); the “knees” (tibiofemoral articulations) are covered by the broadly explanate sides of the pronotum and elytra; in habitus view the knees are faintly visible through the cuticle of the explanate elytral margin.

DISTRIBUTION—South Africa, the western Cape Province (fig. 112b).

PARATYPES (233)—**South Africa:** Same data as holotype, (98 TMP). W. Cape, Hawequas, 33.34S–19.08E, shore washing, 10.XI.1973, Endrödy-Younga (#226), (7 TMP). S.W. Cape, Bainskloof, Breë R., 33.30S–19.10E, shore washing, 10.XI.1973, Endrödy-Younga (#227), (2 TMP). W. Cape, Dwarsberge, 34.02S–19.01E, sifted litter, 15.XI.1973, Endrödy-Younga (#253), (5 TMP). S.W. Cape, Grootdrif Farm, 32.24S–18.27E, ground trap with meat bait, 61 days, 29.VIII.1981, Endrödy-Younga (#1861), (1/0 TMP). S.W. Cape, Devil’s Kloof, 850 m, 32.28S–19.06E, sifted, 30.X.1981, Endrödy-Younga (#1909), (64 TMP). Kirstenbosch, Table Mountain, c. 33.58S–18.25E, humus, XI.1960, N. Leleup, (Z.A. 39), (2 TMP). Table Mountain, Doline. Bats Cave, humus, XII.1960, N. Leleup, (Z.A. 43), (4 TMP). Cape-Cederbg., jeep track, 1130 m, 32.28S–19.14E, sifted, marsh shore, 7.XI.1983, Endrödy-Younga (#2055), (30 TMP). Piketberg District, (lower) Berg River, near Piketberg, 32.53S–18.44E, (GBG 107D), 11.X.1950, A. D. Harrison, (1/0 AMG). Cape District, Cape Town, Peringuey, (12 SAM). Cape Town, Raffray, (0/1 SAM). Cape District, Cape Town, Table Mountain, 2700 ft, Wynberg Cave Ravine, sieved from vegetable debris, 18.XII.1950, Brinck & Rudebeck, (SSAE Stn. 84), (6 LUM).

Parhydraena d’Orchymont

Parhydraena Orchymont, 1937 (type species: *Hydraena brevipalpis* Régimbart, 1906).

Microhabitats

Individuals of *Parhydraena seriata* have been collected by the shore washing technique and by sifting debris from a wet forest ditch. Specimens of *P. lancicula* were found in water trickling over rocks. Several other species were collected by sifting (Perkins, unpubl.).

Parhydraena seriata J. Balfour-Browne Figures 114, 115

Parhydraena seriata J. Balfour-Browne, 1954: 96 (n. sp., desc., fig.).

HOLOTYPE—Male, South Africa: Cape Province, Albany District, Gowie's Kloof; deposited in BMNH.

DIAGNOSIS—Distinguished from *lancicula* by the shining pronotal discal interstices, the shining and flat elytral intervals, the not striate-impressed elytral series, the more elongate elytra (EL:EW 117:88), and the testaceous to dark brown dorsal coloration. Males further recognized by the unmodified 5th abdominal sternum and the aedeagus (fig. 114).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 175:119:82 (TL to elytral apices); HW 50; PL:PW:PA:PB 44:69:53:61. Maxillary palpus length 41, clypeus basal width 27, interocular width 32, protarsus length 23. **COLOR**: Dorsum and legs testaceous to dark brown, head and disc of pronotum brown to black; apex of distal mere of maxillary palpus darker than remainder of palpus. **HEAD**: Eyes moderately large, in dorsal aspect 9 convex facets in longest series. Ocelli distinct round small shining, each located at base of shallow oblique interocular fovea. Frons on disc distinctly finely punctate, c. $1 \times ef$, interstices effacedly mcr., moderately shining, $1-2 \times pd$; area between interocular fovea and eye mcr., punctate, dull. Clypeus dull, mcr. and indistinctly punctate, punctures smaller and less dense than those of frons disc, except anterior margin shining. Labrum dull, apicomedialely emarginate to form rounded lobe on each side; laterally fringed with short arcuate setae. **PRONOTUM**: Anterior margin weakly arcuate, median 0.3 with extremely narrow hyaline border. Anterior angles obtuse, widely rounded. Sides rounded, widest just before middle, behind middle gradually attenuate, very weakly sinuate. Posterior angles obtusangulate. Disc with anterior impression extremely shallow and broad, posterior impression deeper, broadly U-shaped, with median anterior margin more abrupt where disc feebly elevated; punctuation denser in impressions, sparser, $1-3 \times pd$, on low relief separating them, relief with interstices strongly shining; shallow wide impression at each posterior angle. Sculpture laterally subrugose, dull. Each puncture with anterior margin extended posteriorly as narrow ridge, dividing puncture into a pair of two smaller punctures each of which smaller than eye-facet, short recumbent or decumbent seta arising from posterior extreme of dividing ridge. **ELYTRA**: Elongate-ovate, sides subparallel, margins distinct from shoulder for 0.8 of length, sutural angle more rounded in female than in male, in some females dehiscent at suture. Ten-seriate punctate, only first series striate-im-

pressed in distal 0.5, punctures c. $2 \times ef$, longitudinally separated $1-0.5 \times pd$, becoming finer and shallower on apical declivity. Interval width $1-1.5 \times pd$, shining, each with unilinear or irregular row of minute granules, each granule at its posterior side with short recumbent seta, setae very similar in length and density to setae of serial punctures. **VENTER**: Mentum and submentum sparsely finely punctulate, mcr. Metasternum with median elongate oval impression in basal 0.5, midlongitudinal shining carina between anterior extreme of oval impression and mesosternal intercoxal process. Metasternum and abdominal sterna 1-4 hydrofuge pubescent. Sternum 5, in male, hydrofuge pubescent in basal 0.33 laterally, posterior margin of pubescent area produced in middle to 0.75 length of sternum, in female only basal 0.33 of sternum hydrofuge pubescent; shining part of sternum 5 very sparsely pubescent in both sexes, in male slightly swollen. Sternum 6 mcr. but shining, in male anterior part gradually swollen, middle shallowly impressed, transverse wide irregular band of sparse setae across sternum, in female shape simple, transverse band of setae narrower. Male: last sternum asymmetrical, apex lobiform and setose; last tergum with tuft of setae on each side of apicomedian notch into which fits lobe of last sternum. Female: last sternum sparsely pubescent, margin rounded; last tergum with small tuft of setae on each side of apicomedian emargination. **LEGS**: Short, combined lengths of metatibia and metatarsus (36, 27) slightly greater than basal width of pronotum. Basal 3 pro- and mesotarsomeres, in male, with pad of suction setae. **WINGS**: Fully developed. **AEDEAGUS**: TL 40 (fig. 114).

DISTRIBUTION—South Africa, Transvaal Province and the eastern Cape Province (fig. 115).

MATERIAL EXAMINED—**South Africa**: Cape Province: Ciskei, Amatole, Pirie Forest Station, 32.43S-27.17E, shore washing, 8.XII.1987, Endrödy-Younga (#2563), (5/2 TMP). As above, sifting, wet forest ditch, Endrödy-Younga (#2561), (4/2 TMP). Grahamstown, Teafontein Farm, 5.VIII.1939, J. Omer Cooper, (paratypes, BMNH). Transvaal Province: S. Transvaal, Roberts Drift, Vaal R., 27.02S-29.02E, sifted, flood debris, 8.X.1973, Endrödy-Younga (#190), (1/0 TMP). Transvaal, Mt. Sheeba, 24.51S-30.45E, under river stones, 27.XI.1986, Endrödy-Younga (#2322), (1/0 TMP). C. Transvaal, Roodeplaat Dam, 25.37S-28.23E, shore washing, 14.VIII.1974, Endrödy-Younga (#359), (1/0 TMP). Vaal R., 26.49S-30.08E, Stn. V.D.21, (NIWR-VAL 884J), marginal vege-

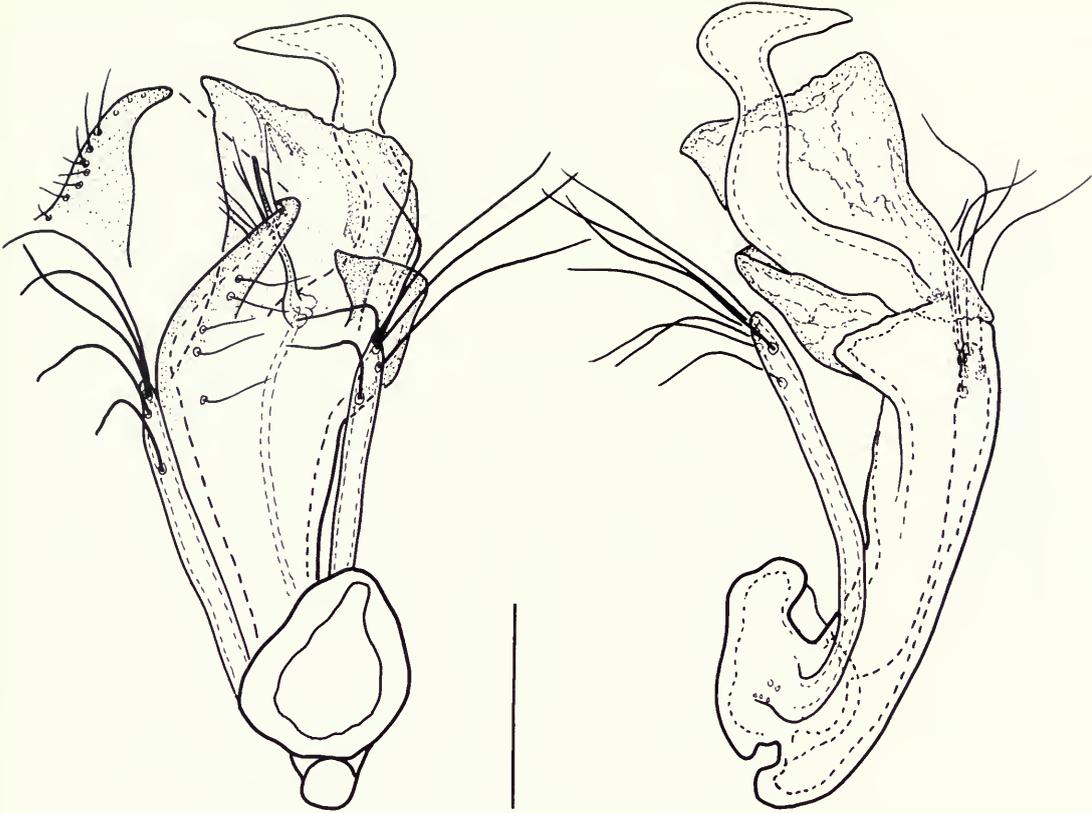


FIG. 114. *Parhydraena seriata*, aedeagus of holotype. Scale line = 0.1 mm.

tation, 21.X.1959, (0/1 AMG). Vaal River where crossed by Ermelo/Amsterdam road, 26.34S–30.12E, (VAL Stn. 2A: 1296L), (1/0 AMG). Vaal River: (VAL 836E), (2/0 AMG); (VAL 1089H), (1/0 AMG); (VAL 1115F), (0/1 AMG). Olifantsvlei, south of Johannesburg, (OLF 86A), (1/4 AMG).

Parhydraena lancicula new species

Figures 115, 116

HOLOTYPE—Male, South Africa: Natal Province, Oribi Gorge, near Port Shepstone, c. 30.40S–30.25E, 1200 ft, in water trickling over rocks, 30.III.1954, J. Balfour-Browne, deposited in BMNH.

DIAGNOSIS—Distinguished from *seriata* by the dull subrugose pronotal sculpture, the raised elytral intervals, the weakly but distinctly striate-impressed elytral series, the less elongate elytra (EL: EW 112:80), and the piceous dorsal coloration. Males are further recognized by the semicircular saucer-like modification of the 5th abdominal sternum, and the aedeagus (fig. 116).

DESCRIPTION—**SIZE (mm × 100)**: Holotype TL: EL:EW 176:112:80 (TL to elytral apices); HW 51; PL:PW:PA:PB 44:69:60:59. Maxillary palpus: interocular width:protarsus 28:35:19. Maxillary palpus length subequal basal width of clypeus. **COLOR**: Dorsum piceous, sides of pronotum and elytra quite narrowly rufescent; maxillary palpi rufo-brunneous; venter piceous; hypomera, elytral epipleura and legs brunneous. **HEAD**: Eyes moderately developed, in dorsal aspect 10 convex facets in longest series. Ocelli distinct round small shining, each located at base of shallow oblique interocular fovea. Frons on disc distinctly finely densely irregularly punctate, some punctures confluent, size c. 1 × ef, interstices moderately shining, some less than puncture diameter; area between interocular fovea and eye mcr., punctate, dull. Clypeus completely dull, mcr. and indistinctly punctate, punctures smaller and less dense than those of frons disc. Labrum dull, apicomediaally emarginate to form rounded lobe on each side; laterally fringed with short arcuate setae. **PRONOTUM**: Anterior margin weakly arcuate, me-

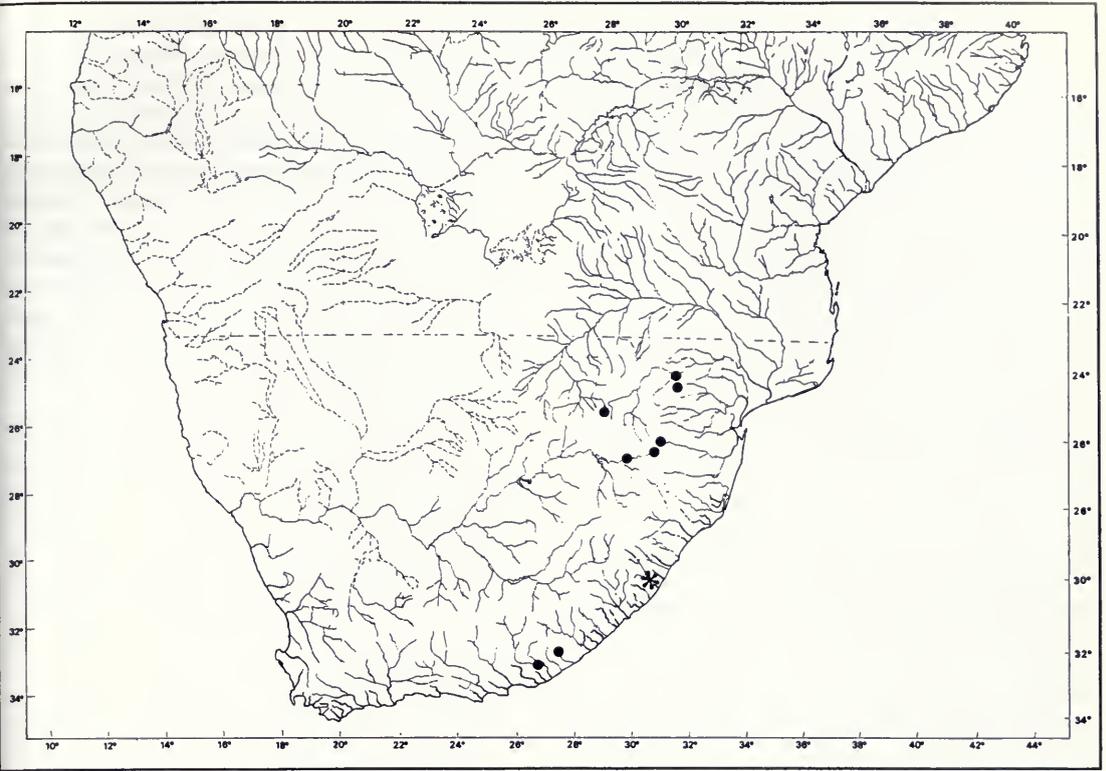


FIG. 115. Geographical distributions of *Parhydraena seriata* (●) and *Parhydraena lancicula* (*).

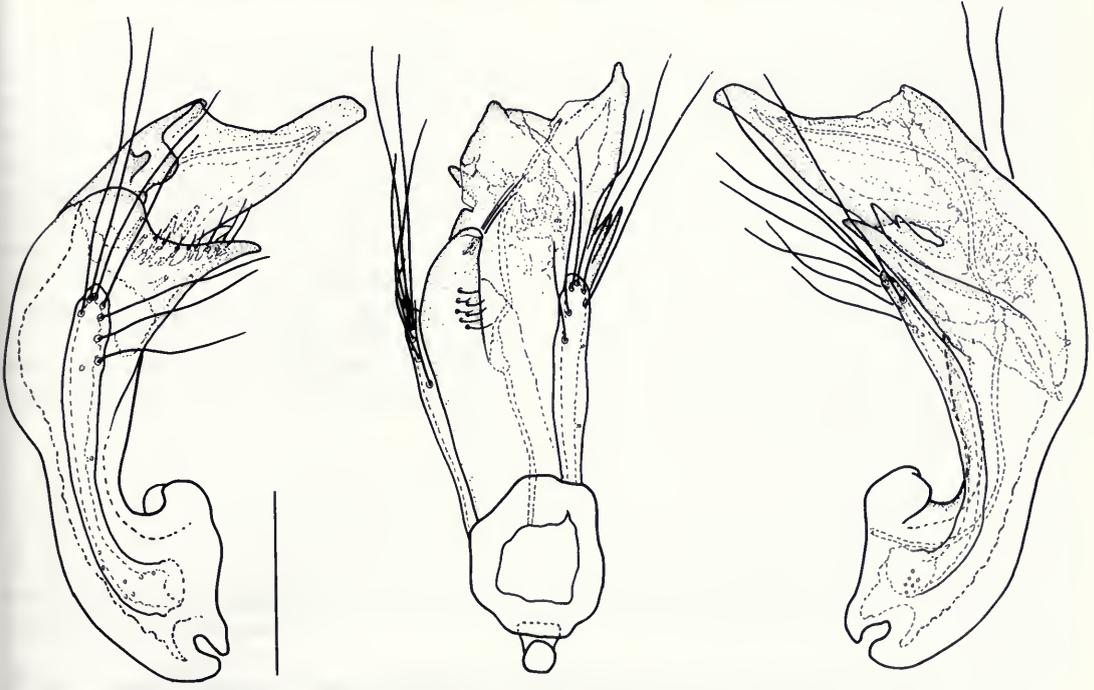


FIG. 116. *Parhydraena lancicula*, aedeagus of holotype. Scale line = 0.1 mm.

dian 0.3 with extremely narrow hyaline border. Anterior angles obtuse, narrowly rounded. Sides rounded, widest just before middle, behind middle gradually attenuate. Posterior angles obtusangulate. Disc with anterior impression extremely shallow and broad, posterior impression deeper, broadly U-shaped, with median anterior margin more abrupt where disc feebly elevated; shallow wide impression at each posterior angle. Sculpture distinctly subrugosely punctate, interstices shining on disc, less strongly or not shining laterally where punctation more rugose. Each puncture slightly heart-shaped, with anterior margin extended posteriorly as narrow ridge into puncture, ridge terminating in minute granule at the base of which issues a short recumbent or decumbent seta; some punctures completely divided by median ridge, hence appearing as a pair of smaller punctures; punctures internally mcr. **ELYTRA:** Elongate-ovate, sides weakly rounded, margins distinct from shoulder for 0.8 of length, apices separately rounded in male, conjointly rounded and sutural angle sharper in female. Ten-seriate punctate, series weakly but evidently striate-impressed even in scutellar region, punctures c. $2 \times ef$, longitudinally narrowly spaced, separated c. $0.5 \times pd$. Interval width $1-2 \times pd$, feebly raised, shining, each with unilinear or sometimes on disc irregular row of minute granules, each granule at its posterior side with short decumbent seta, setae very similar in length and density to setae of serial punctures. **VENTER:** Mentum sparsely finely punctulate, mcr. Metasternum with median elongate oval impression in basal 0.5, midlongitudinal carina between anterior extreme of oval impression and mesosternal intercoxal process. Metasternum, abdominal sterna 1-4 and base of 5th hydrofuge pubescent. Male: 5th sternum in middle 0.5 with well-developed transverse impression that continues posteriorly in distinct semicircular projection with posterior margin glabrous and distinctively thickened, extended over and covering middle of 6th in repose, transverse impression bearing dense setae longer than hydrofuge pubescence; last sternum

with pores and setae on left side only, apicomediaally produced in small lobe; last tergum with patch of setae on each side of well-developed apicomedian notch. Female: 5th sternum simple, nonhydrofuge part of 5th and 6th mcr., dull, distal 0.5 of each with transverse band of moderately long and dense setae; last sternum sparsely setose, distal margin rounded; last tergum with tuft of setae of each side of apicomediaal emargination. **LEGS:** Short, combined lengths of metatibia and metatarsus ($38 + 21$) subequal basal width of pronotum. Basal 3 pro- and mesotarsomeres, in male, with pad of suction setae. **WINGS:** Fully developed. **AEDEAGUS:** TL 35 (fig. 116).

