TERMITOPHILOUS SCARABS OF THE TRIBE CORYTHODERINI: A TAXONOMIC REVIEW (COLEOPTERA: APHODIIDAE)

by

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With 201 text-figures and one plate

Abstract

The scarab tribe Corythoderini is reviewed. All its members appear associated with termites, probably in a symphilous way; the host records all pertain to *Odontotermes* species. The known range of the Corythoderini falls within the range of the host genus: Africa to Burma. The phylogeny of the corythoderine genera is discussed. Comparative remarks on other termitophilous scarabs are added. The closest known relatives of the Corythoderini are the Termitoderini, trib. nov.

The tribe Corythoderini is diagnosed, *inter alia*, by means of a key to the subfamilies and tribes of the Aphodiidae. The corythoderine genera are diagnosed and keyed. All the species are keyed, and the new species are described. The characters of the genera and of the species of the two larger genera are analysed and reviewed in tabular form. One new genus is proposed: *Hemicorythoderus*; one new subgenus: *Miochaetopisthes*; 15 new species are described in the genera *Chaetopisthes* Westwood, *Termitopisthes* Wasmann, *Paracorythoderus* Wasmann. Type-species as well as lectotypes are designated. The known distribution of the species is mapped. The taxonomic information on all the taxa recognized is summarized in an annotated checklist.

Contents

Chapter 1. Introduction

Scarcely any of the numerous groups of scarabs associated with social insects has been the subject of a modern synoptic study, which is in sharp contrast to the situation in other beetle groups, like the Paussidae, Staphylinidae, etc. Much of the original research on scarabs associated with social insects was conducted more than 50 years ago, primarily by Wasmann; subsequent authors usually only added isolated descriptions of novelties. This also holds for the Corythoderini, an Afro-Indian tribe of peculiar termitophilous Aphodiidae (pl. 1). The more comprehensive papers on these Corythoderini were published by Wasmann (1918) and Champion & Wasmann (1923). After 1923 one additional species was described (Paulian, 1947), and the available information was finally repeated by Balthasar (1964) and Endrödi (1964) for Asia and Africa, respectively. The recent discovery of numerous unstudied Corythoderini in the British Museum (Natural History), as well as the opportunity to study material from other sources, induced the second author to conduct a reconnaissance of this taxonomically difficult group. This was then expanded by the first author, who added most of the descriptive detail. The present paper gives the final results of our joint efforts.

The Corythoderini now appear to be one of the largest groups of termitophiles in the Scarabaeoidea: 34 known species (15 of them new) are here accommodated in five genera (one of them new) and seven subgenera (one of them new). Their characters were analysed in great detail, and on this analysis our dichotomous identification keys and synoptic tables are based. Although our primary objective has been to devise a practical classification, this review also presents a gross phylogeny of the Corythoderini (chapter 12), i.e. a theory on how and why the group evolved in space and time. Despite the paucity of the material collected we consider it possible to generate such a phylogeny (cf. also Krikken, 1976), particularly because the characters of the Corythoderini show distinct morphoclines (transformation series of homologous character states). The phylogenetic interpretation of these morphoclines (cf. the characters listed in chapter 4, synoptic table) is, however, hampered by the insufficiently understood functional relations existing between them (cf. chapter 12).

Although actually only few of the 34 species have been found in the nests of termites (all belonging to the genus *Odontotermes* Holmgren), certain externally visible peculiarities of the Corythoderini (specified below) strongly suggest that they are all termitophilous, i.e., dependent on termites during part or all of their life cycles (definition Wilson, 1971). Most, or maybe

all, of the Corythoderini found outside termite nests were attracted to light. Wasmann, in a series of studies (i.a. 1894, 1896, 1898, 1903a), discussed the nature of the associations between social insects and their guests, proposing his well-known general classification of these associations. This classification continues to be used to-day, despite the repeated conclusion (e.g. by Wilson, 1971) that it is considerably less than perfect. However, the same can be said of any post-Wasmannian classification: those known to us (cf. also Kistner, 1979) are either much more complicated, losing in synoptic value, or they are much simpler, or too abstract, thus losing in information content. Our conclusion about the status of the Corythoderini is that they all may well be completely symphilous [1]) in the Wasmannian sense; the existence of symphilous activities may be inferred from the presence of trichomes, the exoskeletal swellings containing glandular tissue, the licking by the hosts of these trichomes and swellings, etc. In his anatomical-histological study of *Chaetopisthes assmuthi*, Wasmann (1903b) discovered glandular or fat tissue in the vicinity of trichomes, grooves and the like, responsible for the secretion of a substance attractive to the termites. Wasmann's correspondent Assmuth (Wasmann, 1918) actually observed the licking of certain parts of *Termitopisthes wasmanni* by the termite *Odontotermes bangalorensis*. The regression of the mouthparts suggests the existence of trophallaxis between the Corythoderini and their hosts, i.e., the exchange of liquid food. Details are still unknown; here lies an interesting field of research for entomologists in India, where most of the Corythoderini occur.

A few words on other termitophilous Aphodiidae seem in order, because they all show some degree of convergence in the aforesaid symphilous features. In fact there are relatively few other Aphodiidae associated with termites [2]), and most of them are doubtfully placed in this family. To our knowledge, genuine termitophiles are only found in the Termitoderini, the Rhyparinae, and the Termitotrogidae (sometimes as Termitotroginae or Termitotrogini placed in the Aphodiidae, or in the Scarabaeidae s. str.). One African genus of Rhyparinae, *Notocaulus* Quedenfeldt, is frequently found

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1) This term symphilous (and its analogues, cf. Wilson, 1971) should preferably be applied in a restricted way, as a qualifier: symphilous behaviour, symphilous organs, etc. The necessity of restricted application was already shown by Wheeler's example (1928) of the *Ptilocerus* assassin bug, and, among scarabs, it is clearly shown by the recently discovered, unexpected predatory activities of the apparently symphilous *Cremastocheilus* (Cazier & Mortenson, 1965).

2) Various New World Aphodiidae are associated with ants, both leafcutting ants (Attini) and others (cf. Krikken, 1972). They are all Eupariini; compared to the termitophiles discussed here, these myrmecophilous eupariines are scarcely modified scavengers.

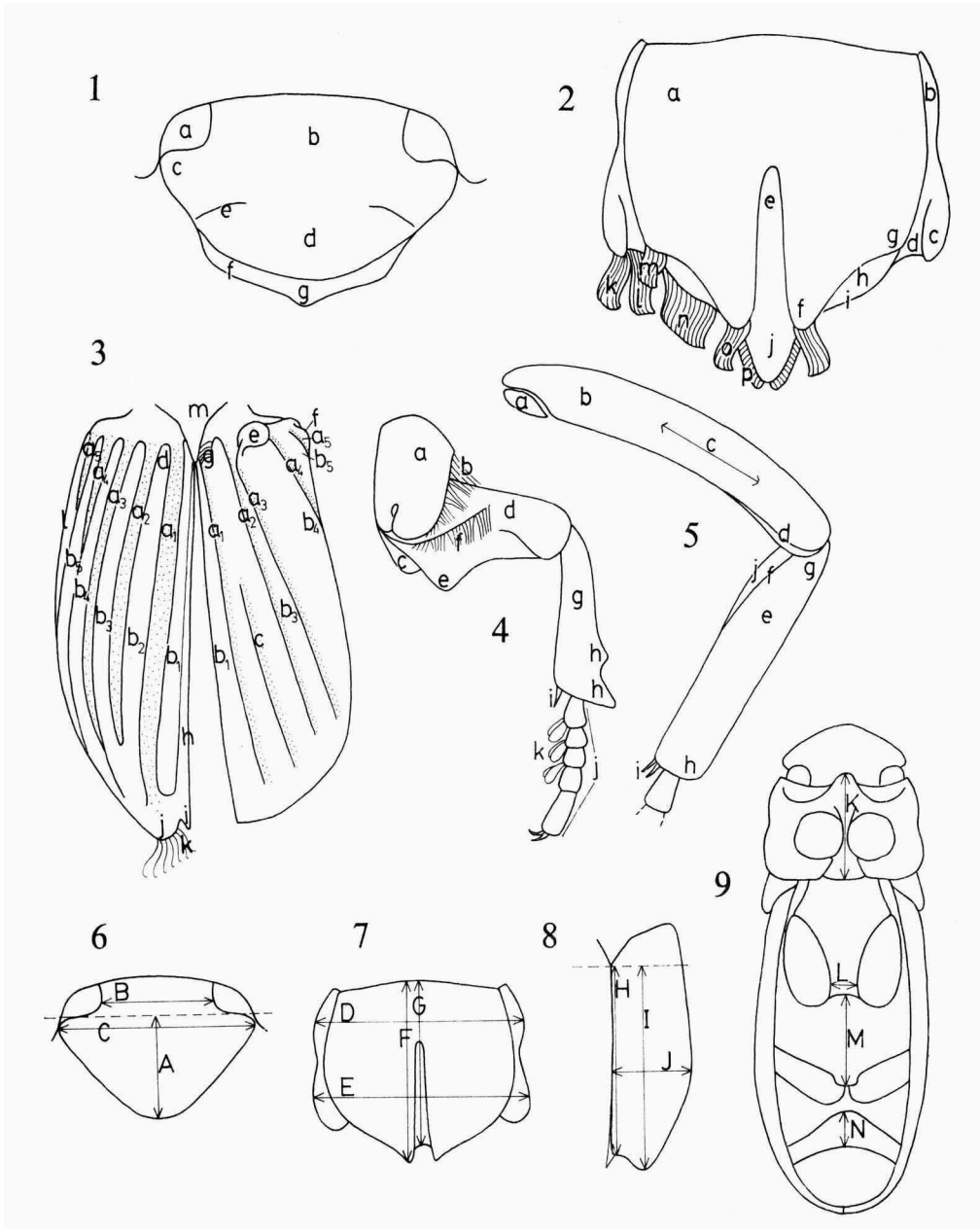
in dung; the other genera (cf. Krikken, 1970) have been found with termites, or are most likely associated with them. Three of the rhyparine genera are eyeless, two of these are also flightless; at least some have regressive mouthparts; all have swellings on the pronotum and/or on the elytra; some have trichomes. The Rhyparinae are pantropical, and this is one of the reasons to consider them old, i.e. of possibly Gondwanian origin; the present subfamily rank (cf. also key to subfamilies and tribes of Aphodiidae, chapter 3) is based on our opinion that scarcely anything in their morphology is indicative of a direct affinity with the other Aphodiidae. This applies even stronger to the Termitotrogidae, containing a single genus, *Termitotrox* Reichensperger. This is, like the Corythoderini, an Afro-Indian group of termitophiles associated with *Odontotermes*. Six species have been described (we have seen more), all eyeless, flightless, all with regressive mouthparts, and all with pronotal and elytral swellings. The Termitoderini, here proposed as a new tribe (see below, key, chapter 3), contains a single genus, *Termitoderus* Mateu (1966). Three species are known to us (two of them undescribed), and again they are associated with termites of the genus *Odontotermes*. The Termitoderini have trichomes, and they exhibit physogastry, like two most aberrant Neotropical scarabs of uncertain position, *Scarabaeinus termitophilus* Silvestri (1939) and *Scarabatermes amazonensis* Howden (1973) [1]).