ETYMOLOGY—Latin, *lancicula* (small saucer of a balance) in reference to the modified male 5th abdominal sternum.

DISTRIBUTION—Known only from the type locality (fig. 115).

PARATYPES—Same data as holotype, (4/4 BMNH).

Ochthebius Leach

Ochthebius Leach, 1815 (type species: *Elophorus marinus* Paykull, 1798).

Microhabitats

In southern Africa, members of *Ochthebius* are generally found at the margins of saline or brackish water habitats, including streams and ponds. *Ochthebius pedalis* has been collected in hypersaline springs and marshes in Namibia (see Day & Seely, 1988, for a description of the habitat). Members of *Notochthebius* are found in ocean rock pools above the high tide line, but within the splash zone. The water in these pools, which is provided by splash from breaking waves and by rain, is usually hypersaline. *Ochthebius andronius* is found at the margins of streams and in more ephemeral aquatic habitats such as water holes and roadside pools.

Key to Subgenera, Groups, and Species of Southern African *Ochthebius*

1. Pronotal disc with two deep transverse grooves; pronotal lateral lobes angulate posteriorly; lateral hyaline border very wide; tiny species (TL c. 100) *Aulacochthebius* d'Orchymont
– Characters not as above 2
2. Pronotum with sides of sclerotized part gradually rounded from anterior angles to beyond middle, then produced as minute point in front of excavate posterior angles; pronotal disc with distinct

- midlongitudinal sulcus, but lacking anterior and posterior foveae (*Asiobates* Stephens) *andronius*
- Pronotum with sides of sclerotized part sinuately attenuate or gradually arcuate to basal angles; pronotal impressions various but never with combination as stated above (fig. 13b) 3
 - 3. Head with frontoclypeal suture deeply impressed; labrum shorter than and inclined at distinct angle to clypeus; intercoxal sternite visible; metacoxal cavities distinctly rimmed posteriorly *Ochthebius* (s.s.) 4
 - Head with frontoclypeal suture very weakly impressed; labrum subequal in length to clypeus, slightly inclined if at all; intercoxal sternite and anterior part of 1st abdominal sternum withdrawn under metasternum, pubescent part of 1st sternum forming part of coxal cavity; legs elongate, metafemora slender; inhabits rock pools in coastal splash zone *Notochthebius* d'Orchymont 10
 - 4. Dorsum black with distinctive white pubescence; pronotum with midlongitudinal sulcus; metasternum uniformly clothed with very dense and very short hydrofuge pubescence (Namibiensis Group) 5
 - Dorsum at least in part brownish or testaceous; pronotum with or without midlongitudinal sulcus; metasternum posteromedially with setae less dense than and cuticle more shining than lateral areas, sometimes strongly shining and nearly glabrous 7
 - 5. Elytron without "accessory series" between 1st and 2nd series and between 9th and 10th series; explanate margin of elytron distinctly wider in front of than behind middle (in female about as wide as mesotibia); pronotal posterior foveae well developed, microreticulate within *namibiensis*
 - Elytron with "accessory series" between 1st and 2nd series (in basal 0.33) and another between 9th and 10th series (punctures sometimes subserially arranged); explanate margin of elytron very narrow in both sexes, widest at midlength; pronotal posterior foveae varying from obsolete to well developed 6
 - 6. Pronotal sides concavely attenuate from near anterior angles, hyaline border very wide, nearly as wide as subdigitiform, sharply rounded lateral lobe; pronotal posterior foveae well developed *spatulus*
 - Pronotal sides sinuately attenuate, concave from about middle to posterior angles, hyaline border much narrower than widely rounded lateral lobe; pronotal posterior foveae obsolete or weakly developed *pagotrichus*
 - 7. Elytral intervals 2, 3, 5, and 7 each with unilinear row of erect short fine setae; labrum in both sexes bearing nonspiniiform setae, anterior margin apicomediaally emarginate; pronotal foveae confluent medially with shallow midlongitudinal impression (location marked by microreticulation) (Extremus Group) *extremus*
 - Elytral intervals without rows of erect setae; labrum in male with short spiniiform setae forming group on each side of middle, anterior margin apicomediaally reflexed; pronotal impressions various (Salinarius Group) 8
 - 8. Pronotum with midlongitudinal sulcus well developed, even in middle; anterior and posterior foveae separate from or only very shallowly joined to sulcus; elytron testaceous with brownish longitudinal lines through each series *salinarius*
 - Pronotum with midlongitudinal impression restricted to anterior and posterior, obsolete if at all present over median area; anterior and posterior foveae deeply confluent with respective parts of midlongitudinal impression; elytron without longitudinal lines of color, often with darker coloration at summit of posterior declivity 9
 - 9. Pronotal reliefs with coarse, irregularly spaced punctures, some separated by narrow walls; metasternum pubescent laterally, disc strongly shining, glabrous except few setiferous punctures; female with wide median glabrous strongly shining area on sterna 3 and 4 and anterior part of 5; smaller species (TL c. 166) *spinatus*
 - Pronotal reliefs finely sparsely punctate; metasternum with small basomedian area less densely pubescent and more shining than remainder, which is microreticulate beneath hydrofuge pubescence; female with narrow median glabrous weakly shining area on sterna 2-4 and anterior part of 5; size larger (TL c. 185-210) *pedalis*
 - 10. Elytral punctures serial except random near suture basally, near humerus, and laterally beyond 8th series; pronotum with lateral lobes rugulose, discal interstices shining; larger species (TL c. 240) *rubripes*

- Elytral punctures completely random; pronotum uniformly finely microreticulate, dull; smaller species (TL c. 192) *capicola*

Ochthebius (sensu stricto)

***Ochthebius (s.s.) extremus* (Péringuey)**

Figures 117, 118

Hydraena extrema Péringuey, 1892: 106 (n. sp., desc.).
Ochthebius extremus d'Orchymont, 1933: 409 (n. comb., desc.).
Ochthebius (s.s.) extremus d'Orchymont, 1943: 24 (note).

LECTOTYPE (herein designated)—Male, South Africa: Cape Town; deposited in SAM.

DIAGNOSIS—Recognized by the elytral intervals 2, 3, 5, and 7 each with a unilinear row of short stiff erect setae, the densely coarsely punctate and mcr. pronotal foveae and subrugose lateral depressions, the basally mcr. clypeus, the metasternal medioposterior area much less densely pubescent and more shining than remainder, which is mcr. beneath hydrofuge pubescence, and, in males, the shallow apicomedian emargination of the labrum and the aedeagus (fig. 117).

DESCRIPTION—**SIZE** (mm × 100): TL:EL:EW 187:126:88; HW 50; PL:PW:PA:PB 45:61:59:46. **COLOR**: Head black, strongly aeneous; pronotum piccous on disc, dark brown laterally; elytra brownish testaceous, sometimes with darker "cloud" on each elytron at summit of posterior declivity, columellae of serial punctures appearing only slightly darker than surrounding cuticle; venter piceous, head and apical abdominal sterna piceo-testaceous; maxillary palpi and legs testaceous. **HEAD**: Eyes rather small, in dorsal aspect 8 weakly convex facets in longest series. Frons densely punctate and dull near eyes, interstices narrow walls, on disc more sparsely but distinctly punctate, puncture size irregular, 1–0.3 × ef or smaller, interstices shining, setae indistinct, recumbent, length 1–2 × ef; interocular foveae large round, deep, width of each about 0.66 distance separating them. Clypeus punctate similar to frons disc but finer on shining anteromedian area, basally and laterally dull, mcr. Labrum in male finely sparsely setiferously punctate, interstices shining, in female more densely punctulate, duller; anterior margin rounded or very weakly sinuate, edge minutely reflexed in male. **PRONOTUM**: Subcordate, widest just behind anterior angles; anterior margin weakly sinuate, without postocular emarginations or processes, hyaline border well devel-

oped; sides sinuately attenuate to posterior angles, rather wide lateral hyaline border beginning just behind anterior angles, continuing around basal angles and along base. Disc with anterior pair of foveae joined by transverse depression nearly as deep as foveae, connected by shallow midlongitudinal impression to deep posterior transverse depression broadly U-shaped, deepest in middle; discal impressions together forming anchor shape; distinct impression at each posterior angle. Disc with foveae densely punctate and mcr., some punctures confluent and mcr. within; reliefs slightly more finely and sparsely punctate, size and interstices c. 1 × ef, setae recumbent and very indistinct, interstices shining, with very sparse and exceedingly fine mcp. ground sculpture. Lateral depressions slightly inflated, coarsely densely rugosely punctate and mcr. **ELYTRA**: Sides regularly arcuate, widest at middle, explanate margin in male narrower than, in female about equal to greatest width of tarsus. Apices in male individually narrowly rounded, in female conjointly rather sharply rounded. Ten-seriate punctate, series not at all striate-impressed except sutural series behind middle, on disc punctures large and well impressed, 1–1.5 × ef, longitudinal interstices much smaller than punctures, distally punctures progressively smaller and more longitudinally separated, at summit of posterior declivity interstices c. 1 × pd. Intervals flat, wider than serial punctures, weakly alutaceous, moderately shining; intervals 2, 3, 5, and 7 each with unilinear row of erect, short, rather stiff setae, rows 2–3 attaining apical 0.66, rows 5 and 7 ended near midlength of elytron, interstices separating setae of a row about equal to or slightly greater than interstices of serial punctures (if abraded, location marked by sockets that are more darkly colored than surrounding cuticle). Elytron also with few long erect nervure setae, especially on intervals 5 and 7 in apical 0.5. Setae of serial punctures recumbent, each attaining base of next in series. **VENTER**: Mentum shining, finely sparsely recumbently setiferous punctate. Metasternum medioposterior area much less densely pubescent and more shining than remainder, which is mcr. beneath hydrofuge pubescence, setal sockets in shining area larger than those laterally. Abdominal sterna 1–5 entirely clothed with dense hydrofuge pubescence, 6–7 shining, distal 0.5 sparsely pubescent. **LEGS**: Slender, moder-

ately long, tarsal claws of metatarsi not as long as tarsomeres 3 and 4 together. In male protarsomeres 1–3 with pad of suction setae, anterior protarsal claw slightly shorter than posterior. **AE-DEAGUS:** TL 51 (fig. 117).

DISTRIBUTION—South Africa, the western Cape Region (fig. 118).

DISCUSSION—The diagnostic rows of elytral bristles, apparently overlooked by previous workers, are difficult to see if the specimen is positioned such that the dorsum is perpendicular to the light source. When dry specimens are studied, the rows of bristles are best viewed by tilting the specimen on its transverse axis such that the elytra are in about the same plane as the light source. When dry, partly abraded specimens or specimens in fluid are studied, the locations of the bristle rows are indicated by the bristle sockets, each of which is slightly darker than the surrounding cuticle.

In the original description, Péringuey (1892) mentioned two localities but did not designate a type specimen. Later, d'Orchymont (1933) indicated that he studied the "type" and a "paratype." We have studied the two specimens in question (SAM, on separate pins) and found that one of them has a red "type" label and the other an orange "paratype" label, both labels being of the kind used by d'Orchymont. (In addition, the pin with the d'Orchymont "type" label bears a red label, "SAM type 3602a," and the other specimen bears a green label, "SAM type 3602b"; these labels are below the d'Orchymont "type" and "paratype" labels, respectively.) Apparently a lectotype has never been formally selected and designated from these two specimens. We therefore hereby designate the first specimen lectotype (a male) and have labeled it such. We have dissected this specimen to remove the aedeagus, which is illustrated herein (fig. 117); the aedeagus is in a microvial attached to the pin. The second specimen is also a male; we have dissected this specimen and placed the aedeagus in a microvial attached to the pin. This specimen is hereby designated paralectotype and has been so labeled.

A single specimen purportedly from Port Alfred (c. 33.36S–26.54E) may be mislabeled, as this locality is well east of other records. Further collecting is needed to verify this record: Port Alfred, 18.II.1939, J. Omer Cooper, (1 BMNH).

MATERIAL EXAMINED—**South Africa:** Cape Province: S.W. Cape, Elandsdrift, 34.39S–19.53E, shore washing, 24.II.1981, Endrödy-Younga (#1747), (10 TMP). S.W. Cape, Verlorevlei Farm, 32.19S–18.22E, shore washing, 28.VIII.1981, En-

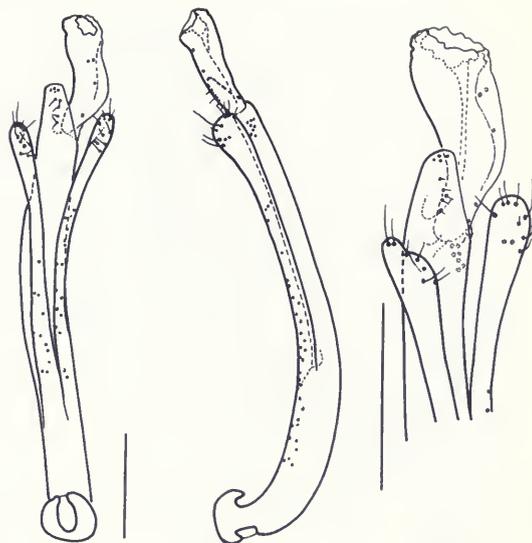


FIG. 117. *Ochthebius extremus*, aedeagus of holotype. Scale lines = 0.1 mm.

drödy-Younga (#1857), (60 TMP). S.W. Cape, Nuweberg, 10 km NE, 34.00S–19.06E, water plankton, 13.XI.1973, Endrödy-Younga (#239), (4 TMP). S.W. Cape, Bainskloof, Breë R., 33.30S–19.10E, shore washing, 10.XI.1973, Endrödy-Younga (#227), (1 TMP). S.W. Cape, Heuningnes River, shore washing, 34.42S–20.02E, 28.X.1983, Endrödy-Younga (#2028), (102 TMP). S.W. Cape, Nuweberg, 10 km NE, 34.00S–19.06E, shore washing, 13.XI.1973, Endrödy-Younga (#240), (2 TMP). Cape-Cederbg., jeep track, 1130 m, 32.28S–19.14E, sifted, marsh shore, 7.XI.1983, Endrödy-Younga (#2055), (1 TMP). S.W. Cape, Betty's Bay, on coast line between Gordon's Bay and Hermanus, Vlei (lower) in Typha, (FRW 117 L-N), c. 34.20S–19.01E, 2.I.1956, (1/0 AMG). S.W. Cape, Great Berg River system, Soutrivier, Hopefield, (GBG Stn. 20: 235J), 33.04S–18.21E, 25.IV.1951, (3 AMG). 20 mi ENE Bredasdorp, Kars (Salt) River, c. 34.20S–20.10E, (SSAE 104), 1.I.1951, Brinck & Rudebeck, (9 LUM). Albertinia, 34.13S–21.35E, (SSAE 129), 10.I.1951, Brinck & Rudebeck, (6 LUM). Cape Flats, Varden Vlei, 2 mi E. Ottery, (SSAE 163), 2.II.1951, Brinck & Rudebeck, (40 LUM). De Hoop Vlei, 20 mi ENE Bredasdorp, c. 34.20S–20.10E, (SSAE 108), 2–3.I.1951, Brinck & Rudebeck, (4 LUM). 20 mi SE Swellendam, c. 34.10S–20.40E, (SSAE 110), 3.I.1951, Brinck & Rudebeck, (2 LUM). Tzitzikama Forest, Storms River Mouth, c. 33.59S–23.52E, (SSAE 136), 12.I.1951, Brinck & Rudebeck, (1 LUM). Hope-

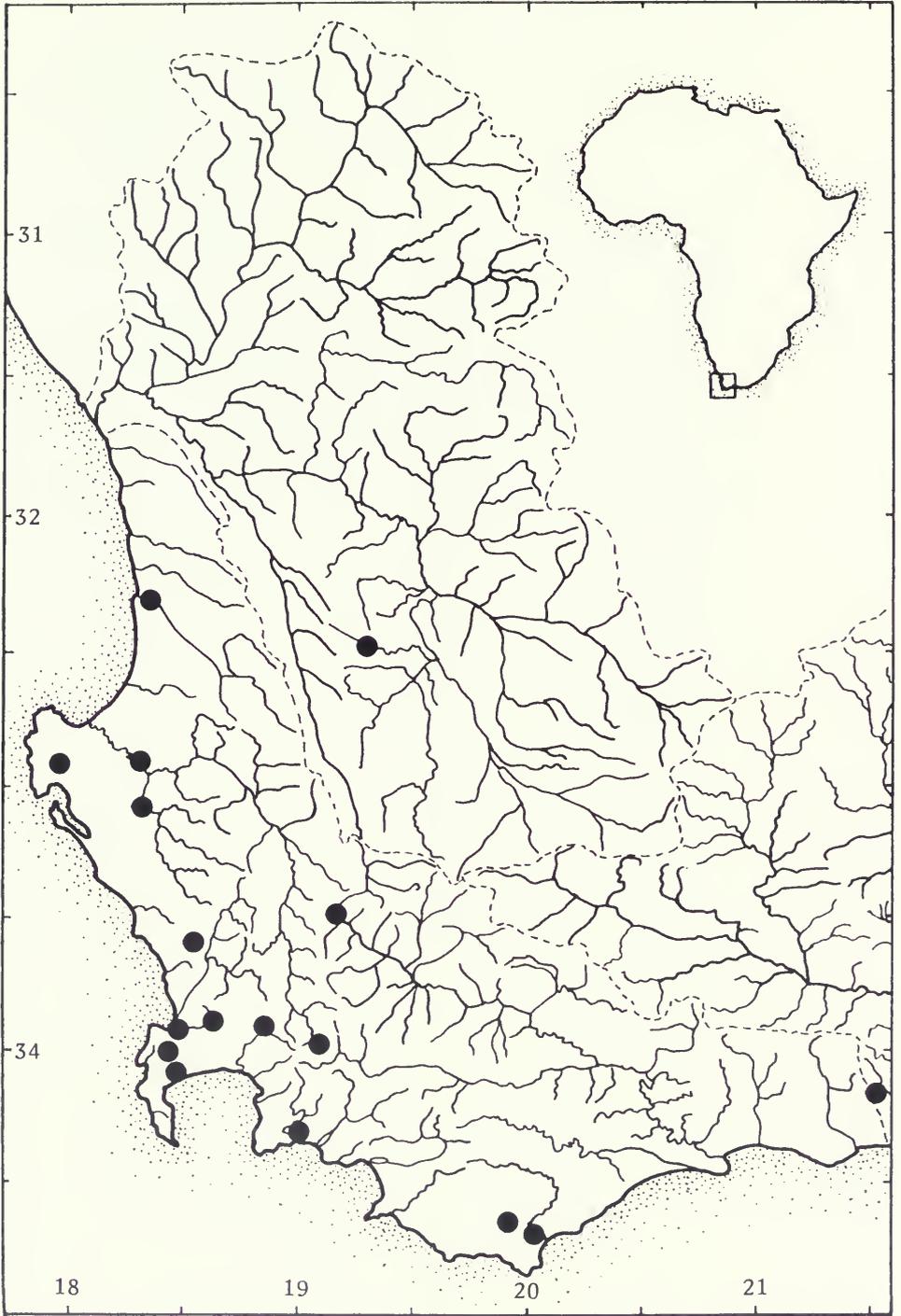


FIG. 118. *Ochthebius extremus*, geographical distribution.