Chapter 2. Terminology and further explanation

The terminology applied to the different structures mentioned in the keys, synoptic tables, and descriptions, is explained in five diagrams (figs. 1-5). These structures are designated as follows:

Head: *a* = eye, *b* = frons, *c* = gena, *d* = clypeus, *e* = clypeogenal suture, *f* = reflexed (lateral) margin of clypeus, *g* = anteromedian denticle. *Pronotum*: *a* = pronotal disc, *b* = anterolateral corner, *c* = lateral lobe, *d* = lateral sulcus, *e* = median sulcus (not the slight general impression of the pronotal disc metioned in the descriptions), *f* = paramedian lobe, *g* = sublateral angle of disc, *h* = caudal impression, *i* = caudal margin of pronotum, *j* = median lobe, *k* = trichome of lateral lobe, *l* = trichome of lateral sulcus, *m* = trichome of sublateral angle, *n* = trichome of caudal margin, *o* = trichome of paramedian lobe, *p* = trichome of median lobe. *Elytra*: *a* 1-5 = sulcus 1 to 5, *b* 1-5 = interval 1 to 5, *c* = incomplete sulcus between sulci 1 and 2, *d* = basal point of interval, *e* = basal knob-shaped protusion, *f* = humerus, *g* = basal trichome, *h* = sutural margin of interval 1, *i* = apical

[1]) For a reappraisal of physogastry cf. Kistner (1979). The single described specimen of *Termitoderus* happens to be stenogastric!



Figs. 1-9. Terminology and measurements of head (1, 6), pronotum (2, 7), elytron (3, 8), ventral side (9), foreleg (4), hindleg (5). 1-5, topographical terms; 6-9, measurements (cf. descriptions of new species). Further explanation in text.

extension of sutural margin, *j* = apical lobe, *k* = apical trichome, *l* = reflexed lateral surface, *m* = scutellum. *Fore leg*: *a* = coxa, *b* = fore-coxal row of bristles, *c* = trochanter, *d* = femur, *e* = basal lobe, *f* = fore-femoral row of bristles, *g* = tibia, *h* = external denticles, *i* = terminal spur, *j* = tarsal segments, *k* = transparent flaps (♂). *Middle and hind leg*: *a* = trochanter, *b* = femur, *c* = axis, *d* = distal-posterior curve, *e* = tibia, *f* = proximal-posterior curve, *g* = base, *h* = apex, *i* = terminal spurs, *j* = transparent membrane.

The measurements taken are explained in four diagrams (figs. 6-9).

The terms used in the descriptions to indicate densities of punctures (or setae) in general have the following meaning: sparse = units separated by $\geqslant$ 5 times their diameter; moderately abundant = units separated by 4-5 times their diameter; abundant = units separated by 1-3 times their diameter; rugulate-punctate: units contiguous, rendering surface more or less rough.

The presence of a micropunctation is mentioned only if clearly visible at a magnification of × 50. The terms secondary punctation and secondary pilosity are used in case there are two distinct size classes of punctures and setae, respectively (the larger = primary, the smaller = secondary); micropunctation and micropilosity always fall in the secondary class.

We have given numerous drawings, especially of the new species ,because without them identification would be nearly impossible. The magnification of the drawings is always the same for the same elements: head (ca. × 50), lateral pronotal views (ca. × 50), dorsal pronotal views (ca. × 38), elytral views (ca. × 30), ventral view (ca. × 20), fore leg (ca. × 38), hind leg (ca. × 38).

The following museum abbreviations are used (see also under Acknowledgements): BM = British Museum (Natural History), London; L = Rijksmuseum van Natuurlijke Historie, Leiden; USNM = National Museum of Natural History, Washington D.C.; W = Natuurhistorisch Museum (Wasmann collection), Maastricht.

The article by Champion & Wasmann (1923) is in fact a collation of two separate parts, one by Champion and the other by Wasmann. Throughout the text reference has been made to the entire article as well as to the views and observations of each of the two authors, thus Champion (1923) or Wasmann (1923).

As usual with collections of the Wasmann-Champion period the "cotype" labels raised questions about a possible paralectotype status of the specimens concerned, but we trust that our statements in these cases do not lead to confusion. Whenever it was uncertain whether a type available to us had holotype or syntype status a lectotype has been designated here, despite the fact

that it seems sometimes likely that the species was based on a single specimen: our experience has been that the absence of statements on variation in the original diagnoses is no indication of holotype status.

Chapter 3. KEY TO SUBFAMILIES AND TRIBES OF THE APHODIIDAE

Some introductory remarks to justify the present arrangement of the family-group taxa seem in order. The ranking of the family-group taxa within the Scarabaeoidea as a whole is still much a matter of debate. This debate will not end until a really comprehensive phylogenetic analysis of the characters of adult as well as immature stages has been conducted. We do not expect this to happen in the near future [1]).

The tribe Corythoderini and its cladistic twin, the Termitoderini, seem to have in common a synapomorphous complex of pronotal features (cf. chapter 12). Their equal tribal rank is arbitrary. The subfamily rank of the Rhyparinae is based on the absence of any direct relatives within the Aphodiidae. The tribe Aegialiini seems to consist of a complex of paraphyletic lineages sprouting from the extreme base of the "evolutionary tree" constituted by the remaining Aphodiinae (this is implied by Stebnicka, 1977); the exposed state of the aegialiine mandibles certainly has to be qualified as plesiomorphous.

1. Postprosternum with lanceolate process. Pronotum with at least 5 longitudinal ridges. — Pantropical, 7 genera . . . Rhyparinae [2])
— Postprosternum without this lanceolate process. Pronotum may be swollen and/or impressed in various ways, but never with narrow longitudinal ridges . . . . . Aphodiinae, 2
2. Mandibles covered by clypeus 3
— Mandibles exposed, projecting beyond clypeus. — Holarctic and South America, 4 genera [3]) . . . . . Aegialiini
3. Pronotum with median longitudinal sulcus, usually also with other extensive impressions and with trichomes 7

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[1]) Most family-group level phylogenies do not critically consider odd groups like the Termitotrogidae, Rhyparinae, etc., or they do not mention them at all. A recent example of such an incomplete, and in various ways even confusing phylogeny was produced by Iablokoff-Khnzorian (1977).

[2])There is some confusion over the spelling and homonymy of the name of the type-genus (cf. Sherborn, 1930, for references). A future clarification of this could result in the conclusion that the family-group name should be spelled Ryparinae, in contrast to current usage.