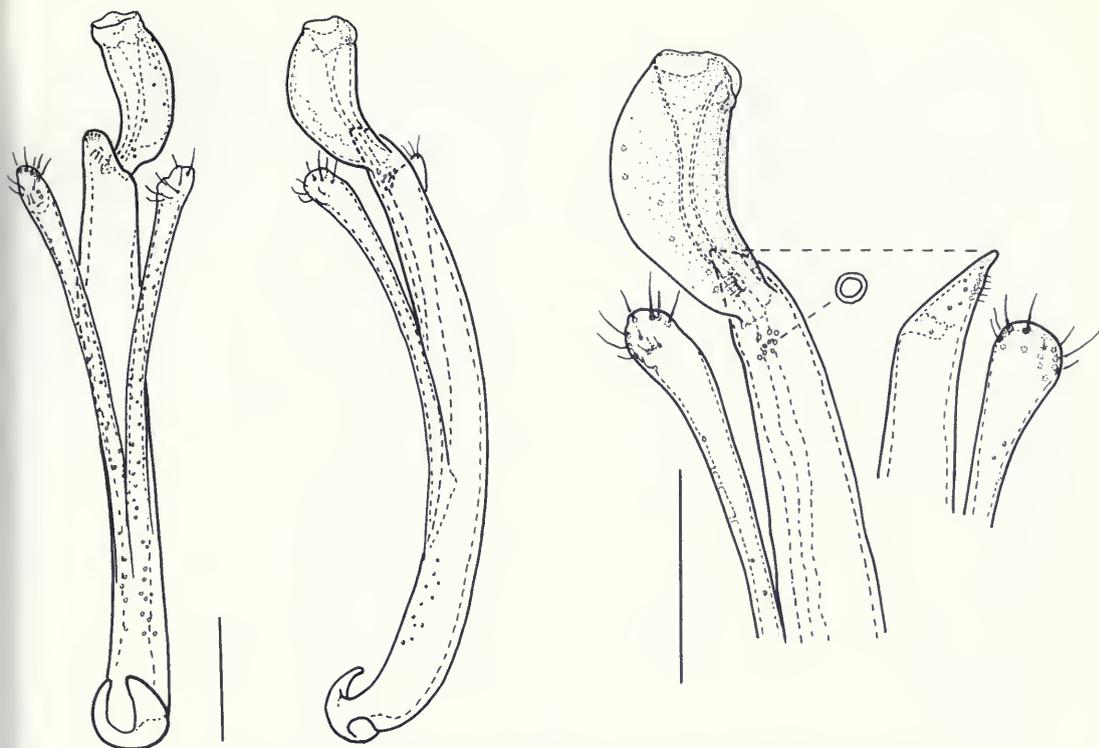


FIG. 119. *Ochthebius pedalis*, aedeagus of holotype. Scale lines = 0.1 mm.

field, 33.05S–18.20E, (SSAE 19), 31.X.1950, Brinck & Rudebeck, (3 LUM). Cape Flats, Strandfontein, c. 34.06S–18.50E, (SSAE 77), 8.XII.1950, Brinck & Rudebeck, (9 LUM). Berg River, 32.55S–18.20E, farm Kersefontein near estuary, Stn. 21, (NIWR-GBG 233F), 25.IV.1951, (1/0 AMG). Hopefield, Soutrivier (saline tributary of Berg River), 33.05S–18.21E, Stn. 20, (NIWR-GBG 235J), 25.IV.1951, (4/6 AMG). Piquetberg Stn. 18, Boesmans River, 32.53S–18.44E, (NIWR-GBG 268N), 29.V.1951, (0/1 AMG). Berg River, farm Kersefontein, 32.55S–18.20E, Stn. 21, (NIWR-GBG 592A), (1/0 AMG). Cape District, Diep River, Blaauwberg Bridge, near Milnerton, (NIWR-MIL 113L), (0/1 AMG). Cape District, Muizenberg, Pond 7, (NIWR-SOX 1C), marginal vegetation, 11.X.1961, (1/0 AMG). Bellville Nat. P., c. 33.55S–18.38E, (NIWR-SOX 28), marginal vegetation, 11.X.1961, (1/0 AMG). Cape District, Wynberg Circ. P., (NIWR-SOX 31), marginal vegetation, 3.I.1962, (0/1 AMG). Cape Town, Cape Flats, c. 33.56S–18.28E, no date, (1 SAM). Stellenbosch, c. 33.56S–18.51E, 1897, L. Péringuey, (2 SAM). Riversdale District, near Albertinia, c. 34.13S–21.35E, 16.II.1947, J. Omer-Cooper, (15/15 BMNH). Cape

Province, Simons Town, c. 34.15S–18.30E, 12–20.IV.1915, M. Cameron, (3 BMNH). Milnerton, Diep River, c. 34.15S–18.30E, 1.XII.1947, A. D. Harrison, (1 BMNH). Cape Town, Lakeside, c. 33.56S–18.28E, 12.II.1947, A. D. Harrison, (1 BMNH). Kleinemonde, c. 34.20S–19.01E, I.1939, J. Omer Cooper, (11 BMNH). Philadelphia, c. 33.40S–18.35E, 11.XI.1949, B. Malkin, (11 BMNH). Malmesbury District, Vredenburg, highly brackish pond, fine gravel bottom, c. 32.55S–18.00E, 19.XI.1949, B. Malkin, (25 BMNH). Milnerton, 10 mi N. of Capetown, c. 34.15S–18.30E, 18–20.XI.1949, B. Malkin, (17 BMNH).

Ochthebius (s.s.) pedalis

J. Balfour-Browne

Figures 119–121

Ochthebius (s.s.) pedalis J. Balfour-Browne, 1954: 102 (n. sp., desc., fig.).

HOLOTYPE—Male, South Africa: East Cape Province, Bathurst District, Kleinemonde, c. 34.20S–19.01E; deposited in BMNH.

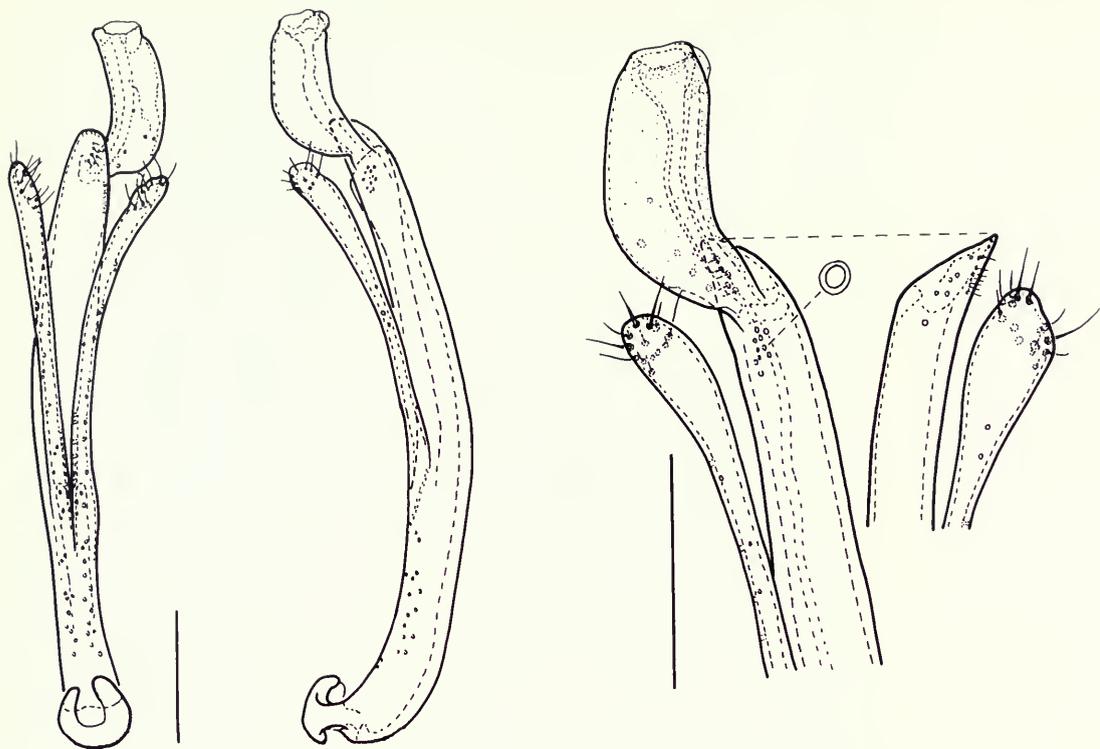


FIG. 120. *Ochthebius pedalis*, aedeagal variant from Namibia. Scale lines = 0.1 mm.

DIAGNOSIS—Recognized by the shining, finely sparsely punctate head and pronotum with exceedingly fine and sparse mcp. ground sculpture and distinctive recumbent setae, the shallow, finely to markedly mcr. pronotal foveae, the black and slightly aeneous head contrasting with stramineous maxillary palpi, the testaceous elytra often with brownish “cloud” at summit of posterior declivity, the hydrofuge pubescent metasternum except small basomedian area, the abdominal sterna 2–4, in females, with median 0.2 shining and much less densely pubescent than remainder, and, in males, the upturned apicomedian process of the labrum and the aedeagus (figs. 119, 120).

DESCRIPTION—**SIZE** (mm × 100): Holotype TL: EL:EW 216:144:95; HW 53; PL:PW:PA:PB 50:70:63:51. **COLOR**: Head black, strongly aeneous; maxillary palpi stramineous; pronotum sclerotized part testaceous laterally, disc more or less widely piceous and aeneous; elytra brownish testaceous except at top of apical declivity darker brownish cloud extending from 1st to 6th series, humeri similarly dark brownish; columellae of serial punctures very evident, appearing darker than surrounding cuticle except not visible in area of

dark cloud; venter piceous, head and apex of abdomen dark rufous; legs testaceous except coxae and apices of tarsi darker. **HEAD**: Eyes rather small, in dorsal aspect 8 weakly convex facets in longest series. Frons shining, distinctly but finely sparsely setiferously punctate, punctures $0.5 \times ef$ or smaller, setal length and interstices both $2-3 \times ef$ but separation quite irregular; interstices with mcp. ground sculpture exceedingly fine, sparse and irregularly spaced; interocular foveae large round, deep, width of each about 0.66 distance separating them. Clypeus sculpture and pubescence as frons. Labrum densely mcp. and rather densely pubescent; anterior margin in male with small apicomedian upturned tooth, in female shallowly sinuate, not upturned. **PRONOTUM**: Subcordate, widest just behind anterior angles; anterior margin weakly sinuate, without postocular emarginations or processes, hyaline border well developed; sides sinuately attenuate to posterior angles, rather wide lateral hyaline border beginning at middle of side of lateral depression continuing around basal angles and along base. Disc with anterior and posterior pairs of foveae shallow, each pair connected by shallow transverse depressions, posterior wider

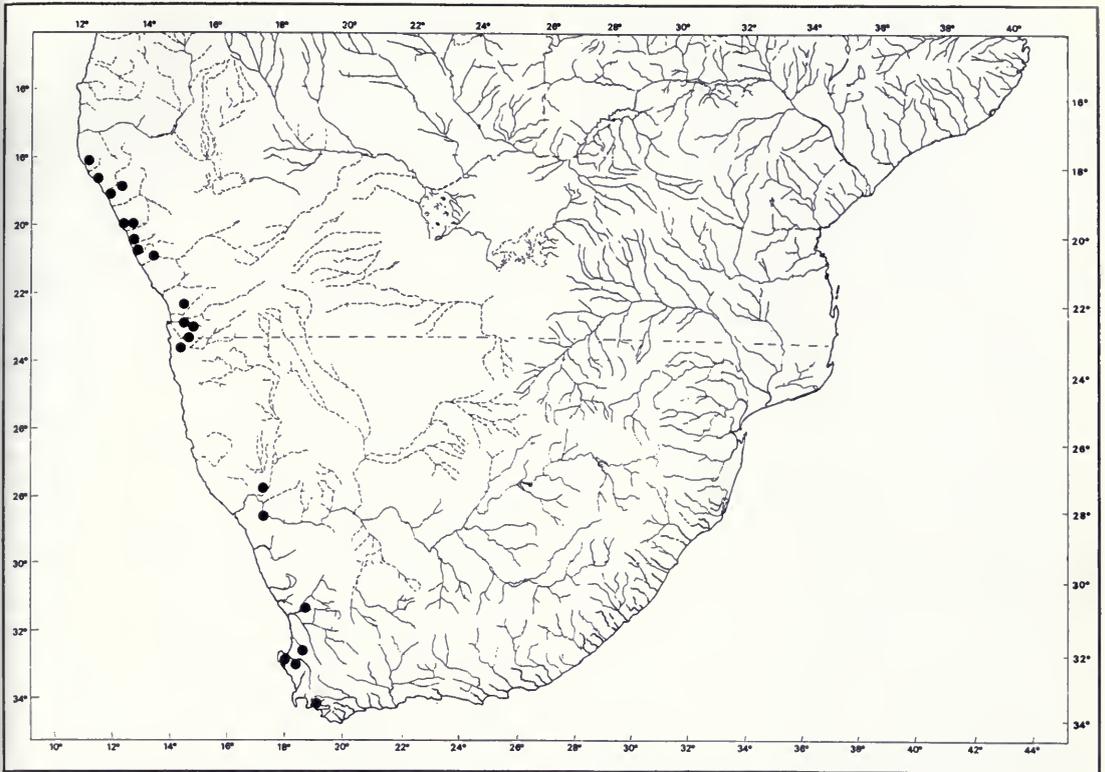


FIG. 121. *Ochthebius pedalis*, geographical distribution.

than anterior, depressions densely mcp. and dull, reliefs strongly shining, very finely sparsely setiferously punctate and with few minute micro-punctulae of ground sculpture; median groove obsolete, location very faintly indicated by sparse mcp. ground sculpture. Lateral depressions sparsely punctate, slope continuing transverse curvature of disc, delimited medially by arcuate densely mcp. depression. **ELYTRA:** Sides regularly arcuate, widest at middle, explanate margin in male narrower than, in female slightly greater than, greatest width of tarsus. Apices in male individually rounded but slightly so, almost conjointly narrowly truncate; in female sutural angle slightly acute, sharp, sutural margin of each elytron just before apices weakly arcuate away from sutural margin of other elytron, creating narrow gap. Ten-seriate punctate, series not at all striate-impressed except sutural series behind middle, on disc punctures large and well impressed, $1-1.5 \times ef$, interstices much smaller than punctures, distally progressively smaller and more longitudinally separated, at summit of posterior declivity interstices c. $1 \times pd$. Intervals flat, wider than serial punctures; in male

shining, surface slightly uneven and very sparsely exceedingly finely mcp.; in female much duller than pronotal reliefs, irregularly subrugulose. Serial setae recumbent and short, length c. $1 \times pd$, nervure setae erect or decumbent, much longer. **VENTER:** Mentum shining, sparsely setiferously punctate. Metasternum medioposterior area less densely pubescent and more shining than remainder, which is mcr. beneath hydrofuge pubescence, setal sockets in shining area larger than those laterally. Abdominal sterna 1-5 in male mcr. and entirely clothed with dense hydrofuge pubescence, in female median 0.2 of sterna 2-4 shining and much less densely pubescent than remainder, limits of shining area ill defined; 6-7 shining, distal 0.5 sparsely pubescent. **LEGS:** Elongate, slender, tarsal claws elongate, those of metatarsi about as long as tarsomeres 3 and 4 together. In male protarsomeres 1-3 with pad of suction setae, anterior protarsal claw slightly shorter than posterior. **AE-DEAGUS:** TL 59 (figs. 119, 120).

DISTRIBUTION—Western coastal or slightly inland, forming a narrow distribution band from northern Namibia south to the Cape (fig. 121).

DISCUSSION—Slightly deeper pronotal impressions and slightly more developed mcr. therein appear to be expressed in greater frequency in some South African populations. Rarely, Namibian specimens almost lack mcr., consequently the pronotum is quite shining. The aedeagal variation observed is slight (figs. 119, 120).

The physical and chemical conditions of "Hosabes," a hypersaline spring in the Namib Desert where J. A. Day collected many specimens of this species, are given in Day and Seely (1988).

MATERIAL EXAMINED—**Namibia:** Brakputz, pool at confluence of Brak and Ugab Rivers, W. Damaraland, 20.59S–14.00E, 16.X.1986, B. A. Curtis, (13 SMW). Rössing, Boulder, c. 22.26S–14.58E, 2.VII.1984, C. Meyer, (1 SMW). "Hosabes," a hypersaline spring, salt stream, 23.29S–15.02E, 24–26.VI.1982, J. Day, (82 JDC). As above, 19.X.1980, (13 JDC). As above, 2.XI.1979, (7 JDC). Ubibivlei, saline stream, salinity variable, 20–60‰, 23.05S–15.09E, 26.VI.1983, J. Day, (22 JDC). As above, 2.XI.1979, (2 JDC). Kaokaveld, salt pan S. Hoarusib, 19.04S–12.34E, saline pond, shore washing, 14.IV.1984, Endrödy-Younga (#2122), (214 TMP). C. Namib, Mirabib, 14.XII.1983, C. K. Brain, (5 TMP). Southern Ai-Ais, Fish River, 27.56S–17.27E, shore washing, 19.IV.1984, Endrödy-Younga (#2126), (2 TMP). Gobabeb, Salt River, c. 23.40S–14.50E, II.1987, P. Réveillet, (4 PM). Small stream on Swartbank, granite inselberg, c. 23.19S–14.50E, 4.XI.1979, J. Day, (3 JDC). Huab River, just west of Jack Scott Bridge, rainpool surrounded by reeds, slightly saline, c. 20.54S–13.32E, 10.I.1983, Bethune & Day, (1 SMW). "Klein Oasis" near Hoarusib River, hypersaline marsh in reeds, c. 19.03S–12.34E, 21.I.1983, Bethune & Day, (57 SMW). Sechomib River, about 2 km inland, saline seep with no surrounding veg., c. 18.41S–12.16E, 22.I.1983, Bethune & Day, (1 SMW). Ogams Fountain, about 40 km inland near Sechomib River, brackish to saline series of small pools in granite with few reeds, 18.32S–12.28E, 23.I.1983, Bethune & Day, (2 SMW). Hunkab River, ca. 35 km inland, rainpool below rocks on north bank, surrounded by reeds, c. 19.44S–13.13E, 25.I.1983, Bethune & Day, (11 SMW). Kharu-Gaiseb River, ca. 20 km inland, salt stream with algae, very shallow with crystallized salt, c. 19.49S–13.14E, 26.I.1983, Bethune & Day, (62 SMW). Unnamed river 4 km S. of Kharu-Gaiseb River, 20 km inland, salt stream, saline; algae, c. 19.53S–13.14E, 26.I.1983, Bethune & Day, (35 SMW). Obob River canyon, ca. 40 km from sea, salt stream with *Ruppia*, Rhino tracks, c. 20.14S–13.29E, 26.I.1983, Bethune & Day, (18 SMW).

"Pergasiefontein" in Koigab River ca. 26 km inland, hypersaline seep surrounded by bushes, c. 20.23S–13.30E, 27.I.1983, Bethune & Day, (31 SMW). "Wolfwasser" on open plain, ca. 25 km inland, on edge of escarpment, benthic algae, sedges, c. 20.23S–13.37E, 27.I.1983, Bethune & Day, (6 SMW). Uxieb in Koigab River canyon, ca. 16 km inland, salt spring in canyon, 20.27S–13.28E, 27.I.1983, Bethune & Day, (1 SMW). Huab River, ca. 12 km inland, rainpools in riverbed increasing size of normal spring, reeds, c. 20.46S–13.36E, 28.I.1983, Bethune & Day, (3 SMW). Dead End Canyon, Zebra River, ca. 40 km inland, brackish trickle emerging from rockface, c. 21.07S–13.55E, 29.I.1983, Bethune & Day, (3 SMW). **South Africa:** Cape Province: Richtersveld, Stinkfontein dam, 28.48S–17.17E, shore washing, 11.X.1976, Endrödy & Breytenb., Endrödy-Younga, (#1272), (4 TMP). Great Berg River, Soutrivier Stn. 20, 33.05S–18.21E, marginal vegetation, 25.IV.1951, (GBG 235J), (1/0 AMG). Lower Berg River, 32.53S–18.44E, Piquetberg Stn. 18, (NIWR-GBG 594N), 23.VI.1952, (1/0 AMG). Van Rhynsdorp District, Zoul River, between Van Rhynsdorp and Nieuwerust, c. 31.30S–18.40E, rapid running clear stream, 17.XI.1949, B. Malkin, (2/0 BMNH).

Ochthebius (s.s.) spinasus new species

Figures 122, 123

HOLOTYPE—Male, South Africa: Cape Province, Bredasdorp District, 20 mi ENE Bredasdorp, Kars River, c. 34.20S–20.15E, (SSAE Stn. 104), 1.I.1951; deposited in LUM.