[3]) It should be noted that in some of the tribes the number of included genera is currently increasing rapidly.

— Pronotal disc at most modified by slight elevations (e.g. transverse costae) and shallow intervening impressions; trichomes absent . 4

4. Superior terminal spur of hind tibia flap-like, strongly dilated. Frons and pronotum each with two transverse ridges. Elytra dilated-truncate caudally, disc not striate(-punctate). Non-alate. Scutellum broader than long. — Central Asia, 1 genus . . . . . Thinorycterini

— Terminal tibial spurs all more or less tapering. Frons without two transverse ridges. Elytra striate-(punctate). Usually alate. Scutellar length usually exceeding width 5

5. Middle and hind tibiae with distinct fossorial elevations on their external side. Head scarcely deflexable under pronotum, eyes usually (almost) entirely exposed. — Worldwide, ca. 35 genera . . . Aphodiini

— Middle and hind tibiae usually without distinct fossorial elevations, at most with longitudinal ridges. Head strongly convex, deflexable under pronotum, then eyes concealed 6

6. Pronotum with variably distinct transverse impressions, usually separated by broad transverse costae. Head distinctly granulate. — Worldwide, ca. 15 genera . . . . . Psammobiini

— Pronotum without transverse impressions. Head smooth, punctate (-rugulate), or scabrous. — Almost worldwide, ca. 25 genera . . . . . Eupariini

7. Pronotal disc with characteristic set of grooves arranged in a triangle divided by the median sulcus (fig. 14). Alae reduced, elytral tips flap-like, abdomen susceptible to physogastry. Length of middle and hind tarsal segments 1 very long, exceeding length of other segments (2-5) combined. Clypeal border bisinuate or rounded. — Tropical Africa; one genus, *Termitoderus* Mateu, 1966 (type-genus); one described species (*T. grassei* Mateu, 1966), more known to us [1]). New tribe . . . . . Termitoderini

— Pronotum with characteristic set of grooves and protrusions (see figures): median sulcus, paramedian protrusions, lateral sulcus, lateral lobe. Alae complete. Distal surface of elytra normally convex (apart from trichome-bearing bulbs in *Chaetopisthes*), no trace of physogastry. Tarsal segment 1 of middle and hind legs much shorter. Clypeal border medially rounded, angulate, or dentate. — Tropical Africa, Indian region, 5 genera . . . . . Corythoderini

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[1]) Additional, strongly physogastric species to be described by Krikken (in preparation).

Chapter 4. CORYTHODERINI: TRIBAL DESCRIPTION AND GENERIC CLASSIFICATION

"Gruppe" Corythoderina Schmidt, 1910: 137 (diagnosis); Tribus Corythoderini Wasmann, 1918: 7 (diagnosis); Schmidt, 1922: 541 (diagnosis); Janssens, 1946: 7 (in key only); Janssens, 1949: 23 (in key only); Endrödi, 1960: 220 (diagnosis); Balthasar, 1964: 617 (diagnosis); Endrödi 1964: 317 (diagnosis).

Tribal description. — Body more or less cylindrical, shiny, with variable punctation and fine, erect pilosity. Colour ranging from light yellow-brown to black-brown; trichomes yellow-white to dark-brown. General surface of head slightly convex, with rounded to triangular rostral outline. Clypeus always with more or less reflexed lateral margins; apex rounded, angulate, or dentate; clypeal surface mostly rugulate-punctate. Gena small. General surface of pronotal disc flat, slightly or strongly convex; with median sulcus. Paramedian lobes adjacent to base of median sulcus variably extended, sometimes strongly convex or distinctly pointed. Reflexed lateral surface of pronotum with distinct lateral sulcus and small to strongly swollen lateral lobe. Pronotal base with or without a triangular median lobe; caudal impression usually strongly hollowing pronotal disc. Caudal border of pronotum (with one exception, *Hemicorythoderus*) with trichomes. Scutellum small, triangular. Elytron with five longitudinal sulci; third, fourth or fifth one occasionally more or less reduced; between first and second one occasionally an incomplete sulcus; sulci reaching from base to near apex, or apically effaced. Elytral base with or without elevations, with or without knob and flap-like structures. Elytra with or without basal or apical trichomes. General elytral surface variably convex, lateral declivities distinctly reflexed. Intercoxal part of mesosternum either small and caudally tapering, or strongly dilated, sometimes parallel-sided. Abdomen with six visible sternites, anal one may be strongly expanded over midline. Legs long, rather slender, but in some species strongly dilated, without fossorial protrusions. Fore tibia with one or two external teeth and variably developed spur, spur sometimes absent. Fore femur with distinct, mostly extended basal lobe. External side of fore coxa and anterior side of fore femur with distinct bristle-rows. Middle and hind femora slightly or strongly curved upwards; tibiae mostly lined with transparent membranes; terminal spurs mostly small, occasionally larger. Tarsus with five segments. Mouthparts modified (see below). — Immature stages unknown.

Mouthparts (figs. 10-13). — Wasmann (1903b) suggested that the modification of the mouthparts of the Corythoderini, as compared to generalized Aphodiidae (cf. *Aphodius*), is connected with feeding of these guests by their hosts (trophallaxis); the mouthparts are strongly reduced, a fact also

recorded by Westwood (1847), Wasmann (1899b) and Brauns (1900), and later again by Kolbe (1909) and Wasmann (1918). Dissection of the mouthparts of some specimens of *Chaetopisthes simplicipes* showed this reduction to be almost complete in the labial palps; the mandibles, and the labium itself, though membranous, are otherwise normal. The maxilla is even well developed; the distinct 4-segmented palp serves, according to Wasmann (1918), in stimulating the feeding by the hosts.

Synoptic table of Corythoderini, genera and subgenera (for explanation of characters, see figures)

Head

1. Lateral sides of clypeus: a, not broadened; b, broadened.

Pronotum

2. Lateral view of pronotal disc: a, flat; b, slightly convex; c, strongly convex.
*3. Lateral lobe and lateral sulcus of pronotum: a, lobe small, somewhat extended, free caudal end; sulcus broad, deep, parallel-sided or rostrally dilated; b, lobe rather large, extended, no free caudal end; sulcus broad, rather shallow, rostrally dilated; c, lobe very large, extended and inflated, secondary free caudal end; sulcus narrow and vaguer.
4. (Secondary) free caudal end of lateral lobe (conditional on 3c): a, small; b, large.
5. Median sulcus: a, short, extending over less than half of pronotal disc, or else shallow; b, long, extending over more than half of pronotal disc, deep.
6. Median sulcus (conditional on 5a): a, broad, deep and short, paramedian lobes long and relatively narrow; b, narrow and shallow, sometimes longer, paramedian lobes long and broad.
7. Median sulcus (conditional on 5b): a, over virtually entire length narrow, not so deep; b, somewhat broader and deeper; c, basal part of sulcus distinctly broadened and deeper.
*8. Paramedian lobe and caudal impression: a, lobe not, slightly, or distinctly pronounced, but always part of disc; caudal impression indistinct, or distinct though rather shallow; b, lobe distinctly pronounced, more or less part of disc; caudal impression narrowly and deeply incising pronotal disc; c, lobe long and very well pronounced, broad or rather narrow, no part of disc; caudal impression deeply and broadly hollowing pronotal disc.
9. Caudal impression (conditional on 8c): a, without a swelling; b, with a small, pointed swelling; c, with a larger, more bulbous swelling.
*10. Median lobe and pronotal trichomes: a, median lobe absent, pronotal trichomes continuous over total pronotal breadth; b, median lobe present, pronotal trichomes discontinuous, or not extended over total pronotal breadth.
*11. Median lobe (conditional on 10b): a, without pointed bulb; b, with more or less distinct pointed bulb.
*12. Pronotal trichomes (conditional on 10a): a, continuous border, narrow or rather broad, only slightly curled; b, continuous border, but sometimes medially interrupted, broad and strongly curled.

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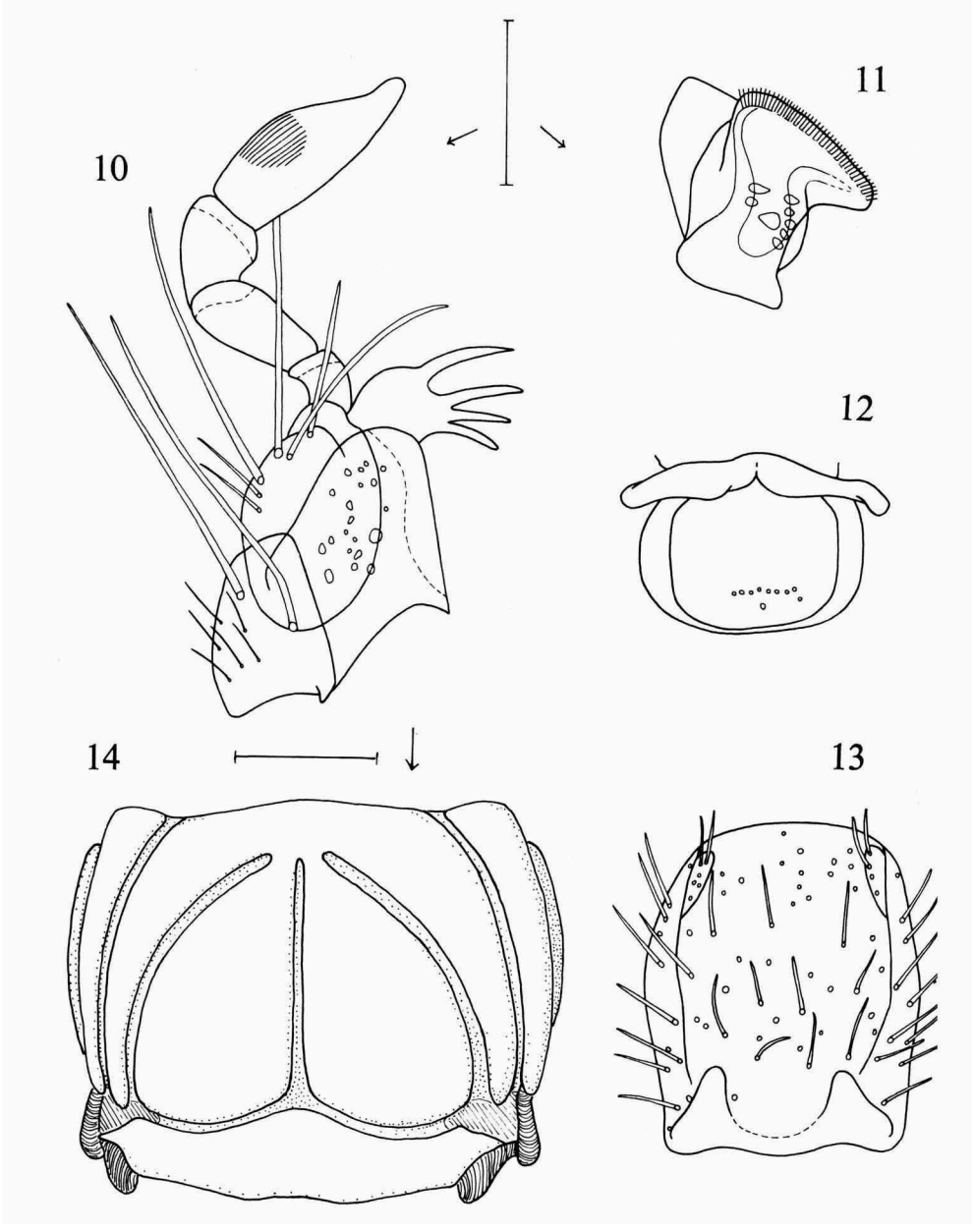
* Asterisk: phylogenetically significant states (cf. chapter 12).



Figs. 10-13. Mouthparts of *Chaetopisthes simplicipes*. 10, maxilla; 11, mandible; 12. labrum; 13, labium. Fig. 14. Pronotum (dorsal view) of *Termitoderus*, with indication of grooves and trichomes. — Scale-line with figs. 10-13 = 0.1 mm, with fig. 14 = 0.5 mm.

*13. Pronotal trichomes (conditional on 10b): a, trichomes connected to median lobe, caudal margin of pronotum, lateral lobe and lateral sulcus; b, trichomes connected to median lobe and only a narrow border on caudal margin of pronotum; c, narrow trichome along median lobe and a small part of caudal margin of pronotum; d, trichomes reduced.

Elytra

*14. Elytral sulci: a, five distinct sulci, or four sulci plus reduced fifth one; b, first three sulci distinct, with or without an incomplete sulcus between the first and second one; sulci 4 and 5 shallow and vague; c, first two sulci and the fourth one distinct and deep; third sulcus reduced and fifth one vague or melted together with fourth one.

*15. Extension of elytral sulci and shape of intervals: a, sulci extended from base to near apex; sides of intervals steeply parallel or slightly convex; b, sulci apically effaced; intervals apically divergent-dilated.

*16. Bases of elytral intervals: a, obtuse or pointed, not or slightly elevated; b, some intervals with dentiform elevated basal point; c, most intervals with carinate elevated base; d, base of second interval strongly elevated and flap-shaped; base of interval 3 and maybe 4 forming one small, knob-shaped protrusion; e, base of second interval strongly elevated, dentiform or flap-shaped; bases of intervals 3 and 4 fused, forming a single, knob-shaped protrusion.

17. Shape of big protrusion on elytral base (conditional on 16e): a, posterior margin of protrusion not undulating; b, posterior margin undulating, three-pointed.

*18. Basal trichomes: a, absent; b, present.

*19. Sutural margin of elytral interval 1: a, without apical extension; b, with transparent apical extension.

*20. Apical trichomes: a, absent; b, present.

Ventral side

*21. Ventral extension of pronotal trichomes: a, not extended to the midline; b, slightly extended to the midline; c, strongly extended to the midline.

22. Posterior part of prosternum: a, flat, caudal border straight; b, flat, caudal border two-pointed; c, slightly or strongly convex.

*23. Intercoxal part of mesosternum, middle coxae: a, narrow (0.02-0.08 mm); b, moderately broad (ca. 0.10-0.15 mm); c, very broad (0.20-0.30 mm).

*24. Intercoxal part of metasternum, hind coxae: a, narrow; b, broad; c, broad and medially pointed.

*25. Anal sternite: a, not broaded, more or less parallel-sided, strongly elevated; b, broadened, parallel-sided; c, slightly expanded medially; d, strongly expanded medially.

Legs

26. Number of external teeth of fore tibia: a, two distinct teeth; b, only one tooth, or with a vague second one.

27. Spur of fore tibia: a, small or absent; b, large.

28. Legs: a, complanate; b, roundish-complanate; c, thickened, round (in cross-section), or club-shaped.

29. First tarsal segment of middle and hind legs: a, not broadened; b, broadened.

*30. Hind femora: a, slightly, b, strongly curved upwards.

Oblique dash: both states occur. Hyphen: intermediate state occurs.

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* Asterisk: phylogenetically significant states (cf. chapter 12).

Corythoderini, genera and subgenera: characters and character states

character no.:	1	2	*3	4	5	6	7	*8	9	*10	*11	*12	*13	*14	*15
Chaetopisthes	b	b	a	–	b	–	a	a	–	a	–	a	–	a	a
Chaetopisthides	b	b	a	–	b	–	b	a	–	a	–	a	–	a	a
Neochaetopisthes	b	b	a	–	b	–	c	a	–	a	–	a	–	a	a
Miochaetopisthes	a	b	a	–	b	–	c	a	–	a	–	a	–	a	a
Termitopisthes	b	a/b	a	–	b	–	b/c	a/b	–	a	–	b	–	a	b
Eurycorythoderus	a	a	a	–	a	a	–	c	b	b	b	–	a	c	b
Stenocorythoderus	a	a	a	–	a	a	–	c	c	b	b	–	a	c	b
Corythoderus	a	c	b	–	a	a	–	c	c	b	b	–	b	c	b
Paracorythoderus	a	c	c	a	a	b	–	c	a	b	a	–	c	b	b
Hemicorythoderus	a	b	c	b	a	b	–	c	a	b	a	–	d	a	a-b

character no.:	*16	17	*18	*19	*20	*21	22	*23	*24	*25	26	27	28	29	*30
Chaetopisthes	a	–	a	b	b	a	c	a	a	d	b	a	a	a	a
Chaetopisthides	a	–	a	b	b	a	c	a	a	d	b	a	a	b	a
Neochaetopisthes	a	–	a	b	b	a	c	a	a	d	a	a	a	a	a
Miochaetopisthes	a	–	a	b	b	a	c	a	a	c	a	a	b	a	a
Termitopisthes	a/b	–	a	a	a	b/c	a/c	a	a	c	a	a	b/c	a	a
Eurycorythoderus	e	b	b	a	a	c	a	b	b	a	b	a	c	a	b
Stenocorythoderus	e	a	b	a	a	c	a	b	b	a	a	a	c	a	b
Corythoderus	e	a	b	a	a	c	c	a	b	a	a	a	c	a	b
Paracorythoderus	d	–	b	a	a	a	b	c	b	b	b	b	b	a	b
Hemicorythoderus	c	–	a	a	a	a	c	c	c	b	–	–	b	b	b

Key to genera and subgenera of tribe Corythoderini

1. Trichomes on elytral apex present (figs. 90-111); sutural margin of elytral interval 1 with transparent apical extension. Elytral sulci extending from base to near apex, intervals parallel or more or less converging onto apex. Four subgenera (cf. key to species, chapter 5) . . . . . genus *Chaetopisthes*

— Trichomes on elytral apex absent; sutural margin of elytral interval 1 without apical extension 2