DIAGNOSIS—Recognized by the deeply coarsely moderately densely punctate pronotum with fine sparse mcp. ground sculpture on shining interstices, the deep transverse pronotal foveae, the small body size (TL c. 166), the quite transverse pronotum, with length less than basal width (PL:PB c. 36:46), the strongly shining glabrous metasternal disc, in males the upturned apicomedian process of the labrum and the aedeagus (fig. 122), and, in females, the shining glabrous median area of abdominal sterna 3–5.

DESCRIPTION—**SIZE (mm × 100):** Holotype TL: EL:EW 166:106:75; HW 43; PL:PW:PA:PB 36: 53:50:41. **COLOR:** Head black, strongly aeneous; pronotum widely testaceous around dark brownish or piceous disc; elytra testaceous, serial punctures brownish, summit of posterior declivity with inverted V-shaped brownish shading, sometimes also with vague oval shading at humerus and mid-

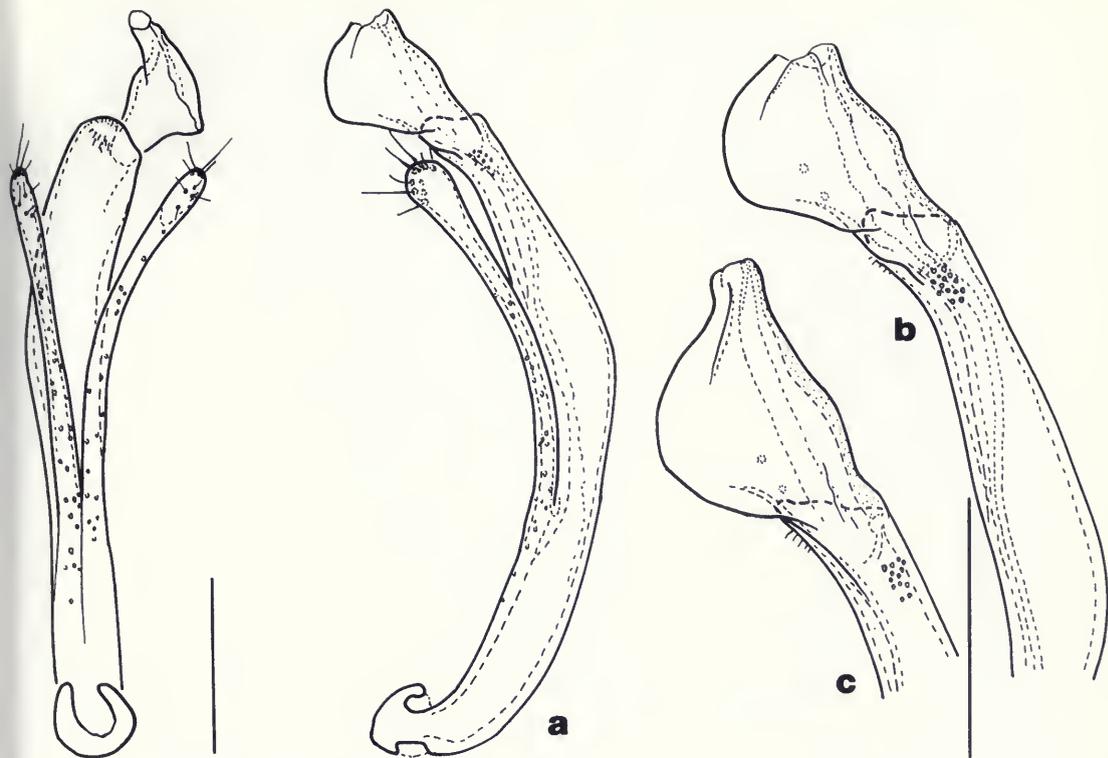


FIG. 122. *Ochthebius spinasus*, aedeagi. a-b. Holotype. c. Variant from Namibia, Klein Oasis. Scale lines = 0.1 mm.

way between humerus and posterior shading; venter rufo-piceous, underside of head, metasternum and apex of abdomen rufous; maxillary palpi and legs stramineous. **HEAD:** Eyes rather small, in dorsal aspect 8 weakly convex facets in longest series. Frons shining, distinctly but finely sparsely setiferously punctate, punctures $0.3 \times ef$ or smaller, setae recumbent, setal length and interstices both $2-3 \times ef$ but denser near eyes; interocular foveae large round, deep, width of each about 0.66 distance separating them, each internally coarsely contiguously punctate. Clypeus sculpture as frons except punctures slightly denser and sides densely pubescent. Labrum shining, very finely setiferously punctate; in male anterior margin apico-medially strongly upturned to form tooth, behind tooth on each side three or four admedian spiniform setae inclined toward midline; in female anterior margin shallowly roundly emarginate, not upturned, lacking spiniform setae. **PRONOTUM:** Subcordate, widest just behind anterior angles; anterior margin weakly sinuate, without postocular emarginations or processes, hyaline border well developed; sides sinuately attenuate to posterior

angles, rather wide lateral hyaline border beginning at middle of side of lateral depression, edge weakly arcuate nearly straight over median 0.8, continuing around basal angles and along base. Disc with anterior transverse impression deep, formed of three confluent foveoles, outer edge of impression sharply marked, with similar posterior transverse impression composed of larger median and two smaller admedian foveoles; disc longitudinally convex between foveae; depressions densely confluent punctate; reliefs strongly shining, coarsely densely punctate but size and spacing of punctures quite irregular, size $1-2 \times ef$, largest punctures separated by narrow walls, much smaller and distinctly less dense in middle of disc, interstices with exceedingly fine and sparse mcp. ground sculpture. Lateral depressions rugosely strongly punctate, slope continuing transverse curvature of disc but appearing slightly inflated. Setae of discal punctures recumbent, fine and indistinct. **ELYTRA:** Widest at middle, sides arcuate, regularly so in male, more strongly so in female; explanate margin in male narrower than, in female $2 \times$ greatest width of tarsus. Apices in male indi-

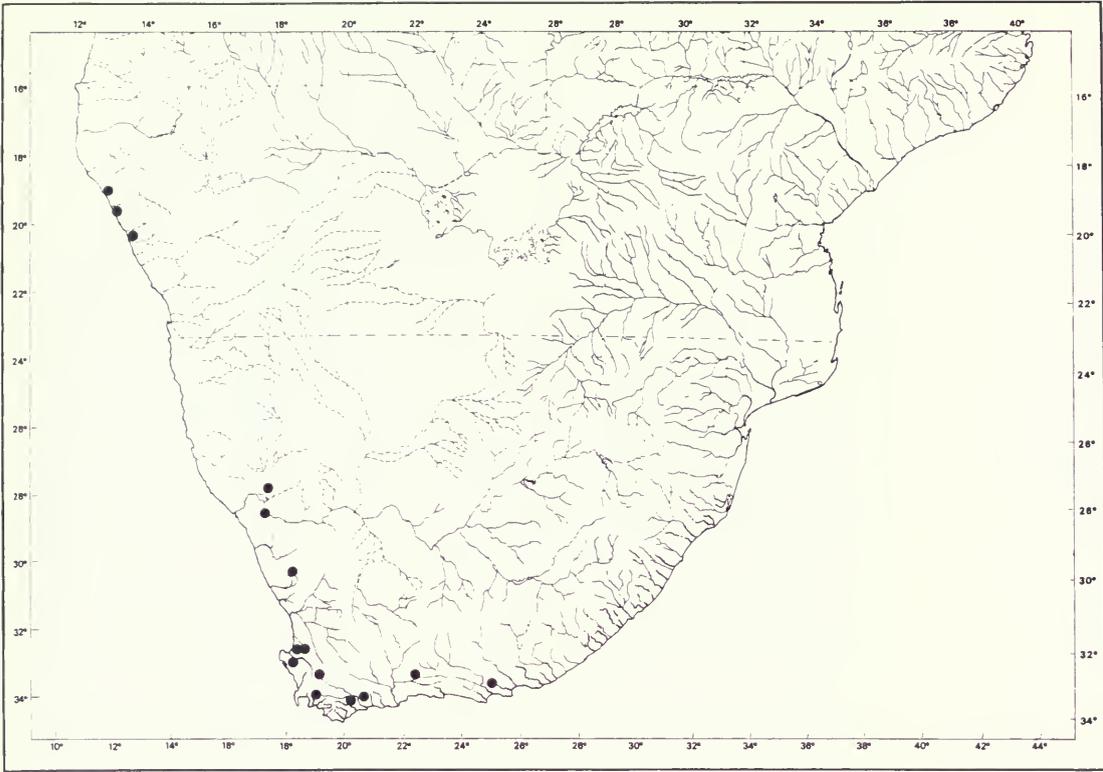


FIG. 123. *Ochthebius spinasus*, geographical distribution.

vidually rounded but slightly so, almost conjointly narrowly truncate; in female sutural angle slightly acute, sharp, sutural margin of each elytron just before apices weakly arcuate away from sutural margin of other elytron. Ten-seriate punctate, series not at all striate-impressed except sutural series behind middle, on disc punctures slightly elongate, large and well impressed, slightly smaller than largest pronotal punctures, $1-1.5 \times ef$, interstices much smaller than punctures, distally punctures progressively smaller and more longitudinally separated, at summit of posterior declivity interstices $c. 1 \times pd$. Intervals flat, shining in both sexes, $1-2 \times pd$. Serial setae decumbent and short, each attaining base of next seta in series; nervure setae erect or decumbent, much longer. **VENTER:** Mentum shining, sparsely setiferously punctate. Metasternum pubescent laterally, disc strongly shining, glabrous except few setiferous punctures. Abdominal sterna 1-5 in male mcr. and entirely clothed with dense hydrofuge pubescence, in female likewise except median 0.2 of sterna 3-4 and to a less extent 5 glabrous and shining; 6-7 shining, each with distal 0.5 sparsely pubescent in male, more densely so in female. **LEGS:** Slender, only

moderately elongate, metatarsal claws slightly shorter than tarsomeres 3 and 4 together. In male protarsomeres 1-3 with pad of suction setae, anterior protarsal claw slightly shorter than posterior in both sexes. **AEDEAGUS:** TL 43 (fig. 122).

ETYMOLOGY—Latin, *spinasus* (spiny nose), in reference to the spiniform setae of the male labrum.

DISTRIBUTION—Western coastal or slightly inland, forming a narrow distribution band from northern Namibia south to the eastern area of the Cape Region (fig. 123).

DISCUSSION—There is variation in the intensity of the elytral shading. In most specimens an inverted V-shaped diffuse macula is apparent. In some teneral specimens the shading appears as separate circular markings. In more darkly colored specimens the shadings coalesce to form an irregular "X" on the elytra. The extremes of the aedeagal variation seen in available material is illustrated (fig. 122).

PARATYPES (89)—Same data as holotype, (1/3 LUM). **Namibia:** Klein Oasis near Hoarusib River, hypersaline marsh in reeds. $c. 19.40S-12.34E$, 21.I.1983, Bethune & Day, (2/3 SMW). Uxieb

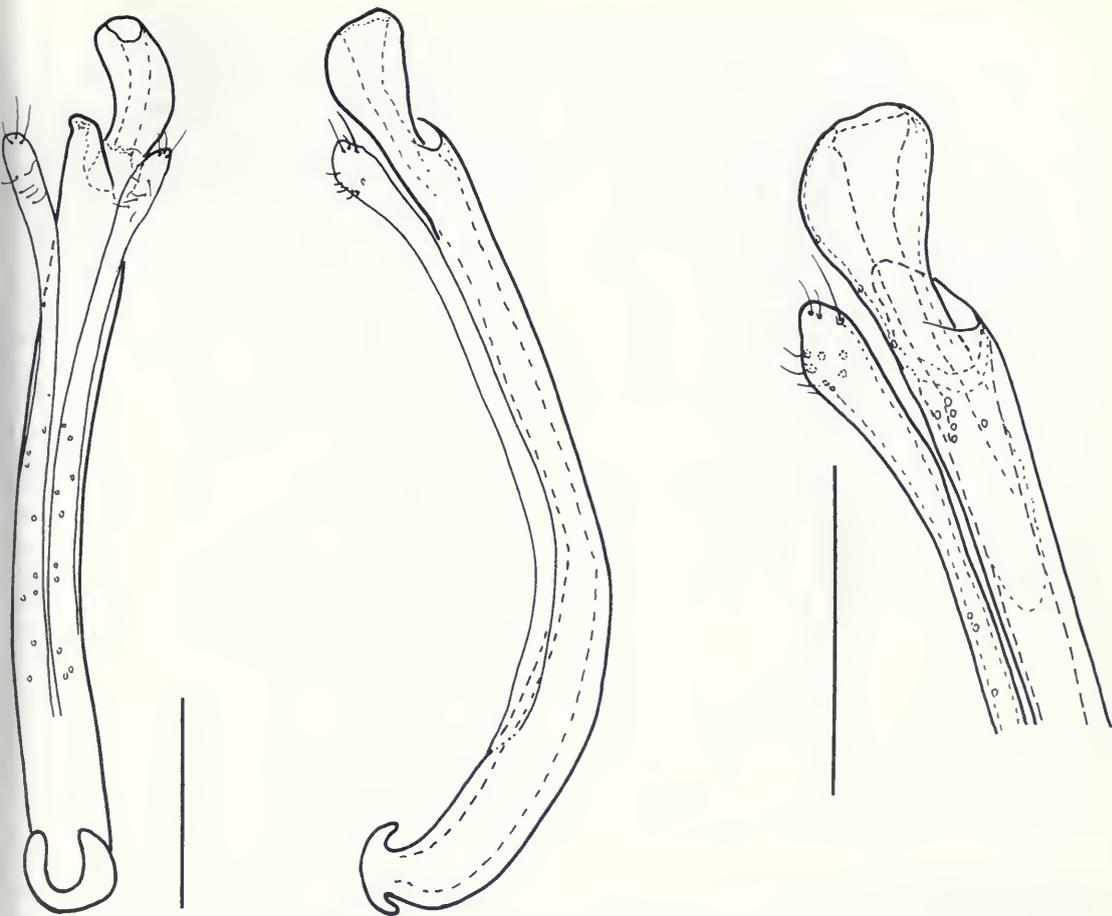


FIG. 124. *Ochthebius salinarius*, aedeagus of holotype. Scale lines = 0.1 mm.

Fountain, Koigab River, Skeleton Coast, 20.27S–13.28E, 6.X.1986, B. A. Curtis, (1/0 smw). Namibia: southern Ai-Ais, Fish River, 27.56S–17.27E, shore washing, 19.IV.1984, Endrödy-Younga (#2126), (11 TMP). Kaokaveld, salt pan S. Hoarusib, 19.04S–12.34E, saline pond, shore washing, 14.IV.1984, Endrödy-Younga (#2122), (0/1 TMP). **South Africa:** Cape Province: Uitenhage District, Van Staaden's Pass, 33.54S–25.12E, in gravel at edge of fast stream, 21.III.1954, J. Balfour-Browne, (1/3 BMNH). Oudtshoorn District, Oudtshoorn, Olifants River, c. 33.35S–22.12E, 26.X.1949, B. Malkin, (10/11 BMNH). Namaqualand, Farm Eselsfontein, 30.24S–18.05E, cattle dung, 30.X.1977, Endrödy-Younga (#1408), (1/0 TMP). Richtersveld, Stinkfontein dam, 28.48S–17.17E, shore washing, 11.X.1976, Endrödy & Breytenb., Endrödy-Younga (#1272), (22 TMP). S.W. Cape, Nuweberg, 10 km NE, 34.00S–19.06E, shore washing, 13.XI.1973, Endrödy-Younga

(#240), (1/0 TMP). 20 mi SE Swellendam, c. 34.10S–20.40E, (SSAE Stn. 110), 3.I.1951, Brinck & Rudebeck, (3/3 LUM). Hopefield, 33.05S–18.20E, (SSAE Stn. 19), 31.X.1950, Brinck & Rudebeck, (0/4 LUM). Lower Berg River, 32.56S–18.32E, Farm Sandrift, Stn. 19, (NIWR-GBG 237G), 25.IV.1951, (1/0 AMG). Lower Berg River, Piketberg, 32.53S–18.44E, Stn. 18, (NIWR-GBG 299B), 25.VI.1951, (0/1 AMG). As above, 23.VI.1952, (NIWR-GBG 594M), (2/2 AMG). Wellington Road Bridge, Stn. 12, 33.35S–19.01E, 17.XII.1952, (NIWR-GBG 667B), (1/0 AMG).

Ochthebius (s.s.) salinarius

J. Balfour-Browne

Figures 124, 125

Ochthebius (Hymenodes) salinarius J. Balfour-Browne, 1954:101 (n. sp., desc., fig.).

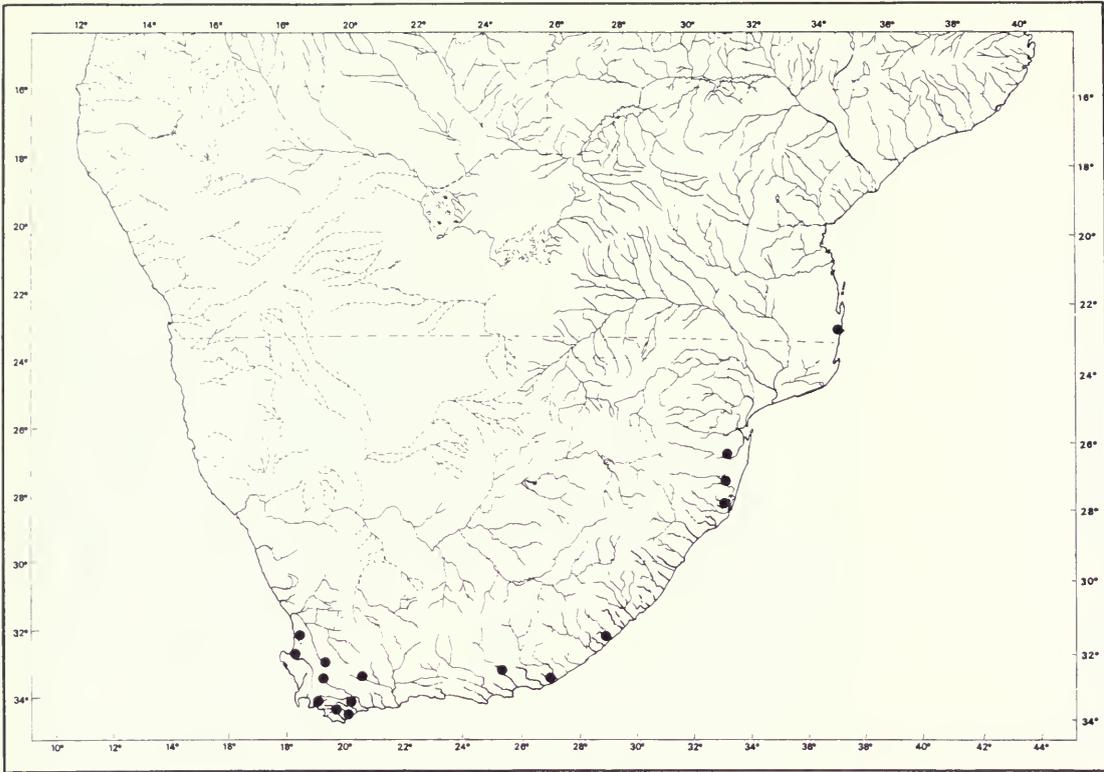


FIG. 125. *Ochthebius salinarius*, geographical distribution.

HOLOTYPE—Male, South Africa: East Cape Province, Bathurst District, Kleinimonde, 34.20S–19.01E.

DIAGNOSIS—Recognized by the testaceous elytra with brownish longitudinal lines through the series of punctures, the large and sharply delimited shining median area of the metasternum, the posterior pronotal foveae not confluent with the mid-longitudinal sulcus, and in males the aedeagus (fig. 124).