2. Pronotum without median lobe (figs. 77-82); pronotal trichomes continuous over total pronotal breadth (except sometimes a small median interruption). Elytral base without elevations, or some intervals with dentiform elevated basal points (figs. 112-117). Anal sternite slightly broadened medially . . . . . genus *Termitopisthes*

— Pronotum with median lobe (figs. 83-89); pronotal trichomes discontinuous, or else not extended over total pronotal breadth. Elytral base with knob- and flap-shaped elevations. Anal sternite not or slightly broadened, with parallel anterior and posterior border . . . 3

3. Pronotal trichomes present. Elytron with three or four distinct sulci, apically effaced; base of second interval strongly elevated and flap-

shaped, base of intervals 3 and 4 fused to a single knob-shaped protrusion; basal elytral trichomes present (figs. 118-129). Metasternal intercoxal part of hind coxae broad, not pointed medially. First tarsal segment of middle and hind legs not broadened 4

— Pronotal trichomes reduced (fig. 89). Elytron with five distinct shallow sulci, largely extended from base to near apex; most intervals with carinate elevated base (figs. 130, 131); no basal elytral trichomes. Metasternal intercoxal part of hind coxae broad, pointed medially (fig. 150). First tarsal segment of middle and hind legs broadened; hind tibia distinctly lated towards apex (fig. 189) . genus *Hemicorythoderus*

4. Lateral lobe of pronotum small (figs. 51, 52) or rather large and extended (fig. 50); median sulcus broad, deep and short; median lobe with more or less distinct pointed bulb (figs. 83-85). Elytral sulci 1 and 2 distinct and deep, 3 reduced, 4 distinct and 5 vague or contiguous with sulcus 4; elytral base with robust protrusion (figs. 118-123). Pronotal trichomes strongly extended ventrally. Anal sternite not broadened, strongly convex . . . . . genus *Corythoderus,* 5

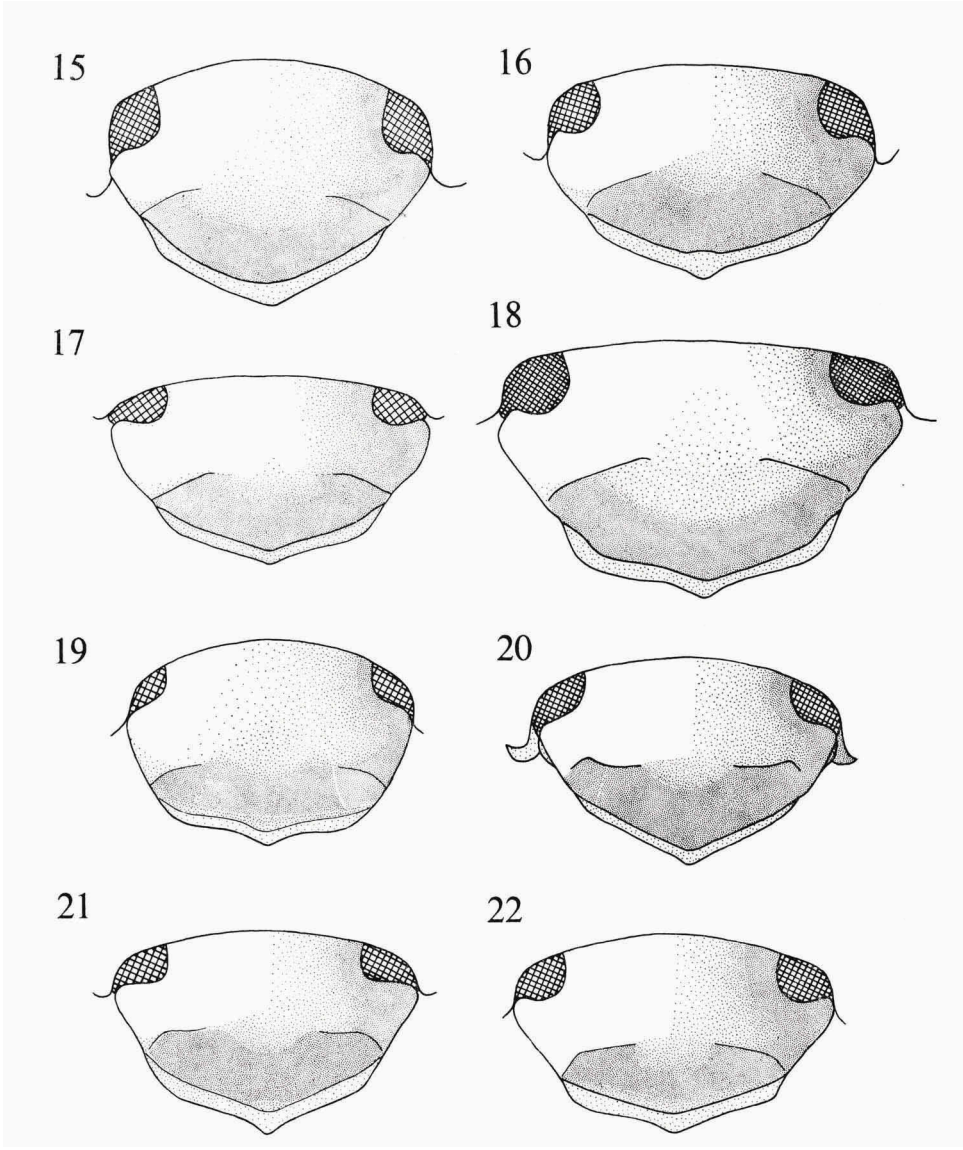
— Lateral lobe of pronotum very large and inflated (figs. 53-55); median sulcus narrow and shallow; median lobe without pointed bulb (figs. 86-88). Elytral sulci 1-3 distinct, with or without an incomplete sulcus between sulci 1 and 2, sulci 4 and 5 shallow and vague; elytral base with smaller protrusion (figs. 124-129). Pronotal trichomes ventrally not visible. Anal sternite broadened (fig. 149) . genus *Paracorythoderus*

5. Pronotum flat in lateral view, lateral lobe with free caudal end; pronotal trichomes on median lobe, caudal border of pronotum, lateral lobe and lateral sulcus. Middle and hind tibiae over almost whole length more or less thickened 6

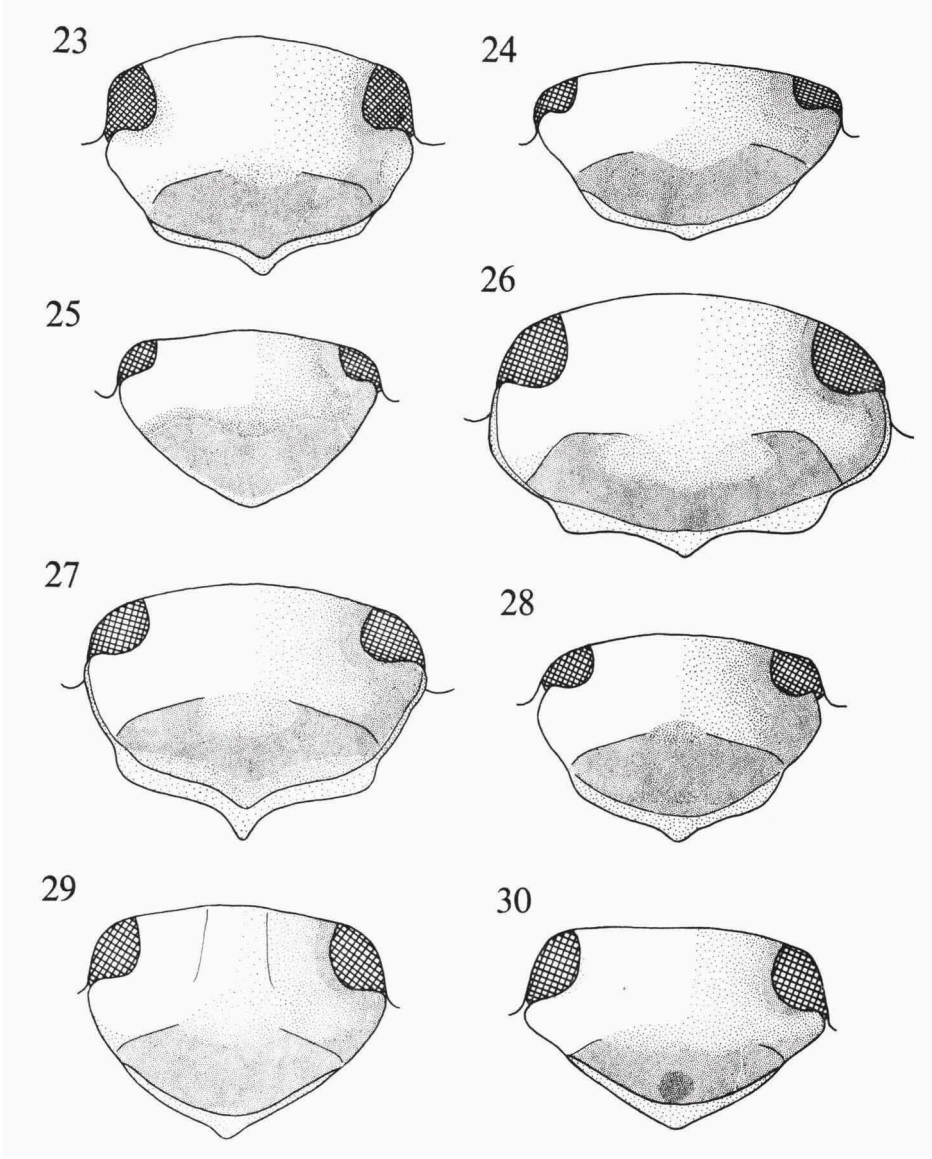
— Pronotum strongly convex in lateral view (fig. 50); lateral lobe without free caudal end; pronotal trichomes only on median lobe and a narrow margin along caudal border of pronotum. Middle and hind tibiae more or less club-shaped . . . . . subgenus *Corythoderus*

6. Caudal impression of pronotum with small pointed swelling; pointed bulb on median lobe very distinct (fig. 83). Posterior margin of robust protrusion on elytral base undulating (fig. 118). Fore tibia with one distinct external tooth. Posterior side of middle tibia distinctly, that of hind tibia moderately sharp . . . subgenus *Eurycorythoderus*

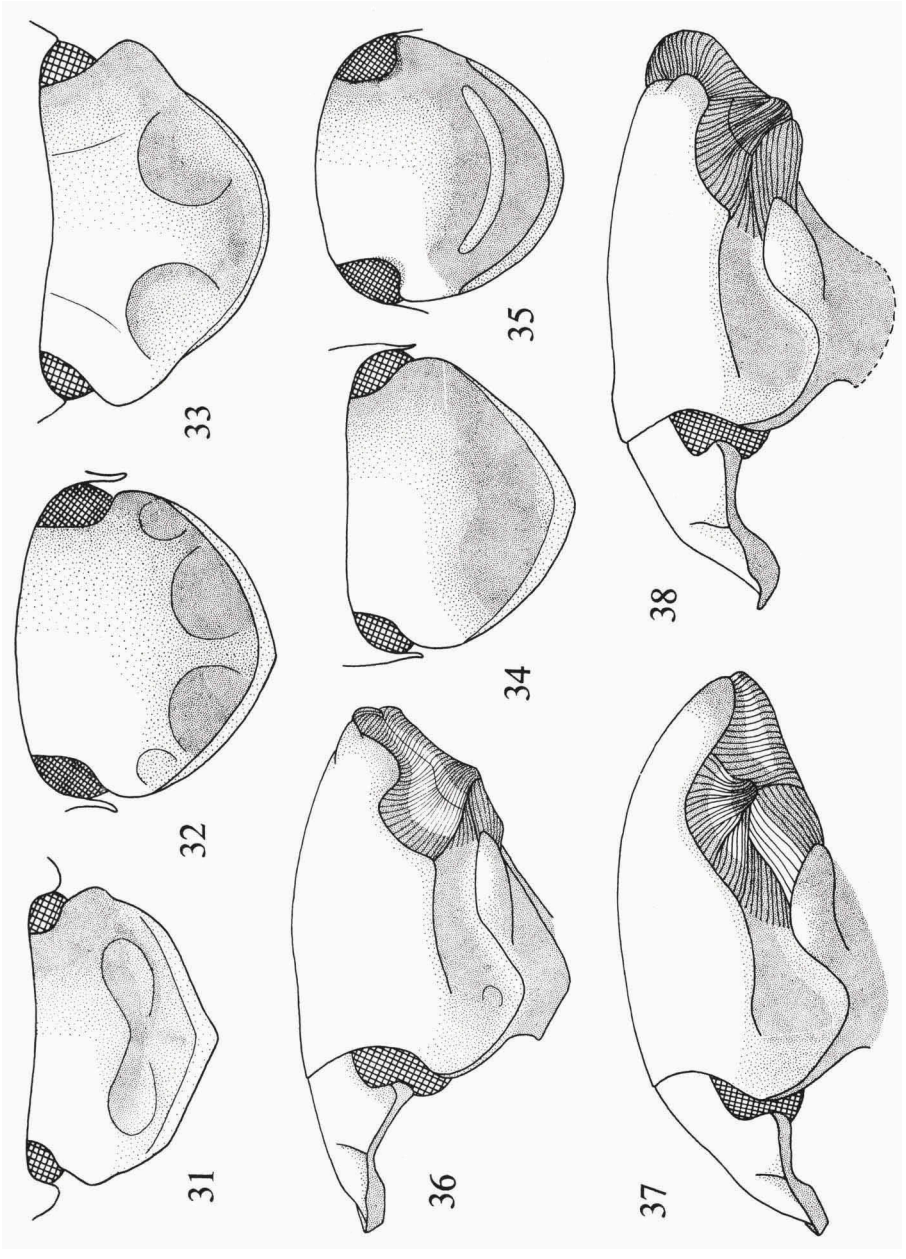
— Caudal impression of pronotum with a larger swelling (fig. 52, 84); pointed bulb on median lobe vague. Posterior margin of robust protrusion on elytral base not undulating (fig. 120). Fore tibia with two external teeth. Posterior side of middle and hind tibiae blunt . . . . . subgenus *Stenocorythoderus*



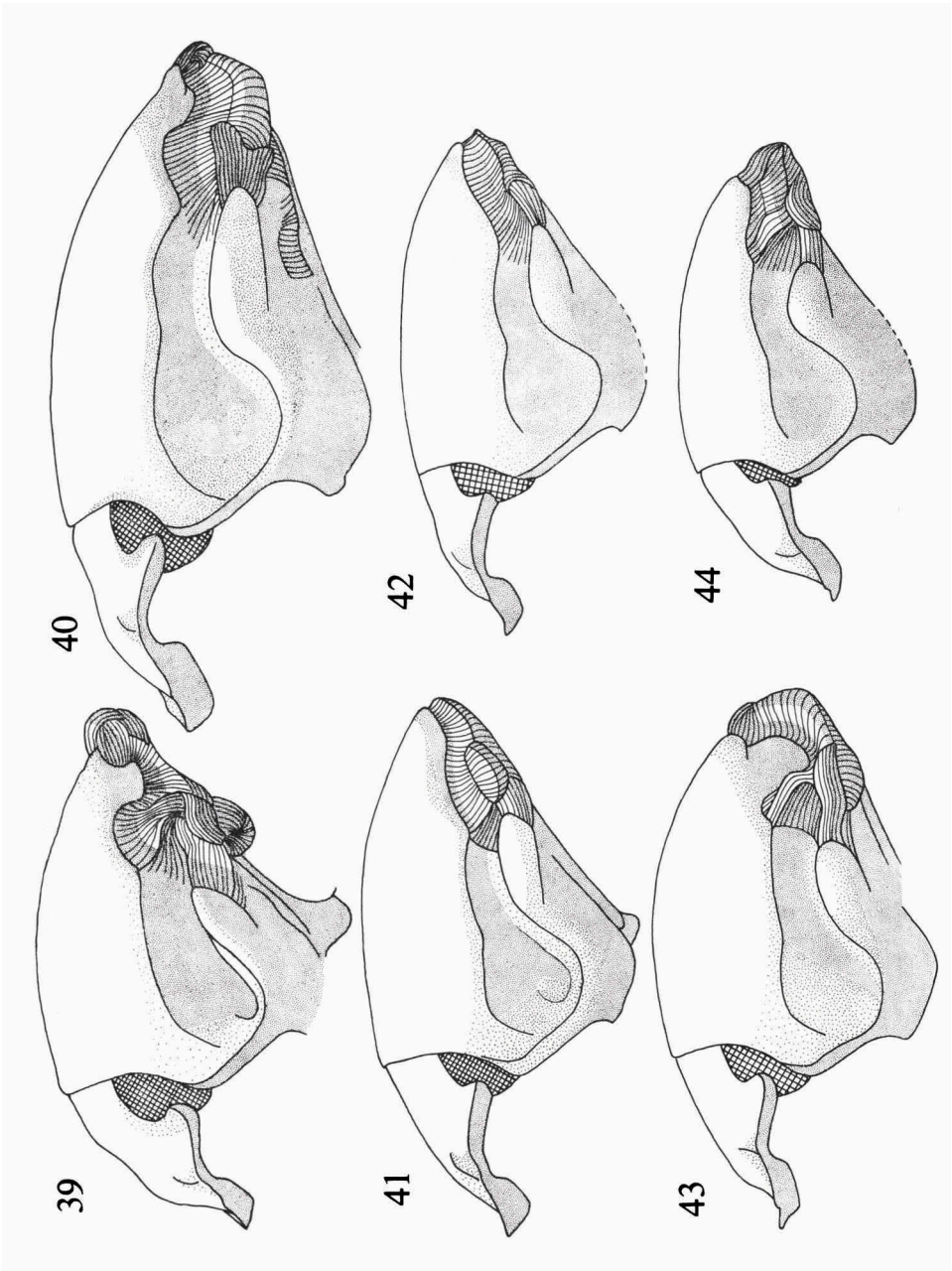
Figs. 15-22. Head (full-face view) of : 15, *Chaetopisthes fulvoides* ♀ ; 16, *Ch. latipes* ♀ ; 17, *Ch. oberthueri* ♀ ; 18, *Ch. popei* ♂ ; 19, *Ch. saetiger* ♀ ; 20, *Ch. ventriosus* ♀ ; 21, *Ch. semisulcatus* ♂ ; 22. *Ch. angustipes* ♀.