DESCRIPTION—**SIZE (mm × 100)**: Male TL:EL:EW 173:108:77; HW 44; PL:PW:PA:PB 40:55:52:43. **COLOR**: Head and disc of pronotum infuscate or blackish, slightly metallic, lateral areas of pronotum testaceous, elytra testaceous with brownish longitudinal lines through series 1–7, maxillary palpi and legs testaceous, venter black except head and abdominal sterna lighter. **HEAD**: Eyes in dorsal aspect with eight convex facets in longest series. Interocular foveae large and deep, each 1 × distance separating them. Ocelli distinct, shining. Frons finely sparsely punctulate, interstices shining except duller in mcr. areas medially on disc and at sides of interocular foveae. Clypeus strongly

mcr. and dull laterally and basally, remaining subtriangular median area shining, finely sparsely punctulate. Frons and clypeus punctures each with fine short indistinct recumbent seta. Labrum in male medially slightly depressed and nonsetose, submedially on each side bearing four to six short stout spines facing inward, laterally bearing tapering setae, surface non-mcr., anterior margin nearly entire, rather strongly reflexed over median 0.33; in female anterior margin apicomediaally narrowly and rather deeply emarginate, surface mcr. and bearing rather dense, tapering setae. Mandible outer margin bearing, in male, stout rather long spiniform setae; in female, tapering curving setae. **PRONOTUM**: Widest near anterior 0.25, sides regularly attenuate to base. Anterior margin on each side with minute postocular process and extremely shallow postocular emargination; hyaline border well developed. Lateral hyaline border moderately wide, sides almost straight, narrowing anteriorly, ended just behind anterior angles, posteriorly continuing narrowly but distinctly round posterior angles and along base. Disc with mcr. narrow midlongitudinal sulcus shallower in mid-

length, anterior and posterior admedian foveae well developed, mcr., extremely shallowly joined to sulcus but this area not mcr., posterior larger than anterior; reliefs shining, very finely sparsely recumbent-setiferously punctate and with exceedingly fine, sparse, irregularly distributed mcp. ground sculpture. Lateral depression, lateral fossula and area between fossula and posterior fovea more densely coarsely punctate than discal reliefs. Posterior angles with broad shallow depression. **ELYTRA:** Elongate oval, broadest about middle. Explanate margin in male narrower than, in female as wide as, tarsal apex. Apices in male narrowly separately rounded, in female conjointly rather sharply rounded. Ten distinct series of punctures, series not striate-impressed except sutural in distal 0.5, punctures and interstices c. $1 \times ef$ on disc, becoming finer and more separated laterally and apically, each puncture with fine recumbent nearly imperceptible seta. Intervals flat, $2-3 \times pd$, slightly shining, very effacedly alutaceous. **VENTER:** Metasternum with large median shining glabrous area. Abdominal sterna 1-5 entirely clothed with dense hydrofuge pubescence. Sixth sternum apical 0.5 in male sparsely, in female densely setose. Seventh sternum in male apically setose on each side of median emargination, in female setose over median 0.5 of arcuate margin. Apical tergum sharply rounded, in male bearing tapering curving setae, in female bearing short stout spines and finer tapering setae. **LEGS:** Male protarsomeres 1-2 with pad of suction setae. **AEDEAGUS:** TL 44 (fig. 124).

DISTRIBUTION—Eastern, often coastal or sub-coastal, from Mozambique south to the Cape (fig. 125).

MATERIAL EXAMINED—**Mozambique:** Pomene, 22.59S-35.35E, brackish shore washing, 4.V.1974, A. Strydom, (E-Y 354), (0/1 TMP). **South Africa:** Cape Province: S.W. Cape, Elandsdrift, 34.39S-19.53E, shore washing, 24.II.1981, Endrödy-Younga (#1747), (38 TMP). S.W. Cape, Verlorevlei Farm, 32.19S-18.22E, shore washing, 28.VIII.1981, Endrödy-Younga (#1857), (37 TMP). S.W. Cape, Heuningnes River, shore washing, 34.42S-20.02E, 28.X.1983, Endrödy-Younga (#2028), (2 TMP). Soutrivier, Hopefield, Stn. 20, 33.04S-18.21E, (GBG 235J), 25.IV.1951, (1/0 AMG). 20 mi ENE Bredasdorp, Kars (Salt) River, c. 34.20S-20.10E, (SSAE 104), 1.I.1951, Brinck & Rudebeck, (1 LUM). Albertinia, (SSAE 129), 10.I.1951, Brinck & Rudebeck, (1 LUM). Cape Flats, Varden Vlei, 2 mi E. Ottery, (SSAE 163), 2.II.1951, Brinck & Rudebeck, (1 LUM). Brandvlei, 6 mi SW

Worcester, c. 33.27S-20.29E, (SSAE 175), 11.II.1951, Brinck & Rudebeck, (1 LUM). Great Berg River, Kersfontein Stn. 21, 32.55S-18.20E, (GBG 541F), (1 AMG). As above, 1.XII.1951, (GBG 443C), marginal vegetation, (1 AMG). Great Berg River, Wellington Road Bridge, Stn. 12, 33.35S-19.01E, (GBG 566B), (1 AMG). Cape (eastern), Sundays River System, Courans Drift—above Kirkwood, c. 33.24S-25.26E, surber in slow-flowing stoney run, (RSU 6.7), 14.II.1968, (3 AMG). 16 mi N. Grahamstown, 17.III.1968, P. J. Spangler, (1 USNM). Natal Province: Mtubatuba, 28.22S-32.19E, airplankton, 4.IV.1974, Endrödy-Younga (#324), (1 TMP). Ndumu Game Reserve, 26.54S-32.16E, shore washing, salty water, 12.VI.1988, Endrödy-Younga & KLIM (#2613), (8 TMP). Zululand, Mkuzi, DDT killed, XII.1945, (2 SANC). Transkei Province: Qora River, 32.16S-28.47E, shore washing, open river, 2.III.1985, Endrödy-Younga (#2179), (1/0 TMP).

Ochthebius (s.s.) spatulus

J. Balfour-Browne

Figures 126, 127

Ochthebius (Hymenodes) spatulus J. Balfour-Browne, 1954: 100 (n. sp., desc., fig.).

HOLOTYPE—Male, South Africa: East Cape Province, Bathurst District, Port Alfred, 33.36S-26.54E; deposited in BMNH.

DIAGNOSIS—Distinguished from *namibiensis* and *pagotrichus* by the pronotal sides concavely attenuate from near the anterior angles (posterior margin of lateral depressions straight or concave), the hyaline border very wide, nearly as wide as the lobe-like sharply rounded lateral depressions; further distinguished from *namibiensis* by the presence of an accessory elytral series between series 1 and 2 (in basal 0.3) and another accessory series between series 9 and 10 (over about middle 0.3 of length).

DESCRIPTION—**SIZE (mm × 100):** Holotype TL: EL:EW 176:112:79; HW 50; PL:PW:PA:PB 40:59:58:48. **COLOR:** Black, shining, somewhat aeneous, clothed with distinct white recumbent or subdecumbent pubescence, maxillary palpi, antennae and legs brunneous to testaceous, apex of distal tarsomeres darker. **HEAD:** Eyes moderately large, in dorsal aspect 8 convex facets in longest series. Ocelli without relief, location vaguely indicated by absence of setae. Interocular foveae deep, width of each slightly less than distance sep-

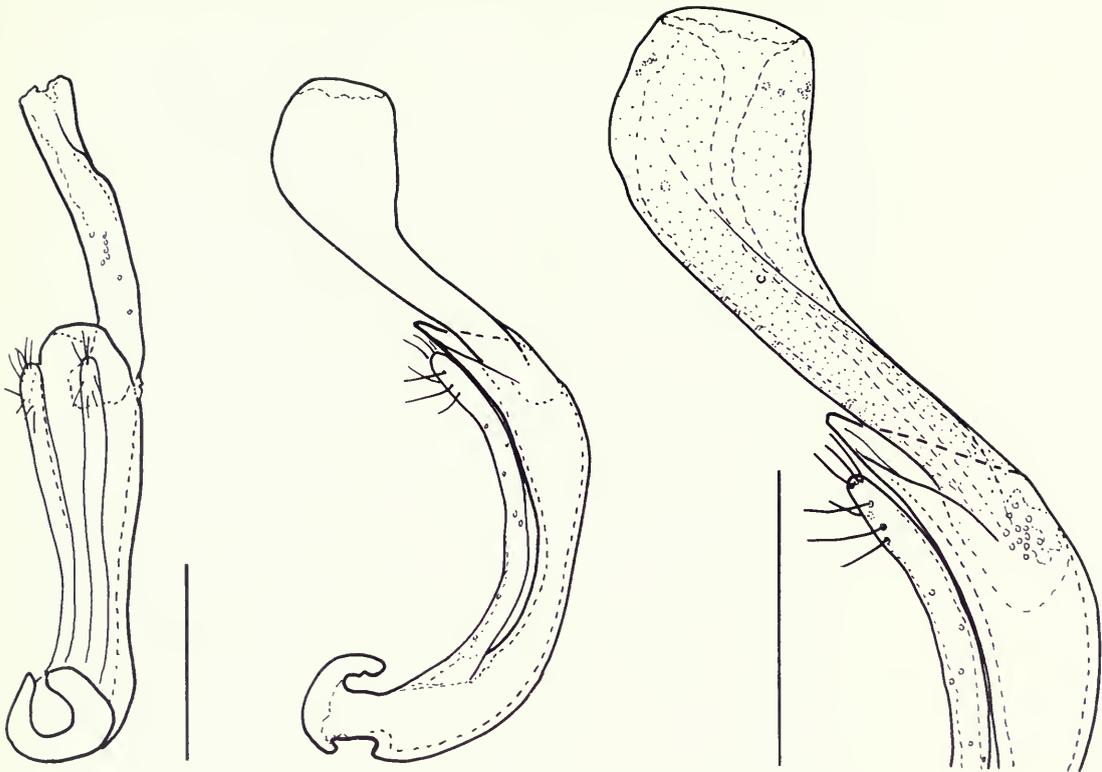


FIG. 126. *Ochthebius spatulus*, aedeagus of holotype. Scale lines = 0.1 mm.

arating them. Frons with small round basomedian fovea. Frons and clypeus with punctures of setal sockets fine, c. $0.5 \times ef$, rather sparse; interstices shining, $1-3 \times ef$, nearly imperceptibly finely sparsely mcp.; white recumbent setae about twice as long as the distance between setal sockets. Labrum more densely setiferously punctate than clypeus, anterior margin entire. Mandibles in both sexes with outer surface bearing rather short tapering curving setae. **PRONOTUM:** Anterior margin shallowly bisinuate, with well-developed bisinuate hyaline border. Widest just behind anterior angles, then sides concavely attenuate to rectangular posterior angles, sometimes side with small acute process at posterior extreme of lateral depression. Lateral hyaline border wide, nearly as wide as lobe-like lateral depression, posteriorly continuing very narrowly along base. Disc with narrow midlongitudinal sulcus constricted just behind middle, anterior and posterior foveae well developed, all depressions mcr. within; setiferous punctures sparse, about same size and slightly less dense than those of frons, interstices strongly shining, with irregularly spaced exceedingly fine and

sparse mcp. ground sculpture, especially near sulcus. Lateral fossula not deep, densely contiguously punctulate. Lateral depression slightly more densely and coarsely punctate than reliefs. **ELYTRA:** Oval, widest about middle, laterally abruptly declivous in basal 0.5, explanate margin very narrow in both sexes, narrower than tarsal apex. Apices only slightly dissimilar in sexes, in male narrowly separately rounded, in female narrowly conjointly truncate. Ten distinct series of punctures, plus two "accessory" series: one short basal between series 1 and 2, and one over about middle third of length between series 9 and 10. Punctures coarser basally, finer apically, on disc punctures c. $1 \times ef$ longitudinally separated by $2-3 \times pd$; each puncture with recumbent whitish seta, length c. $1.5 \times$ distance between punctures; series not striate-impressed except sutural in distal 0.5. Intervals flat, shining, width on disc $2-3 \times pd$; interval 2 in basal 0.3 with setiferous punctures similar to serial punctures (accessory series). **VENTER:** Metasternum and abdominal sterna 1-5 entirely clothed with dense hydrofuge pubescence; 6 shining, apical 0.5 sparsely pubescent, apical margin

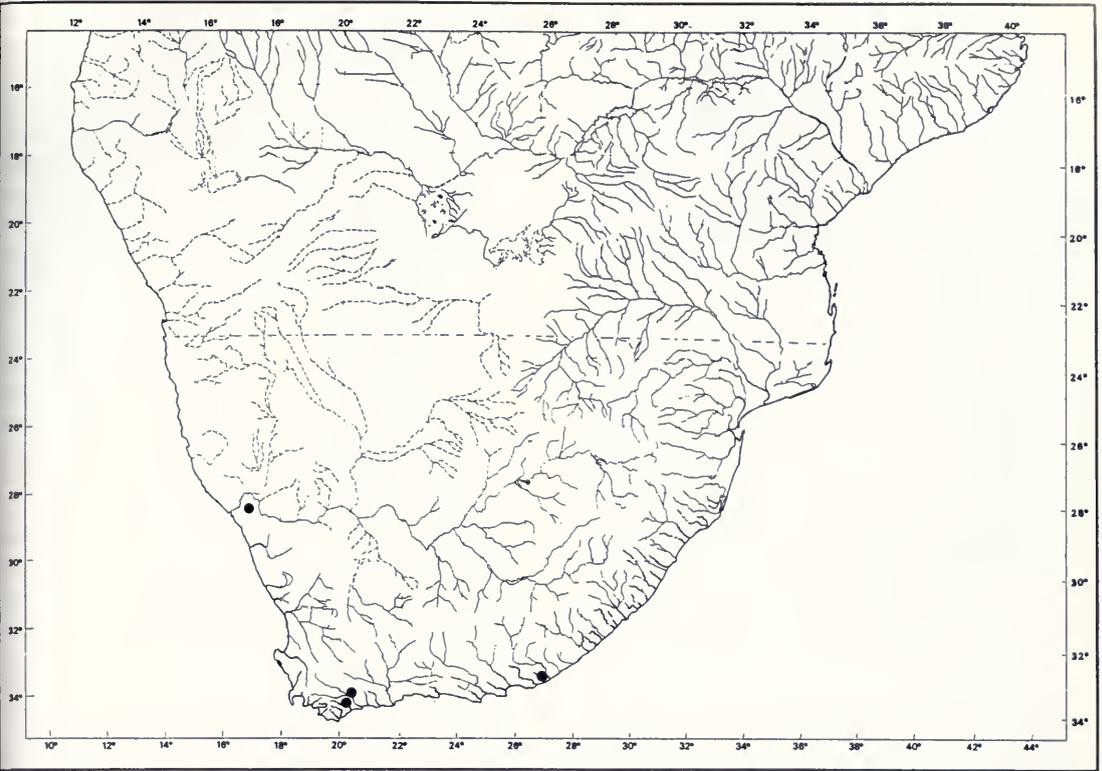


FIG. 127. *Ochthebius spatulus*, geographical distribution.

transverse in male, very slightly emarginate in female; 7 shining, apical margin more broadly rounded in female and bearing transverse band of sparse setae, in male setae apicolaterally only. Apical tergum tumid, bearing short stout spiniform setae and longer flagelliform setae, spiniform setae denser in female than in male. **LEGS:** Male pro-tarsomeres 1–2 with pad of suction setae. **AEDEAGUS:** TL 39, main-piece 25, distal piece 20 (fig. 126).

DISTRIBUTION—Known from three very distantly separated populations in South Africa: eastern Cape (Port Alfred and Grahamstown), western Cape (two localities), and northwestern subcoastal (fig. 127).

MATERIAL EXAMINED—**South Africa:** Cape Province: Kuboos, Richtersveld, c. 28.32S–17.00E, XI.1933, G. van Son, (1/6 TMP). 20 mi ENE Bredasdorp, Kars (Salt) River, c. 34.20S–20.10E, (SSAE 104), I.I.1951, Brinck & Rudebeck, (1/3 LUM). Breede River, 3 mi SW Swellendam, c. 34.05S–20.25E, (SSAE 128), 10.I.1951, Brinck & Rudebeck, (0/1 LUM). 16 mi N. Grahamstown, 17.III.1968, P. J. Spangler, (1/0 USNM).

Ochthebius (s.s.) namibiensis
new species

Figures 13b, 128, 129

HOLOTYPE—Male, Namibia: Uxieb Fountain, Koigab River, Skeleton Coast, 20.27S–13.28E, 6.X.1986, B. A. Curtis; deposited in smw.

DIAGNOSIS—Recognized by the lack of “accessory” elytral series (accessory series present on intervals 2 and 10 in *pagotrichus* and *spatulus*), the elytral explanate margin widest before midlength, the well-developed pronotal foveae (fig. 13b), and in males the aedeagus (fig. 128).

DESCRIPTION—**SIZE (mm × 100):** Holotype TL: EL:EW 187:124:88; HW 45; PL:PW:PA:PB 40:60:52:44. **COLOR:** Black, shining, somewhat aeneous, clothed with distinct white decumbent pubescence, maxillary palpi, antennae and legs testaceous, all tarsi with distal tarsomere darker in apical 0.5. **HEAD:** Eyes moderately large, in dorsal aspect 8 convex facets in longest series. Ocelli without relief, location vaguely indicated by absence of setae. Interocular foveae deep and large, width of each slightly greater than distance sepa-

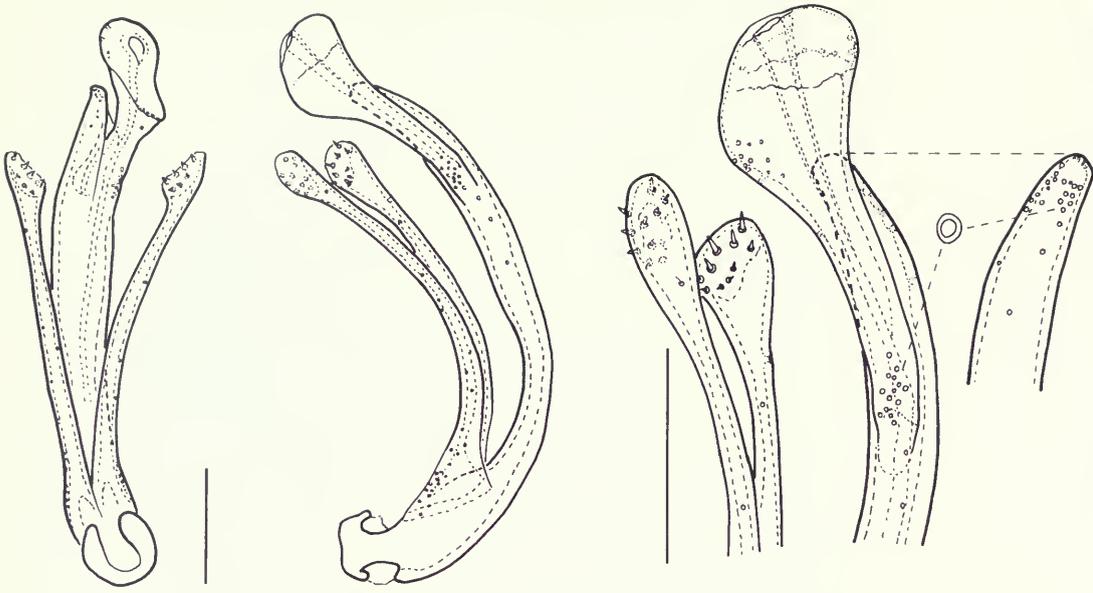


FIG. 128. *Ochthebius namibiensis*, aedeagus of holotype. Scale lines = 0.1 mm.