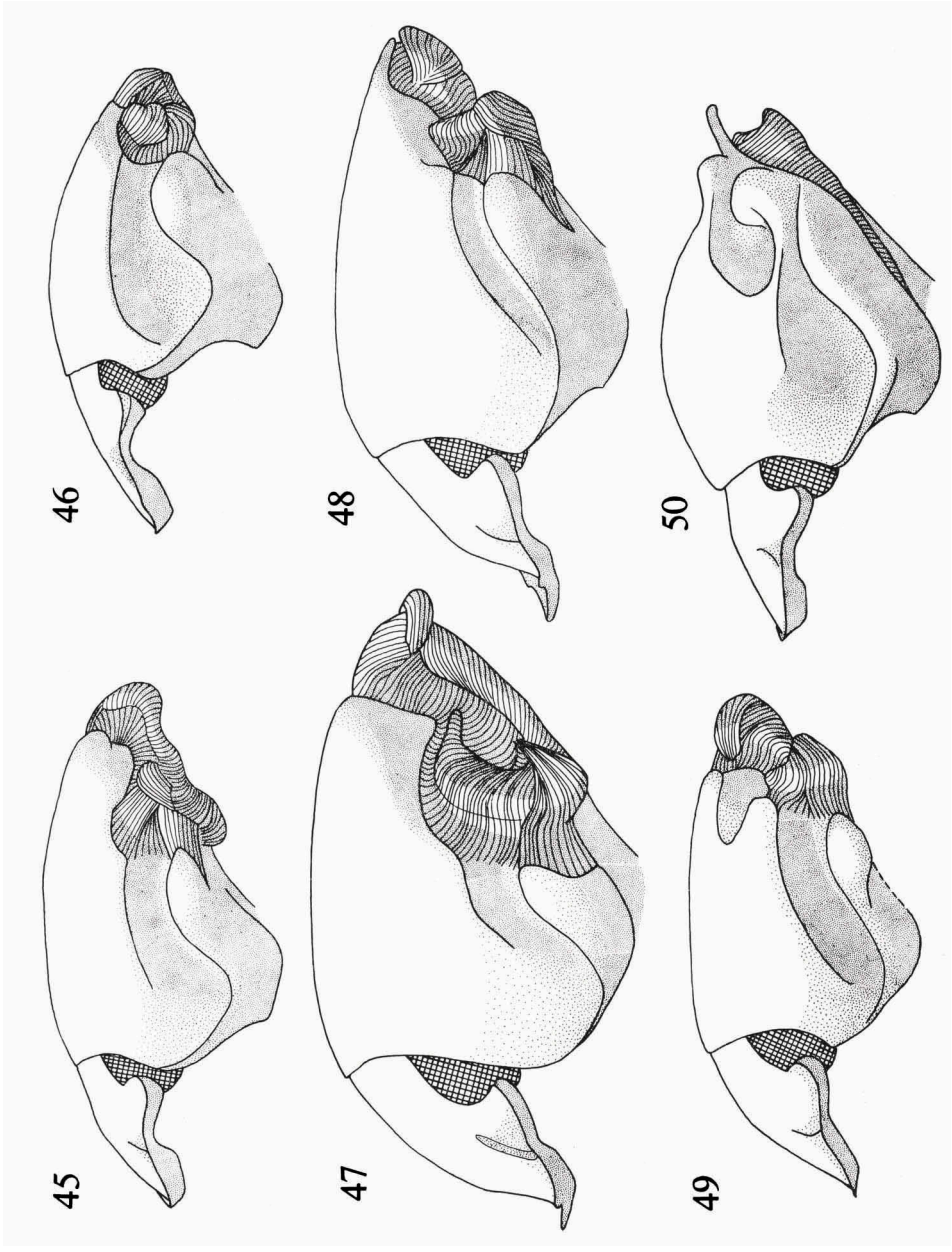
Figs. 23-30. Head (full-face view) of: 23, *Chaetopisthes septentrionalis* ♂; 24, *Ch. meridionalis* ♀; 25, *Ch. cincinnatus* ♂; 26, *Termitopisthes forticulus* ♀; 27, *T. submissus* ♀; 28, *T. kistneri* ♂; 29, *Corythoderus gibbiger* ♀; 30, *C. braminus* ♀.



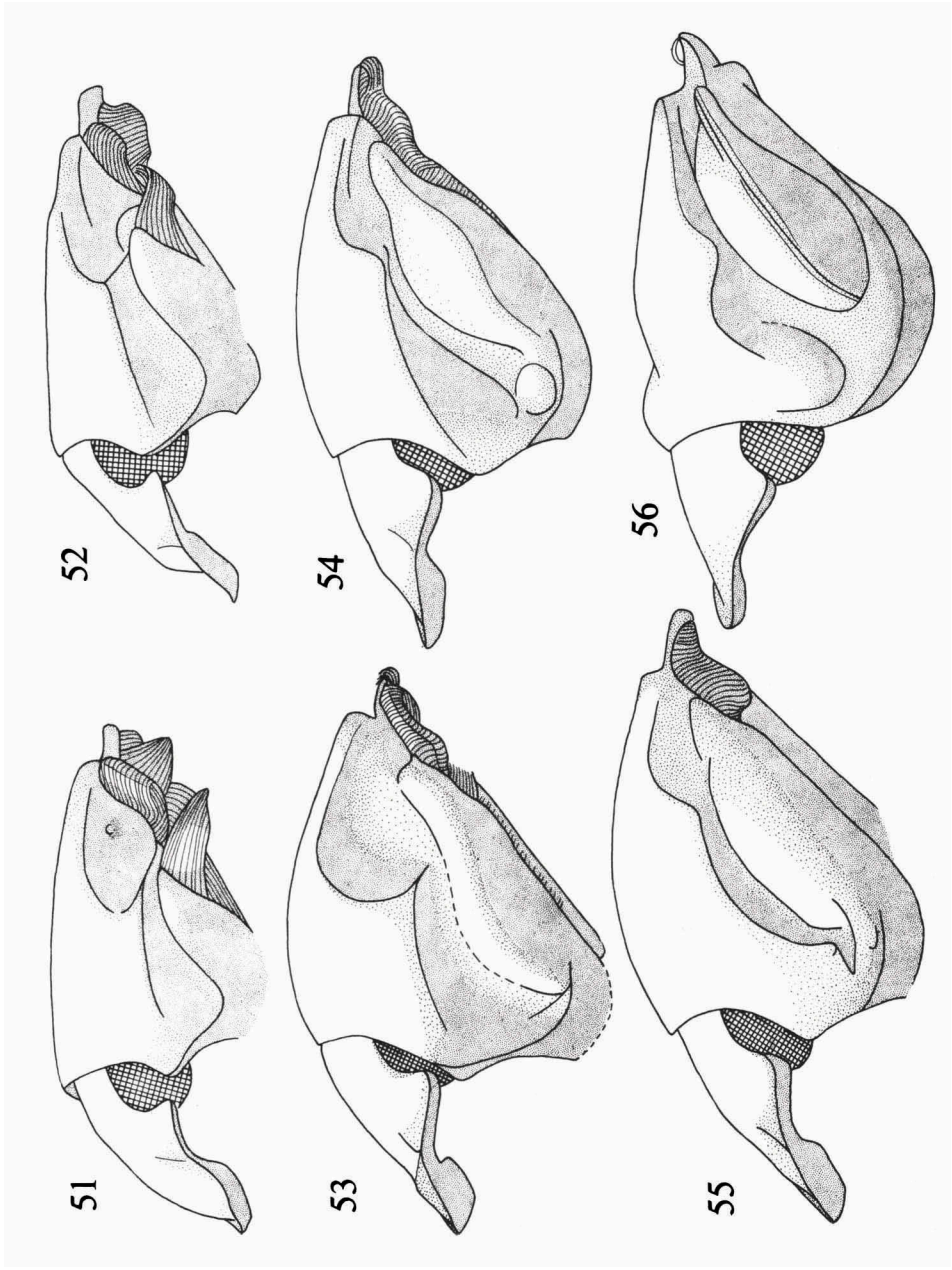
Figs. 31-35. Head (full-face view) of: 31, *Corythoderus loripes* ♂; 32, *Paracorythoderus marshalli* ♂; 33, *Hemicorythoderus vaneyeni*; 34, *Paracorythoderus casperi*; 35, *P. rudens* ♀. Figs. 36-38. Fore-body contours (lateral view) of: 36, *Chaetopisthes oberthueri* ♀; 37, *Ch. fulvoides* ♀; 38, *Ch. latipes* ♀.