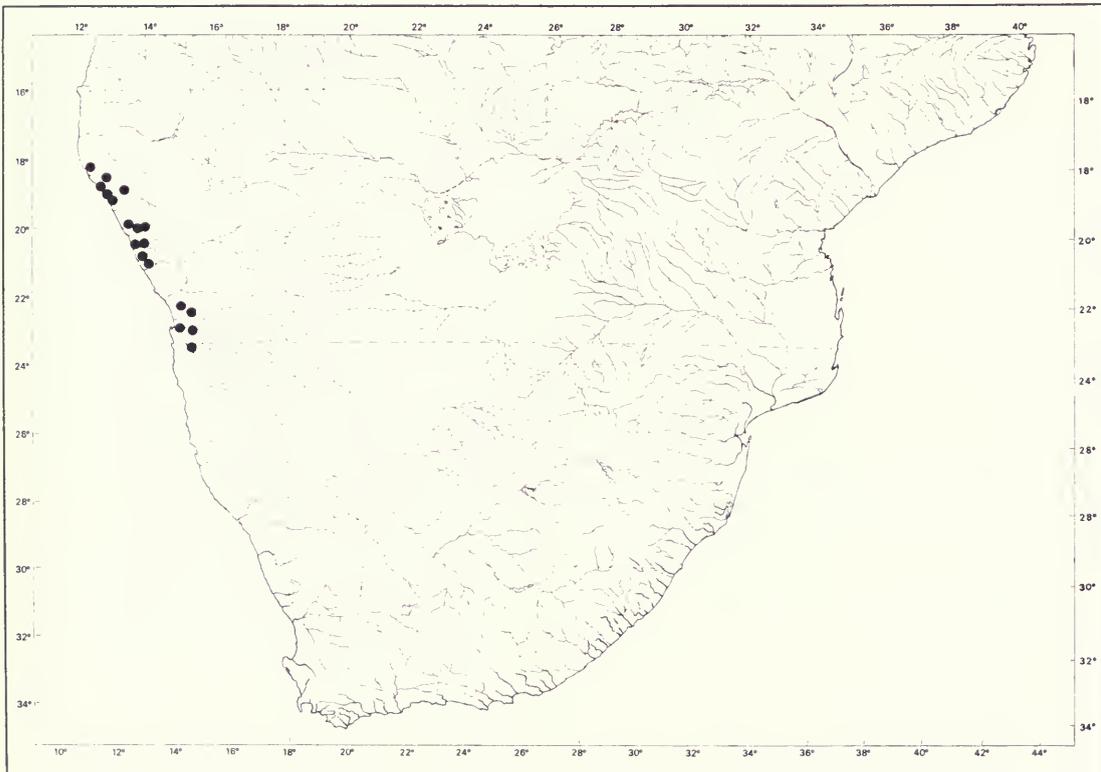


FIG. 129. *Ochthebius namibiensis*, geographical distribution.

rating fovea and eye. Frons and clypeus with punctures of setal sockets fine, c. $0.5 \times ef$, sparse; white setae about twice as long as distance between setal sockets; interstices shining, $2-3 \times ef$, with extremely fine sparse mcp. ground sculpture. Labrum densely setose, shallowly apicomedialely emarginate in both sexes, emarginate edge reflexed slightly in male, hence in habitus aspect anterior margin appearing slightly truncate over median 0.33. Mandibles in both sexes with outer surface bearing rather short tapering curving setae. **PRONOTUM:** Widest at anterior 0.25, regularly attenuate to base; emarginate sides with narrow hyaline border that continues narrowly but distinctly round posterior angles and along base; anterior margin almost straight and with bisinuate hyaline border; disc with well-developed midlongitudinal sulcus, constricted in middle, on each side with oval anterior and longitudinally elongate posterior admedian fovea well developed; sulcus and foveae mcr.; lateral fossula deep, reniform and delimiting distinct convex subaurate lateral lobe; reliefs shining, with nearly imperceptible mcp. ground sculpture, setigerous punctures slightly less dense than those of frons. **ELYTRA:** Oval, broadest about middle. Explanate margin distinctly wider in front of than behind middle; in female widened anterior part slightly more expressed than male, about as wide as mesotibia. Ten distinct series of punctures, punctures coarser basally finer apically, on disc punctures c. $1 \times ef$, interstices $1-2 \times ef$; series not striate-impressed except sutural in distal 0.5. Intervals shining, feebly convex, faintly alutaceous and with exceedingly fine and sparse mcp. ground sculpture; width on disc $2-3 \times pd$. Recumbent setae of serial punctures overlapping to form distinct whitish lines; nervure setae also whitish, but erect or decumbent. **VENTER:** Metasternum and abdominal sterna 1-5 entirely clothed with dense hydrofuge pubescence; 6 shining, apical 0.5 sparsely pubescent, apical margin transverse; 7 mcr. basally, apically shining, apical margin more broadly rounded in female and bearing transverse band of sparse setae, in male setae apicolaterally only. Apical tergum tumid, bearing stout spiniform setae and longer flagelliform setae, spiniform setae in female denser and twice as long as in male. **LEGS:** Male protarsomeres 1-2 with small pad of suction setae. **AEDEAGUS:** TL 50 (fig. 128).

ETYMOLOGY—Named in reference to the geographical distribution.

DISTRIBUTION—Namibia (fig. 129).

DISCUSSION—The three species placed in the *namibiensis* group (*namibiensis*, *pagotrichus*, and

spatulus) are apparently related to Palearctic species placed in the *punctatus* group by Jäch (1992), who was unable to distinguish monophyletic subgroups within the Palearctic species. Additional study is needed to determine the relationships of *namibiensis* group species to *punctatus* group species.

PARATYPES (512)—**Namibia:** Same data as holotype (18 SMW). Koabis, Rooiplatt 710, Damaraland, 19.58S–13.48E, 25.X.1982, S. Bethune, (1 SMW). Rossing, Boulder, 22.26S–14.58E, 2.VII.1984, C. Meyer, (8 SMW). As above, HC6, 14.I.1985, C. Meyer, (18 SMW). Rossing, Piet se Gal (Rock Fountain), 22.29S–15.01E, 8.V.1985, C. Meyer, (2 SMW). As above, Panner, HC1, (49 SMW). As above, CS7, (125 SMW). Koabis Fountain, Damaraland, tributary of Uniab Dam, 19.58S–13.48E, 9.X.1986, B. A. Curtis, (3 SMW). Obob Canyon, Skeleton Coast Park, 19.59S–13.25E, 7.X.1986, B. A. Curtis, (4 SMW). As above, Obob River, ca. 1 km downstream of spring, 7.X.1986, B. A. Curtis, (6 SMW). Sarusas West Fountain, Skeleton Coast Park, 18.52S–12.26E, 12.X.1986, B. A. Curtis, (9 SMW). Ogams Fountain, Skeleton Coast Park, 18.39S–12.18E, 11.X.1986, B. A. Curtis, (1 SMW). Huab River, Skeleton Coast Park, Jack Scott Bridge, 20.54S–13.32E, 15.X.1986, B. A. Curtis, (1 SMW). Sesob River, south of Ugab R., Dead End Canyon, 21.03S–13.55E, 16.X.1986, B. A. Curtis, (1 SMW). Saltzputz, Ugab River, Skeleton Coast Park, 21.01S–13.54E, 16.X.1986, B. A. Curtis, (1 SMW). Wolfwasser, Koigab R., Skeleton Coast Park, sluggish stream, 20.25S–13.31E, 6.X.1986, B. A. Curtis (2 SMW). As above, swiftly flowing stream, (1 SMW). Namib, Gobabeb, 23.34S–15.03E, shore washing, 7.IX.1974, Endrödy-Younga (#363), (1/0 TMP). Kaokaveld, salt pan S. Hoarusib, 19.04S–12.34E, saline pond, shore washing, 14.IV.1984, Endrödy-Younga (#2122), (2 TMP). c. Namib, Mirabib, 14.XII.1983, C. K. Brain, (79 TMP). Gobabeb, Salt River, c. 23.34S–15.03E, II.1987, P. Réveillet, (14 PM). Huab River, just west of Jack Scott Bridge, rainpool surrounded by reeds, slightly saline, 20.54S–13.32E, 10.I.1983, Bethune & Day, (2 SMW). Khumib River, ca. 10 km inland, spring and narrow running stream in reeds, slightly brackish, c. 18.40S–12.30E, 21.I.1983, Bethune & Day, (7 SMW). Sechomib River, about 2 km inland, saline seep with no surrounding veg., c. 18.41S–12.16E, 22.I.1983, Bethune & Day, (24 SMW). Okau Fountain, 12.5 km inland on Munutum River, spring and narrow running stream, fairly saline, in reeds, c. 18.25S–12.08E, 22.I.1983, Bethune &

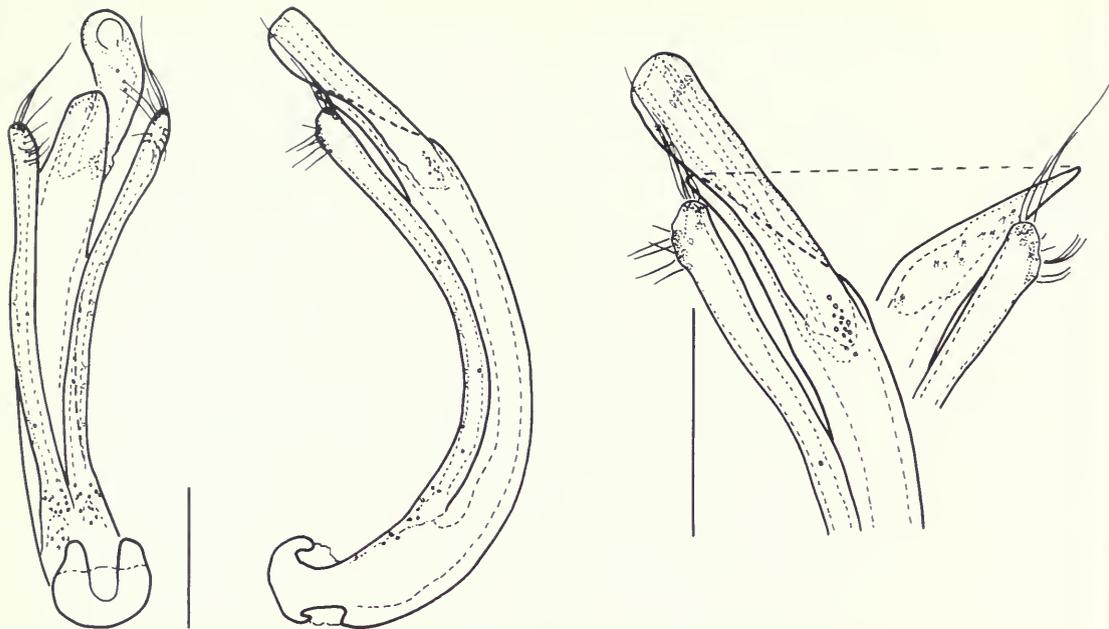


FIG. 130. *Ochthebius pagotrichus*, aedeagus of holotype. Scale lines = 0.1 mm.

Day, (77 SMW). Ogams Fountain, about 40 km inland near Sechomib River, brack to saline series of small pools in granite with few reeds, 18.32S–12.28E, 23.I.1983, Bethune & Day, (2 SMW). Hunkab River, ca. 44 km inland, saline stream with some reeds, c. 19.43S–13.17E, 25.I.1983, Bethune & Day, (4 SMW). Hunkab River, ca. 35 km inland, rainpool below rocks on north bank, surrounded by reeds, c. 19.44S–13.13E, 25.I.1983, Bethune & Day, (21 SMW). Unnamed river 4 km S. of Kharu-Gaiseb River, 20 km inland, salt stream, saline; algae, c. 19.53S–13.14E, 26.I.1983, Bethune & Day, (2 SMW). Obob River canyon, ca. 40 km from sea, salt stream with *Ruppia*, Rhino tracks, 20.14S–13.29E, 26.I.1983, Bethune & Day, (13 SMW). "Gemsbokbron" at source of Gemsbok River, ca. 25 km inland, running, brackish stream in trees, with algae and sedges, c. 20.25S–13.38E, 27.I.1983, Bethune & Day, (27 SMW). Uxieib in Koigab River canyon, ca. 16 km inland, salt spring in canyon, c. 20.27S–13.28E, 27.I.1983, Bethune & Day, (19 SMW). Huab River, ca. 12 km inland, rainpools in riverbed increasing size of normal spring, reeds, c. 20.46S–13.36E, 28.I.1983, Bethune & Day, (2 SMW). Dead End Canyon, Zebra River, ca. 40 km inland, brackish trickle emerging from rockface, c. 21.07S–13.55E, 29.I.1983, Bethune & Day, (5 SMW). Salty spring and stream, ("Foram stream"), 23.08S–15.10E, 26.VI.1982, J. Day, (8 JDC). Small

stream on Swartbank, a granite inselberg, c. 23.19S–14.50E, 4.XI.1979, J. Day, (1 JDC). Ubibvlei, saline stream, salinity variable, 20–60‰, 23.05S–15.09E, 26.VI.1983, J. Day, (1 JDC).

***Ochthebius (s.s.) pagotrichus*
new species**

Figures 130, 131

HOLOTYPE—Male, Namibia: Lêwater, marsh in Omaruru River, 21.39S–14.51E, 19.IV.1986, B. A. Curtis; deposited in SMW.

DIAGNOSIS—Distinguished from *namibiensis* by the 2nd elytral interval in basal 0.3 with setiferous punctures similar to serial punctures ("accessory series"), the obsolete or weakly developed pronotal posterior foveae, and the very narrow explanate margin of the elytra, widest at midlength; from *spatulus* by the sinuately attenuate pronotal sides (posterior side of lateral depression arcuate). Further distinguished from compared species by the aedeagus (fig. 130), and the 7th abdominal sternum in males with a V-shaped apicomedian incision and, in females, with the transverse band of setae interrupted in middle.

DESCRIPTION—SIZE (mm × 100): Holotype TL: EL:EW 198:126:92; HW 55; PL:PW:PA:PB 45:66:59:50. **COLOR**: Black, shining, somewhat ae-

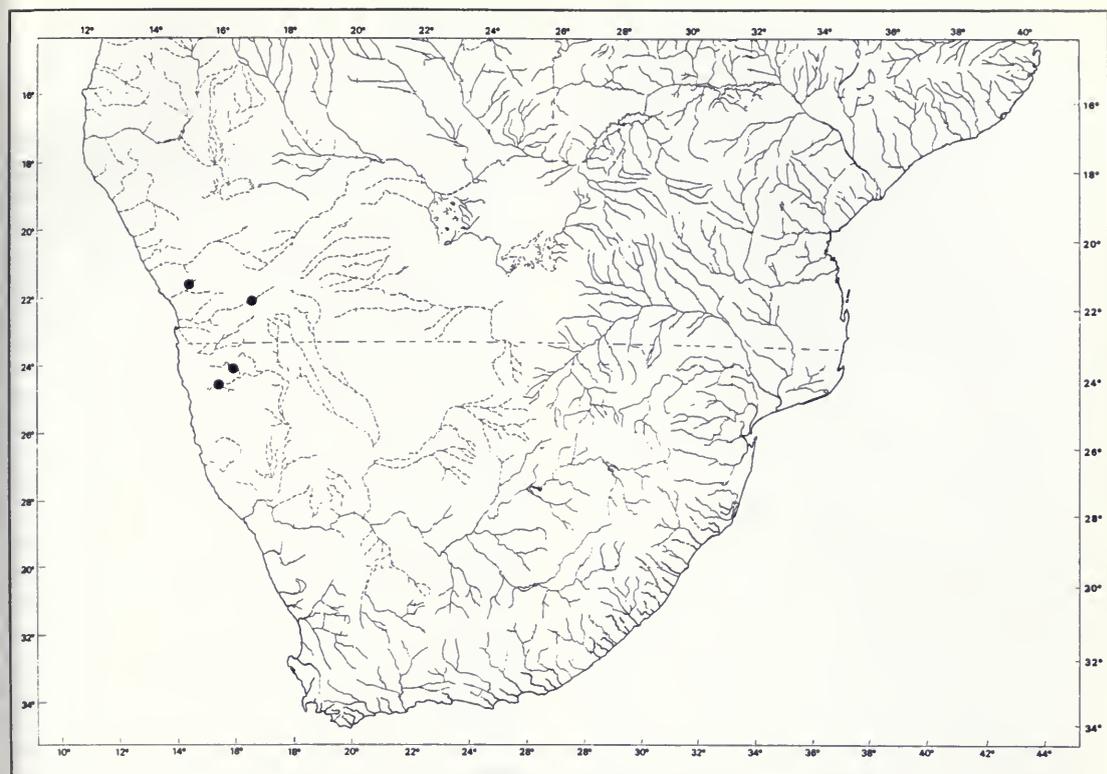


FIG. 131. *Ochthebius pagotrichus*, geographical distribution.

neous, clothed with distinct white decumbent pubescence, maxillary palpi, antennae and legs testaceous, last tarsomeres with apices darker. **HEAD:** Eyes moderately large, in dorsal aspect 8 convex facets in longest series. Ocelli without relief, location vaguely indicated by absence of setae. Interocular foveae deep, width of each slightly less than distance separating eye and fovea. Frons and clypeus with punctures of setal sockets fine, c. $0.5 \times ef$, rather sparse; interstices shining, $1-3 \times ef$, nearly imperceptibly finely sparsely mcp.; white setae about twice as long as distance between setal sockets. Labrum in habitus aspect appearing entire, anterior edge truncate, in oblique facial aspect slight apicomedian emargination with edge weakly upturned. Mandibles in both sexes with outer surface bearing rather short tapering curving setae. **PRONOTUM:** Widest at anterior 0.25, regularly attenuate to base; emarginate sides with narrow hyaline border that continues narrowly but distinctly round posterior angles and along base; anterior margin almost straight and with bisinuate hyaline border; disc with narrow not very deep midlongitudinal sulcus, on each side with oval very

shallow anterior admedian fovea, posterior admedian foveae weakly developed or obsolete with location marked by denser setigerous punctures; lateral fossula deep, almost reniform and delimiting distinct lateral lobes; reliefs shining, setigerous punctures slightly less dense than those of frons, with nearly imperceptible mcp. ground sculpture; midlongitudinal sulcus and lateral fossulae mcr.; saucer-shaped depressions of pronotal sensilla very apparent. **ELYTRA:** Oval, broadest about middle, explanate margin extremely narrow in both sexes, about as wide as tarsal claw. Ten distinct series of punctures, plus two "accessory" series: one short basal between series 1 and 2, and one over about basal 0.6 of length between series 9 and 10. Ten distinct series of punctures, punctures coarser basally finer apically, on disc punctures and interstices c. $1 \times ef$; series not striate-impressed except sutural in distal 0.5. Intervals feebly convex, very faintly alutaceous, shining, width on disc $2-3 \times pd$; interval 2 in basal 0.3 with setiferous punctures similar to serial punctures (accessory series). Recumbent setae of serial punctures overlapping to form distinct whitish lines;

nervure setae also whitish, but erect or decumbent. **VENTER:** Metasternum and abdominal sterna 1–5 entirely clothed with dense hydrofuge pubescence; 6 shining, apical 0.5 sparsely pubescent, apical margin transverse; 7 shining, apical margin more broadly rounded in female and bearing transverse, medially interrupted band of sparse setae, in male with small V-shaped apicomedian incision, setae apicolaterally. Apical tergum tumid, bearing short stout spiniform setae and longer flagelliform setae, spiniform setae denser in female than in male. **LEGS:** Male protarsomeres 1–2 with pad of suction setae. **AEDEAGUS:** TL 43 (fig. 130).

ETYMOLOGY—Greek, *pagotrichus* (*pagos*, frost; *trichus*, hair), in reference to the well-developed white, frost-like dorsal pubescence.

DISTRIBUTION—Namibia (fig. 131).

PARATYPES (43)—**Namibia:** Same data as holotype, (15 smw). Damaral., groot Barmen, 22.05S–16.40E, shore washing, 12.IX.1975, Endrödy-Younga (#370), (2 TMP). Naukluft, Felseneck farm, 24.12S–16.04E, water collection, 24.X.1974, Endrödy-Younga (#415), (0/1 TMP). Namib, Sessriem Canyon, 24.35S–15.47E, shore washing, 15.I.1975, Endrödy-Younga (#549), (20 TMP). Naukluft, Naukluft Park, 24.16S–16.15E, river stones, 23.VIII.1982, Endrödy-Younga (#1920), (1/0 TMP). Naukluft River, 24.16S–16.15E, shore washing, 10.VIII.1989, Endrödy-Younga & Klim. (#2644), (1/1 TMP). Naukluft cascades 24.16S–16.15E, 12.VIII.1989, Endrödy-Younga & Klim. (#2648), (1/0 TMP). Naukluft Camp site, Namib-Naukluft Prk., 26.16S–16.15E, 6.III.1987, R. Oberprieler, (1/0 SANC).

Ochthebius (*Notochthebius*) d'Orchymont

Notochthebius d'Orchymont, 1933:410 (n. subgen.).
Nyxochothebius d'Orchymont, 1933:413 (n. subgen.).
New Synonymy.

DISCUSSION—Members of *O. capicola* (Péringuey), the type species of the subgenus *Notochthebius* d'Orchymont, are closely related to members of *O. rubripes* Boheman, the type species of the subgenus *Nyxochothebius* d'Orchymont. These two species share the following characteristics: (1) the same general shape of the pronotum and lateral hyaline border, (2) the same general proportions and surface structures of head and labrum, (3) similar ventral form (see below), (4) similarly shaped

elytral epipleura (moderately enlarged), and (5) similarly formed aedeagus, having parameres at their bases joined to the main-piece for a considerable length.

The characters noted by d'Orchymont of the maxillary palpi and pronotal sculpture are characters that vary within other subgenera. The unusual elytral apices of *capicola* noted by d'Orchymont are now known to be a female sexual dimorphism that is also faintly indicated in some *rubripes* females. The elytral punctures are much more random in *capicola*, but the series in *rubripes* are irregular and there are areas of totally random punctures, basomedially and laterally after the 8th series. Both species are now known to inhabit ocean rock pools. For these reasons, *Nyxochothebius* is herein considered a junior synonym of *Notochthebius*.

An unusual feature of members of *Notochthebius*, not noted by d'Orchymont, is the abdominal structure. The abdomen is short, sometimes wider than long, and does not fully occupy the subelytral space; this is especially true of the female abdomen because the intersegmental membranes are large and therefore contract more in dry specimens. In females the first visible abdominal sternum (true 3rd) is modified: there is no discrete ridge delimiting the coxal cavity from the sternum, so that the pubescent part of the sternum forms part of the coxal cavity, and the coxae extend over and obscure from view all but the lateral portions of the 1st sternum and a medial portion of the 2nd sternum. The anterior extreme of the 1st sternum is withdrawn under the metasternum, and the intercoxal sternite is hidden beneath the metasternum, visible only when the abdomen is separated from the body.

In females of *capicola* the median 0.3 of the 1st sternum is reduced to a narrow membranous strip, the sternum being represented on each side by a triangularly shaped piece. In females of *rubripes* the 1st sternum is complete across the anterior 0.5 but is medially posteriorly abruptly excavate, the excavation trapezoidal and membranous. Transparency mounts are necessary to see these features clearly.

In dry specimens, only three, or sometimes only two, of the first five pubescent sterna are visible beyond the trochanters. Many of the specimens of *O. rubripes* available for study have a soft cuticle, although the venter is black. The softness adds to the contracted condition of dry specimens. The decision as to whether these specimens (especially females) are teneral, or have reached the fully

hardened condition for this species, must await additional material.

Associated with the retraction of the abdomen is the orientation of the metacoxae, which are more oblique than is usual for the subfamily. Although the metacoxae are obliquely oriented, the usual right angle relationship of the sides and base of the metasternum is maintained. Apparently this is accomplished by the epipleura assuming a triangular shape (widest anteriorly) instead of the usual nearly parallel-sided condition.

The mesocoxal cavities are unusual in the absence of a discrete posterior rim.

The distinctively flattened dorsum of the head is similar to that of *Ochthebius* (*s.s.*) in respect to the proportions of the combined lengths of the clypeus and labrum relative to the length and width of the head; therefore, the larger labrum is apparently accompanied by a corresponding shortening of the clypeus.

In these two species the aedeagus has the basal portions of the parameres fused with the main-piece and the internal cavity of each paramere is broadly joined with the same of the main-piece. When an aedeagus was transferred between solutions the parameres spread apart and then slowly returned to the original position. The ability to spread the parameres may be the functional reason for the parameres being broadly joined to the main-piece.

Most of the structural features noted above are specializations involving reductions, probably related in some way to the unusual habitat. None of these morphological features suggest a basal origin within the Ochthebiinae. Further study will probably show that "*Notochthebius*" is actually a subunit of *Ochthebius* (*s.s.*).

Ochthebius (*Notochthebius*) *capicola*
(Péringuey)

Figures 132, 133

Hydraena capicola Péringuey, 1892: 106 (n. sp., desc.).
Ochthebius (*Notochthebius*) *capicola* d'Orchymont,
1933: 411 (n. subgen., desc.).

LECTOTYPE (hereby designated)—Female, South Africa: Cape Town; deposited in the SAM.

DIAGNOSIS—Distinguished from *rubripes* by the totally random elytral punctation, the equally mcr. and dull head and pronotum, the proportionally smaller elytra, the smaller body size (TL c. 191), and the aedeagus (fig. 132).

DESCRIPTION—SIZE (mm × 100): Male TL:EL:EW 191:117:77; HW 48; PL:PW:PA:PB 43:61:52:49. Female slightly larger and broader, TL:EW c. 2.16 (in male c. 2.48). COLOR: Dorsum brown, sometimes with coppery reflections; venter piceous; legs testaceous to brunneo-testaceous, maxillary palpi testaceous. HEAD: Eyes small compared to width of head, in dorsal aspect 8 weakly convex facets in longest series. Frons interocular foveae shallow. Ocelli very indistinct. Dorsum uniformly mcr., dull and with sparse fine recumbent setae. Labrum wider than long (21:15), anterior margin straight. Maxillary palpi with ultimate length 2× width, lengths of ultomere: penultimate as 7:12. Mandible with setae of outer surface originating submarginally on dorsal surface; in male setae short stout spiniform, extending beyond margin but very slightly so, less than 0.5 of total length; in female setae similarly situated and sized, but arcuate and tapering. PRONOTUM: Widest just behind anterior angles, then gradually attenuate to obtusely rounded basal angles. Disc with very obsolete transverse impression in front of and behind middle. Entirely mcr. and with sparse fine recumbent setae. Lateral depressions nearly attaining posterior angles, not separated from disc by sulcus, shallowly subrugosely punctate. Anterior and posterior hyaline borders distinct; lateral hyaline border widest at posterior angles, narrowing anteriorly, very narrow at midlength, ended slightly behind anterior angles. ELYTRA: Punctures random, each with fine recumbent seta. Interstices subrugulose, dull but more shining than head and pronotum. Sides in male nearly parallel sided between anterior angles and midlength, then attenuate to apices, explanate margin very narrow, narrower than apex of tarsus; in female sides attenuate from just behind anterior angles, explanate margin wider than apex of tarsus. Apices in male separately rounded, barely dehiscent at apex; in female conjointly rounded but sutural margin emarginate just before apices, hence apices appear slightly pointed. VENTER: Mentum and submentum shining, finely sparsely punctulate. Antennal pockets well developed. Metasternum hydrofuge pubescent, posteromedially less densely so, slightly shining. Abdominal sterna 1–5 completely and 6 laterally densely hydrofuge pubescent, 6 medially sparsely pubescent, shining. Apical tergum in male sharply rounded, on each side with tuft of long flagelliform setae and very few spiniform setae; in female more angulately rounded, setae similar to male but long setae curling away from midline and spiniform

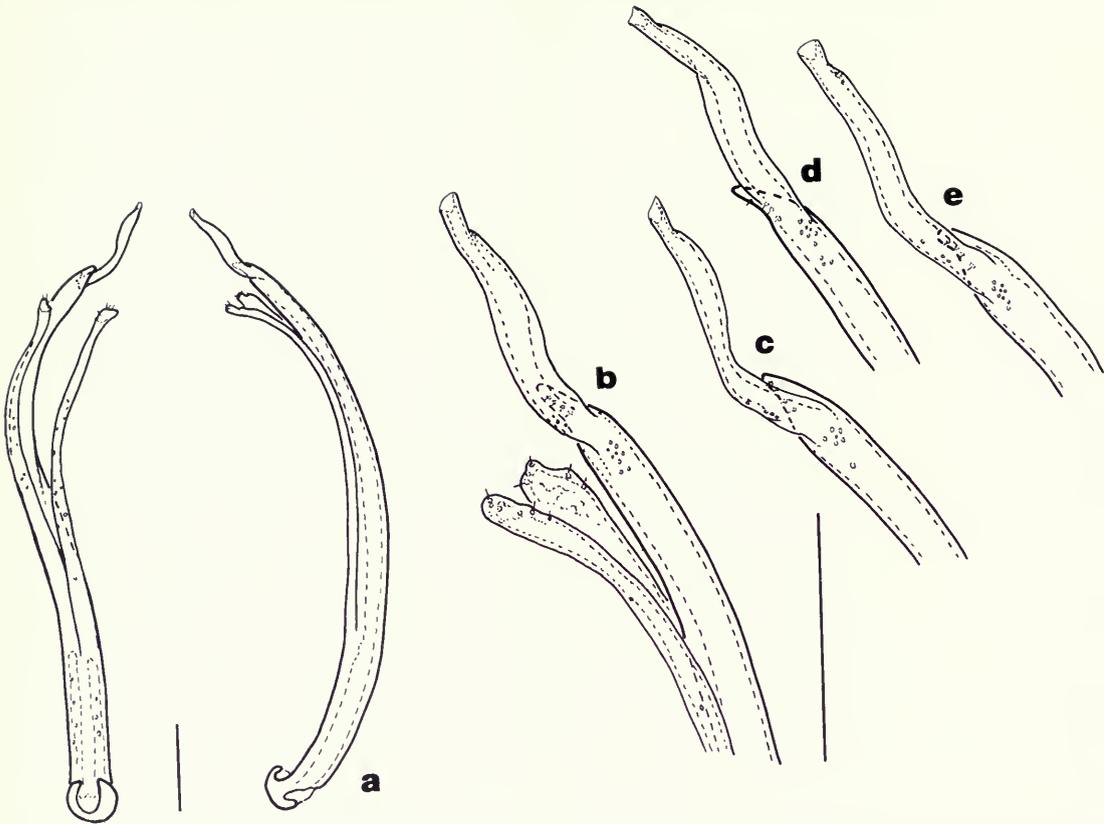


FIG. 132. *Ochthebius capicola*, aedeagi. a–b. Cape Town, Sea Point. c. Knysna Heads. d. Richtersveld, Rietfontein Coast. e. Skoermakerskop, near Port Elizabeth. Scale lines = 0.1 mm.

setae slightly more numerous. **LEGS:** Elongate, slender, metatibia length slightly less than pronotum width. In male, protarsomeres 1–2 slightly widened and with pad of suction setae. **AEDEAGUS:** TL 71 (fig. 132).

DISTRIBUTION—Currently known from four widely disjunct coastal localities in South Africa: Rietfontein coast (Richtersveld), Cape Town, Knysna Heads, and Skoermakerskop (fig. 133). Collected from coastal “rock pools” at all localities.

DISCUSSION—The type series consists of two female specimens, both damaged. The best specimen, which has the head disarticulated, is selected as lectotype and so labeled. The second specimen is labeled as paralectotype.

In March 1954, J. Balfour-Browne was fortunate to find this species in abundance in the “rock pools” at Sea Point, Cape Town, a locality now no longer existing with the carrying forward of the shore line by infilling and now heavily built over.

The species also occurred in abundance in the rock pools at Knysna Heads. These rock pools are, as in Europe, small crevices in the rock along the coast holding water for weeks on end and refilled either by rain or by splash from breaking waves; the water is usually hypersaline. By definition the pools must lie within the splash zone.

The collection made by S. Endrödy-Younga at the rock pools at the Rietfontein coast locality included both *Ochthebius capicola* and *Ochthebius rubripes*.

MATERIAL EXAMINED—**South Africa:** Cape Province: Cape Town, Sea Point, c. 33.56S–18.28E, rock pools, 27.III.1954, J. Balfour-Browne, (36 BMNH). Knysna Heads, c. 34.03S–23.03E, rock pools, 16.III.1954, J. Balfour-Browne, (48 BMNH). Skoermakerskop, nr. Port Elizabeth, 34.02S–25.34E, VI.1959, B. R. Stuckenberg, (20 BMNH). Richtersveld, Rietfontein coast, 28.48S–16.35E, ocean rock pools, 6.X.1976, Endrödy & Breytenb., (2/3 TMP).

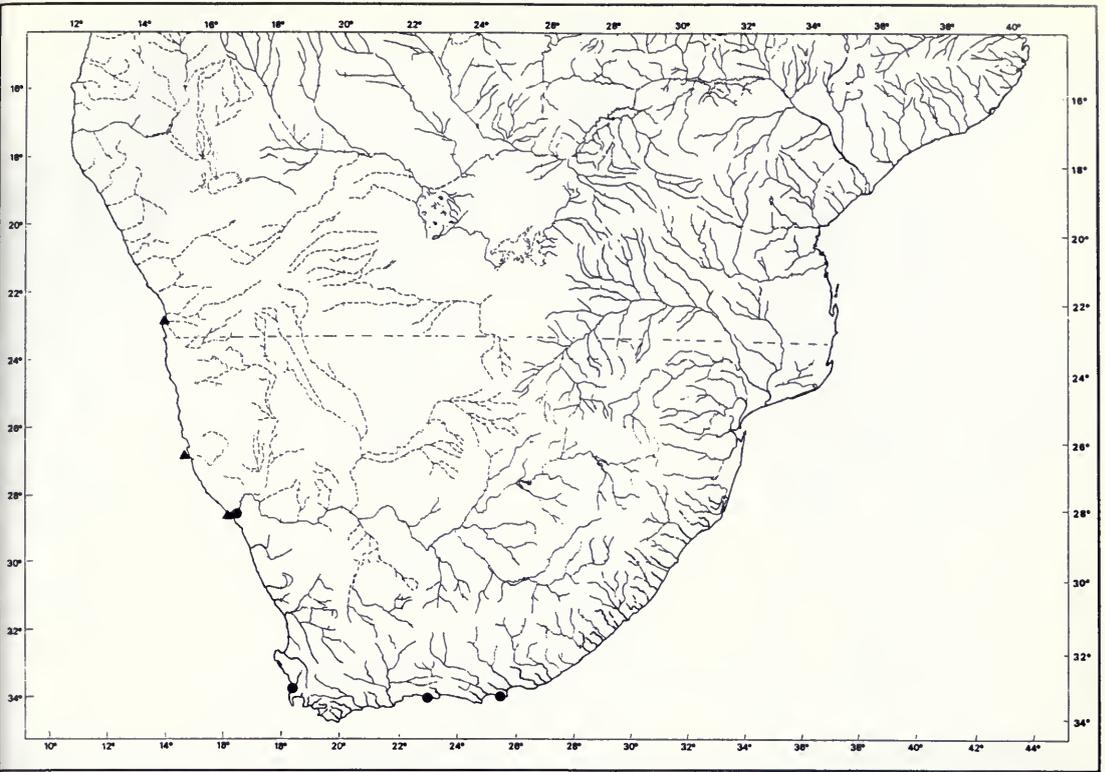


FIG. 133. Geographical distributions of *Ochthebius capicola* (●) and *Ochthebius rubripes* (▲).

Ochthebius (Notochthebius) rubripes
Boheman

Figures 133, 134

Ochthebius rubripes Boheman, 1861: 13 (n. sp., desc.).
Ochthebius (Nyxochthebius) rubripes d'Orchymont,
1933: 413 (n. subgen., desc.).

HOLOTYPE (by monotypy)—Male, Namibia: Kuiseb River, c. 22.59S–14.31E; deposited in NRS.

DIAGNOSIS—Distinguished from *capicola* by the serial punctures of the elytral disc, the shining interstices of the pronotal disc, the rugulose lateral depressions of the pronotum, the proportionally larger elytra, the larger body size (TL c. 244), and the aedeagus (fig. 134).

DESCRIPTION—**SIZE** (mm × 100): Holotype TL: EL:EW 244:156:108; HW 59; PL:PW:PA:PB 50:74:64:56. **COLOR**: Dorsum black, sometimes pronotum with brassy or bluish reflections; venter piceous; legs rufotestaceous. **HEAD**: Eyes small compared to width of head, in dorsal aspect 8 weakly convex facets in longest series. Frons interocular foveae shallow. Ocelli indistinct. Frons and clypeus dull, finely mcr.; frons punctulate,

clypeus more finely and sparsely so; clypeus anterior margin shining. Labrum wider than long (13:7), anterior margin straight, finely denticulate, obsolete mcr. and very finely and sparingly punctulate. Maxillary palpi with ultomere length 2 × width, lengths of ultomere:penultomere as 6:15. Mandible with setae of outer surface originating submarginally; in male short stout spiniform, extending beyond margin but slightly so; in female setae stoutly flagelliform, each arcuate except a few short spiniform near midlength. **PRO- NOTUM**: Widest just behind anterior angles, then gradually attenuate to obtusely rounded basal angles. Disc with transverse impressions in front of and behind middle, anterior very shallow, posterior deeper; sometimes with very faint median longitudinal impression; punctures varying in size from extremely small to c. 1 × ef, not dense, each with fine recumbent seta; interstices shining. Lateral depressions rugulose, dull, nearly attaining posterior angles, not separated from disc by sulcus. Anterior and posterior hyaline borders distinct; lateral hyaline border widest at posterior angles, narrowing anteriorly, very narrow at midlength,

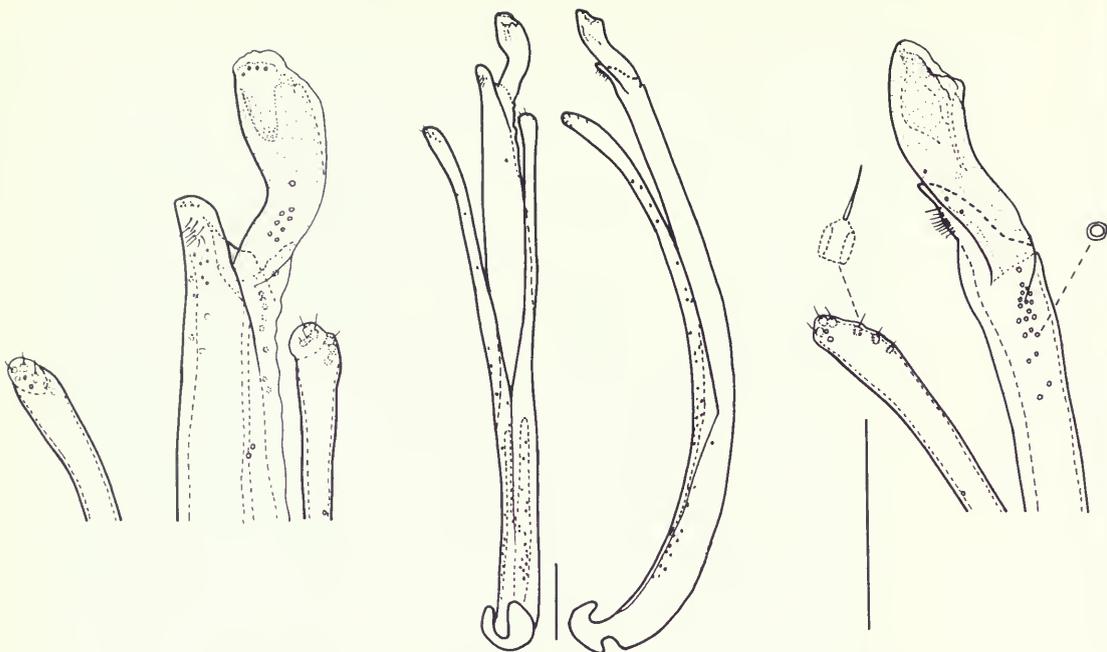


FIG. 134. *Ochthebius rubripes*, aedeagus of holotype. Scale lines = 0.1 mm.

ended slightly behind anterior angles. **ELYTRA:** Punctures in slightly irregular series on disc, becoming random and with extra punctures at base, at area of 1st and 2nd series in basal 0.25 and at area of 9th and 10th series. Punctures larger than largest pronotal punctures. Intervals on disc shining, about 2–3× puncture diameter. Apices in males separately rounded, barely dehiscent at apex; in females separately rounded, with small tooth at juncture of suture and margin, formed by abruptly ended interlocking part of suture. **VENTER:** Mentum and submentum glabrous, shining, mentum finely sparsely punctulate. Antennal pockets well developed. Metasternum hydrofuge pubescent, posteromedially less densely so, shining. Abdominal sterna 1–5 completely and 6 laterally densely hydrofuge pubescent, 6 medially sparsely pubescent, shining. Apical tergum in male sharply rounded, on each side with long flagelliform setae and very few spiniform setae; in female more angularly rounded, setae similar to male but spiniform setae more numerous. **LEGS:** Elongate, slender, metatibia length about equal pronotum width. In male, protarsomeres 1–2 slightly widened and with pad of suction setae. **AEDEAGUS:** TL 85 (fig. 134).

DISTRIBUTION—Currently known from the Kuiseb River in central Namibia (probably collected at the coast), Possession Island, and on the western

coast of South Africa (Richtersveld) (fig. 133); collected from ocean rock pools at the latter locality. About 600 (airline) mi separate the Kuiseb and Richtersveld localities.

DISCUSSION—Males of the series from Richtersveld compare favorably with the holotype, except that the legs are generally lighter in coloration. Males are black dorsally, the legs rufotestaceous, whereas females have the head and pronotum black, the elytra rufotestaceous like the legs, except piceous basally and at the declivity. Females have much wider intersegmental membranes than males; in dry specimens the abdomen is contracted, appearing to be teneral.

In females the 1st abdominal sternum is markedly, triangularly raised in the middle (intersegmental membrane even wider at this area), but because of the configuration of the hind legs this is difficult to see without removing the abdomen. In males this area is only slightly raised.

There is considerable variation in the configuration of the elytral punctures in the basal 0.25 of the first two series. Usually the punctures in this area are totally random and quite dense, apparently having “extra” punctures, infrequently the punctures are subserially arranged, with an “accessory series” between the 1st and 2nd. In the holotype the punctures in this area are totally random, very dense, separated by narrow walls. In

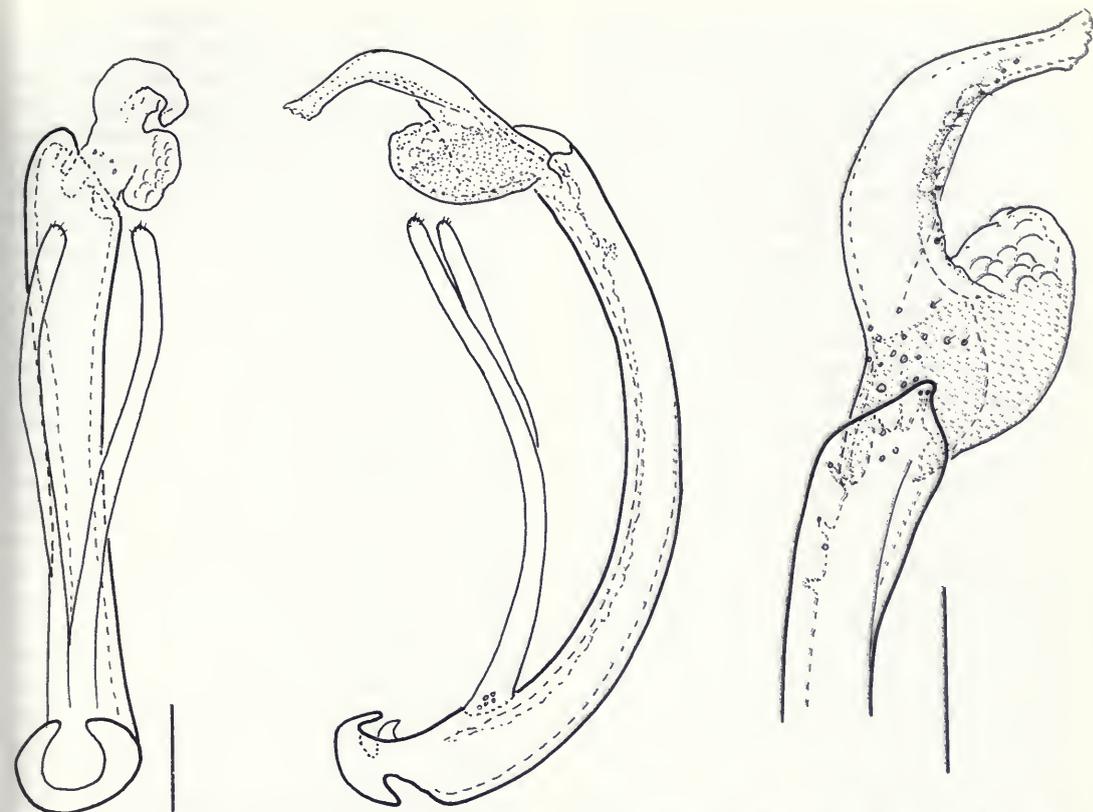


FIG. 135. *Ochthebius andronius*, aedeagus of specimen from Namibia, Windhoek, Eros Mountain. Scale lines = 0.05 mm.

most specimens from South Africa these punctures are usually not quite as dense.

MATERIAL EXAMINED—**Namibia**: Possession Island, 27.00S–15.11E, V.1963, W. D. Haacke, (158 TMP). **South Africa**: Richtersveld, Rietfontein coast, 28.48S–16.35E, ocean rock pools, 6.X.1976, En-drödy & Breytenb., (86 TMP).

Ochthebius (Asiobates) Stephens

Ochthebius (Asiobates) andronius

d'Orchymont new status

Figures 5, 135

Ochthebius (Homalochthebius) andreinii andronius d'Orchymont, 1948: 50.

TYPE LOCALITY—Kenya, Nairobi.

DIAGNOSIS—Recognized from other southern African *Ochthebius* by the pronotal disc with distinct midlongitudinal sulcus, but lacking anterior

and posterior foveae, and the sides of the pronotum rounded from the anterior angles to beyond middle, then produced as minute point in front of the excavate posterior angles.

DESCRIPTION—**SIZE (mm × 100)**: Male TL:EL:EW 198:121:90; HW 50; PL:PW:PA:PB 44:68:59:49. **COLOR**: Dorsum brunneous to brunneo-testaceous, head and pronotum distinctly darker than elytra, head sometimes nearly black; legs and maxillary palpi testaceous except tips of tarsi, apex of palpomere 3 and all of palpomere 4 infuscate; venter piceous. **HEAD**: Eyes moderately large, in dorsal aspect 8 weakly convex facets in longest series. Ocelli distinct. Interocular foveae deep, large, each slightly less than width separating them. Frons punctures distinct, c. $1 \times ef$, each puncture with a fine short seta, interstices shining, $1-3 \times pd$, with moderately dense mcp. ground sculpture. Sides of head distinctly indented at frontoclypeal suture. Clypeus nearly parallel-sided, width of anterior margin nearly twice length; less shining than, punctures smaller and slightly denser than, and

mcp. ground sculpture denser than that of frons. Labrum transversely slightly declivous from midline to sides, more distinctly so in male; disc very finely sparsely recumbent-setiferously punctate, interstices shining; anterior margin in male transverse or nearly so, margin reflexed from side to side, in female apicomediaally shallowly emarginate, not reflexed. Mandibles in male with prominent lateral fringe of spiniform setae. **PRONOTUM:** Anterior margin very shallowly emarginate between middle and anterior angles. Punctures deep and coarse, irregularly spaced and of varying sizes, c. $0.5-3 \times \text{ef}$, punctures finer and sparser near anterior and posterior margins. Interstices shining, varying from narrow walls to $3 \times \text{ef}$. Midlongitudinal sulcus effacedly mcr. Lateral fossula shining, non-mcr. Lateral depressions continuing transverse curvature of disc; punctation similar to larger punctures on disc. **ELYTRA:** Sides rounded, widest near middle, explanate margin moderately wide, declivous, shining, apices in male narrowly separately rounded, in female narrowly conjointly truncate. Ten-seriate punctate, series 1 striate-impressed, other series at most obsoletely so; punctures larger basally finer apically, on disc slightly smaller than largest pronotal punctures, longitudinally separated by narrow walls to $1.5 \times \text{pd}$, each puncture with exceedingly fine and short decumbent seta. **VENTER:** Mentum and submentum finely very sparsely setiferously punctate, interstices strongly shining. Metasternum laterally mcr. and hydrofuge pubescent, medially from base to apex with large strongly shining area glabrous except on each side with irregular longitudinal band of four to seven distinct punctures, each bearing a seta much longer than hydrofuge setae (glabrous area also with midlongitudinal band of micropores visible in transparency mount). Abdominal sterna 1-5 with hydrofuge pubescence; 6 shining, finely sparsely setiferously punctate; 7 shining, in male with subapical transverse band of setae, apical margin shallowly widely emarginate, in female subapical transverse band of setae interrupted in middle, apical margin widely rounded. Last tergum in male with mixture of peg-like spiniform setae and longer flagelliform setae, in female with dense apical fringe of peg-like spiniform setae and randomly arrayed longer flagelliform setae. **LEGS:** Male protarsomeres 1-3 with pad of suction setae, distal mesotarsomere distinctly bent in basal 0.3. **AEDEAGUS:** TL 38 (fig. 135).

DISTRIBUTION—Widely distributed in southern Africa (fig. 5).

DISCUSSION—D'Orchymont (1948) reported that

the only specimens of *O. andreinii* Régimbart he had been able to see from the type locality (Eritrea: Asmara) were a pair collected by Müller in January 1935, now in the Trieste Museum. He further reported that none of the numerous specimens he had seen from Ethiopia, Uganda, and Kenya agreed completely with the pair from Asmara, and created three subspecies on the basis of the mobile terminal piece of the aedeagus assuming four different forms. In certain localities two of these "subspecies" were reported to occur together. These forms are traditionally placed in the subgenus *Homalochthebius*, which is now (Perkins, 1981) considered a subunit of *Asiobates*.

In African material that has been available for study, examination of the genitalia always resulted in an identification as one or the other of the "subspecies": i.e., intermediates are unknown. Consequently *andronius* is herein accorded full species status. All specimens from Namibia and South Africa examined to date have an aedeagal structure comparing favorably to that figured by d'Orchymont for an *andronius* specimen from Nairobi. There is slight variation in proportions and microfeatures, such as the "wrinkles" on the terminal mobile piece, as may be expected given the broad distribution of the preferred microhabitat. The aedeagus illustrated herein (fig. 135) is that of a specimen from Namibia with the following data: Windhoek, Eros Mt., 1600 m, 22.34S-17.06E, shore washing, 10.IX.1974, Endrödy-Younga (#367).

D'Orchymont's 1948 paper describing what he considered subspecies of *Ochthebius andreinii* was published posthumously. Localities for the various subspecies were given, but type specimens were not designated. Designation of a lectotype for *andronius* seems more appropriately done within the context of a paper on the species group, including detailing aedeagal variation.

MATERIAL EXAMINED—**Botswana:** Okavango, Thamalakane River, c. 19.40S-23.30E, XII.1973, P. Reavel, (1/1 TMP). **Lesotho:** Mokhotlong, c. 29.28S-29.05E, 7200 ft, (SSAE Stn. 266), 6.IV.1951, Brinck & Rudebeck, (2/0 LUM). **Namibia:** Damaral., Okahandja, 21.59S-16.52E, shore washing, 12.IX.1974, Endrödy-Younga (#369), (48 TMP). Damaral., groot Barmen, 22.05S-16.40E, shore washing, 12.IX.1975, Endrödy-Younga (#370), (145 TMP). Khomashochl., Farm Wissenfels, 23.20S-16.25E, shore washing, 14.IX.1974, Endrödy-Younga (#371), (13 TMP). Naukluft, Felsenack farm, 24.12S-16.04E, shore washing, 24.X.1974, Endrödy-Younga (#414), (1/0

TMP). Naukluft, Naukluft Park, 24.16S–16.15E, shore washing, 26.X.1974, Endrödy-Younga (#431), (29 TMP). Maltah. D., Farm Kamkas 20, 24.36S–16.37E, shore washing, 28.X.1974, Endrödy-Younga (#435), (3 TMP). Damaraland, Ugab River, 21.08S–14.58E, shore washing, 24.XII.1974, Endrödy-Younga (#516), (0/3 TMP). Namib, Sessriem Canyon, 24.35S–15.47E, shore washing, 15.I.1975, Endrödy-Younga (#549), (1/0 TMP). Windhoek, Eros Mt., 1600 m, 22.34S–17.06E, shore washing, 10.IX.1974, Endrödy-Younga (#367), (37 TMP). As above, sifting, Endrödy-Younga (#366), (1 TMP). Namib, Gobabeb, 23.34S–15.03E, shore washing, 24.IX.1974, Endrödy-Younga (#377), (1 TMP). Namib, Sessriem Canyon, 24.35S–15.47E, shore washing, 15.I.1975, Endrödy-Younga (#548), (1 TMP). Namib, Gobabeb, 23.34S–15.03E, shore washing, 7.IX.1974, Endrödy-Younga (#363), (1 TMP). Naukluft, Naukluft Park, 24.16S–16.15E, river stones, 23.VIII.1982, Endrödy-Younga (#1921), (1 TMP). Gt. Namaqualand, Frm Kub Süd, Fish R., 24.14S–17.30E, shore washing, 2.VIII.1981, Endrödy-Younga (#1819), (1 TMP). Naukluft River, 24.16S–16.15E, shore washing, 10.VIII.1989, Endrödy-Younga & Klim (#2644), (144 TMP). Numis Wasser, 26.03S–16.15E, shore washing, 9.VIII.1989, Endrödy-Younga & Klim (#2642), (5 TMP). Koriakab Waterhole, ca. 10 mi NNW Windhoek, ca. 5500 ft, in bare sandy pool in dry river course, 19.V.1954, J. Balfour-Browne, (1/3 BMNH). Waterhole, 1 mi S. Okahandja, pool with silty bottom, 22.V.1954, J. Balfour-Browne, (1 BMNH). Okarupa, 17 mi E. Okahandja, in pool below large farm-dam, 22.V.1954, J. Balfour-Browne, (2/0 BMNH). **South Africa:** Cape Province: S.W. Cape, Nuweberg, 10 km NE, 34.00S–19.06E, water plankton, 13.XI.1973, Endrödy-Younga (#239), (1 TMP). W. Cape Prov., Wiedouw farm, 31.43S–18.43S, shore washing, 19.VIII.83, Endrödy-Younga (#1946), (3 TMP). Cape Farm Ezelsfontein, 30.24S–18.05E, shore washing, 30.X.1977, Endrödy-Younga (#1407), (1 TMP). Swellendam District, 20 mi SE Swellendam, c. 34.10S–20.40E, (SSAE Stn. 110), 3.I.1951, Brinck & Rudebeck, (4/6 LUM). Somerset East District, Zuurberg Pass, 15 mi N. Addo, c. 33.30S–25.40E, (SSAE Stn. 143), 16.I.1951, Brinck & Rudebeck, (1/0 LUM). Worcester District, Brandvlei, 6 mi SW Worcester, c. 33.27S–20.29E, (SSAE Stn. 175), 11.II.1951, Brinck & Rudebeck, (0/2 LUM). George District, Outeniqua Mountains, Montagu Pass, c. 33.47S–20.07E, (SSAE Stn. 187), 28.II.1951, Brinck & Rudebeck, (1/0 LUM). Aliwal North, 30.42S–26.43E, “in tank,” 18–25.VIII.1954, H. Andreae, (8 SAM). Piquetberg District, Berg River, farm Kersefontein, 32.55S–18.20E, (NIWR-GBG 508A), head of estuary, fresh water, 29.I.1952, (2/1 AMG). As above, (NIWR-GBG 541G), 28.III.1952, (0/1 AMG). Ciskei, Amatole, Pirie For., 32.43S–27.17E, shore washing, 8.XII.1987, Endrödy-Younga (#2563), (0/3 TMP). Port Elizabeth District, Van staaden’s Pass, in small gravel at edge of running water, 21.III.1954, J. Balfour-Browne, (1/0 BMNH). Sundays River, near Addo, in silt at sides of river, 21.III.1954, J. Balfour-Browne, (0/1 BMNH). Van Rhynsdorp District, Bitterfontein, 1125 ft, ephemeral roadside pool, 18.VII.1954, J. Balfour-Browne, (1/0 BMNH). Natal Province: Ngagane River, 30.46S–30.32E, (NAT L32M, Stn. G), marg. veg., (4 AMG). As above, (NAT 397E), 23.VII.1974, marg. veg., (0/1 AMG). Buffalo River, 27.42S–30.33E, (NAT 336N, Stn. 4), 21.V.1974, marg. veg., (2 AMG). Umlaas River Bridge, c. 29.44S–30.31E, marginal vegetation, (NIWR-AD 15Q13), 11.II.1954, (5/6 AMG). Tugela River, Stn. 4, 28.42S–29.10E, marginal vegetation, (NIWR-TUG 12Q9), 17.IX.1953, (0/2 AMG). Zululand, Dukuduku For. Sta., 28.22S–32.19E, air plankton, sunset, 4.IV.1974, Endrödy-Younga (#323), (8 TMP). Transvaal Province: S. Transvaal, Roberts Drift, Vaal R., 27.02S–29.02E, sifted, flood debris, 8.X.1973, Endrödy-Younga (#190), (603 TMP). c. Transvaal, Roodeplaat Dam, 25.37S–28.23E, shore washing, 14.VIII.1974, Endrödy-Younga (#359), (108 TMP). N. Transvaal, Nylsvley, at river, 24.40S–28.42E, in river, 24.V.1976, W. Breytenbach, (0/1 TMP). Transvaal, Pretoria Distr., Roodeplaat, UV light trap, 30.10S–10.11E, 1980, Neubecker, (3 TMP). Transvaal, Uitsuk, 25.15S–30.33E, window trap, 15.XII.1986, Endrödy-Younga (#2390), (2 TMP). Pretoria, c. 25.45S–28.12E, (SSAE 282), 26.IV.1951, Brinck & Rudebeck, (0/1 LUM). Vaal River System: Kalkspruit, 26.48S–28.31E, Stn. 16, (NIWR-VAL 28D), 7.XII.1955, (0/1 AMG). Sasol pipe leak, (NIWR-VAL 189F), 18.IV.1956, (1/0 AMG). Vaal R. above dam, 26.44S–27.36E, Stn. 15, marginal vegetation, (NIWR-VAL 405E), 20.IX.1958, (0/1 AMG). Vaal R., 26.58S–29.15E, Stn. V.D. 4, (NIWR-VAL 668D), marginal vegetation, (1/0 AMG). As above, Stn. V.D. 4, (NIWR-VAL 1027C), marginal vegetation, 8.II.1960, (1/0 AMG). Vaal R., 26.49S–30.08E, Stn. V.D. 21, (NIWR-VAL 884J), marginal vegetation, 21.X.1959, (0/4 AMG). Vaal R., 26.59S–28.44E, Stn. V.D. 5a, (NIWR-VAL 888C), bottom, 20.X.1959, (0/1 AMG). Vaal R., 27.49S–28.40E, Stn. V.D. 41, marginal vegetation, (NIWR-VAL 1350B), 11.VIII.1961, (0/2 AMG). Jukskei-

Crocodile River System: Pelindaba Bridge, 25.48S–27.54E, marginal vegetation, (NIWR-CRO 1A), 23.X.1955, (1/1 AMG). Moreletta at Bakken's Bend, Stn. 3, marginal vegetation, (NIWR-GEN 496C), 17.XI.1960, (0/2 AMG). Magalakwena, marginal vegetation, (NIWR-GEN 580G), 9.XI.1960, (1/0 AMG). Crocodile River, Tarentaalkraal, marginal vegetation, (NIWR-GEN 711S), 3.IX.1961, (0/1 AMG). Bergville District, Lawford's Spruit, near Bergville, ca. 4250 ft, shallow stream, algae and sand on rock slabs, 4.IV.1954, J. Balfour-Browne, (1/3 BMNH). Small tributary of Tugela River, ca. 10 mi SE Bergville, ca. 4500 ft, in muddy gravel in side pools, 4.IV.1954, J. Balfour-Browne, (0/3 BMNH).

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 CAS California Academy of Sciences, San Francisco (D. Kavanaugh)

- FBC F. Bameul, Talence, France
 FMNH Field Museum of Natural History, Chicago (A. F. Newton, Jr.)
 ISNB Institut royal des Sciences Naturelles de Belgique, Brussels (L. Baert)
 JDC J. Day, University of Cape Town, Cape Town
 LUM Zoological Museum, Lund University, Lund (P. Brinck, R. Danielsson)
 NRS Naturhistoriska Riksmuseet, Stockholm (P. Lindskog)
 PM Muséum National d'Histoire Naturelle, Paris (N. Berti)
 SAM South African Museum, Cape Town (M. A. Cochrane)
 SANC South African National Collection, Pretoria (R. Oberprieler)
 SMW State Museum Windhoek (B. A. Curtis)
 TMP Transvaal Museum, Pretoria (S. Endrödy-Younga)
 UCT University of Cape Town, Cape Town (J. M. King)
 USNM Smithsonian Institution, Washington, D.C. (P. J. Spangler)

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