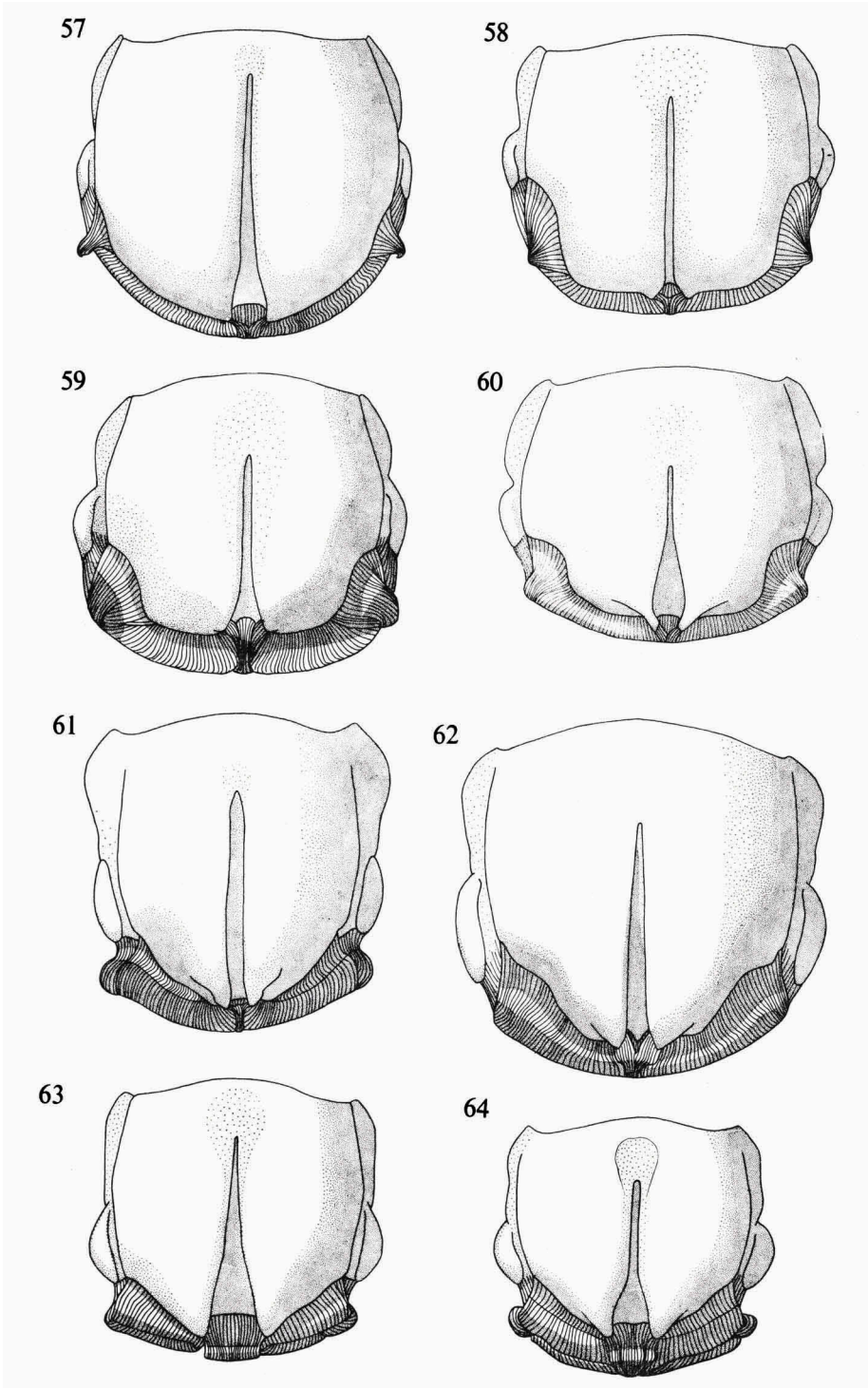
Figs. 39-44. Fore-body (lateral view) of: 39, *Chaetopisthes septentrionalis* ♂; 40, *Ch. popei* ♂; 41, *Ch. ventriosus* ♀; 42, *Ch. semisulcatus* ♂; 43, *Ch. angustipes* ♀; 44, *Ch. saetiger* ♀.



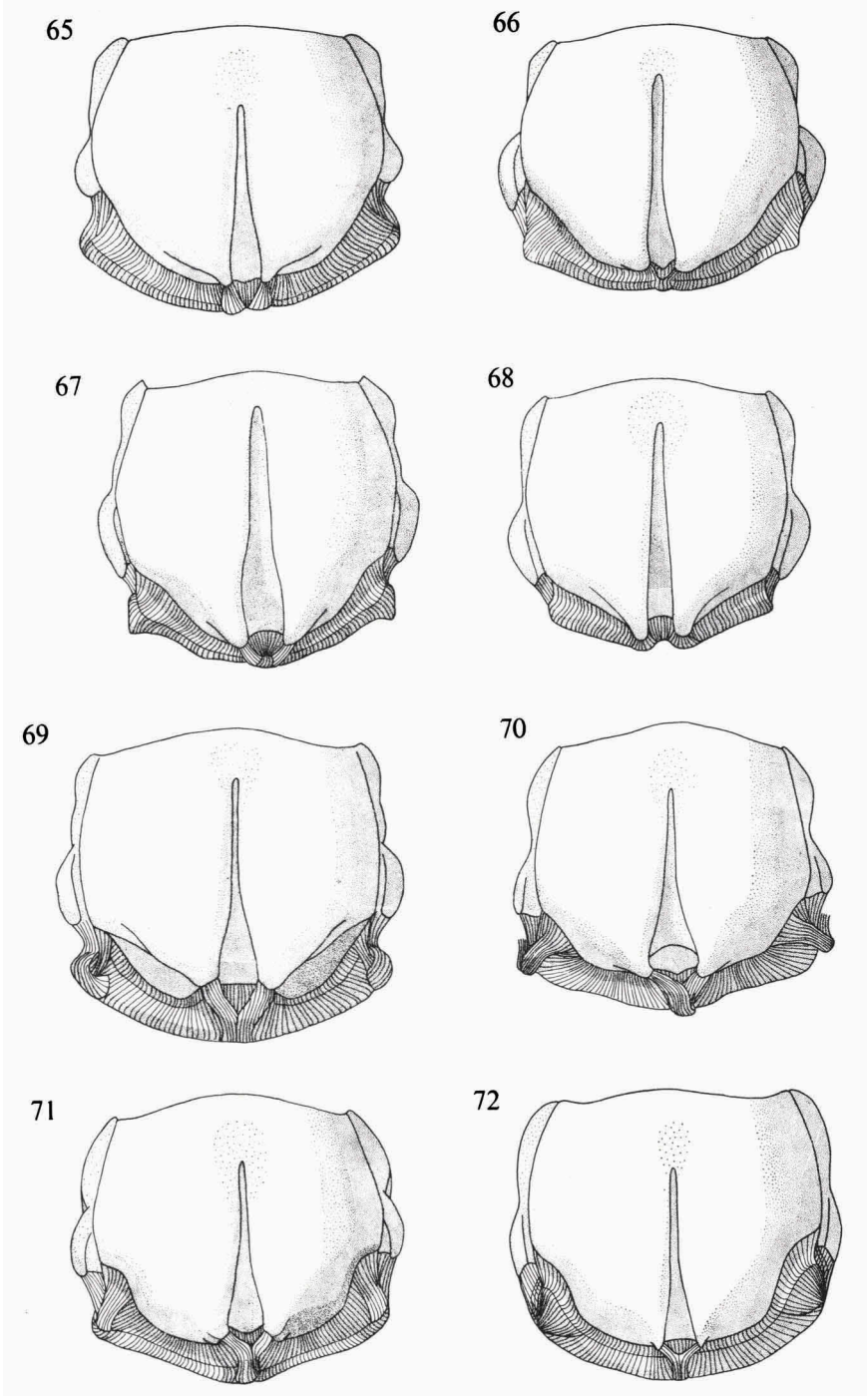
Figs. 45-50. Fore-body (lateral view) of: 45, *Chaetopisthes meridionalis* ♀; 46, *Ch. cincinnatus* ♂; 47, *Termitopisthes forticulus* ♀; 48, *T. submissus* ♀; 49, *T. kistneri* ♂; 50, *Corythoderus loripes* ♂.



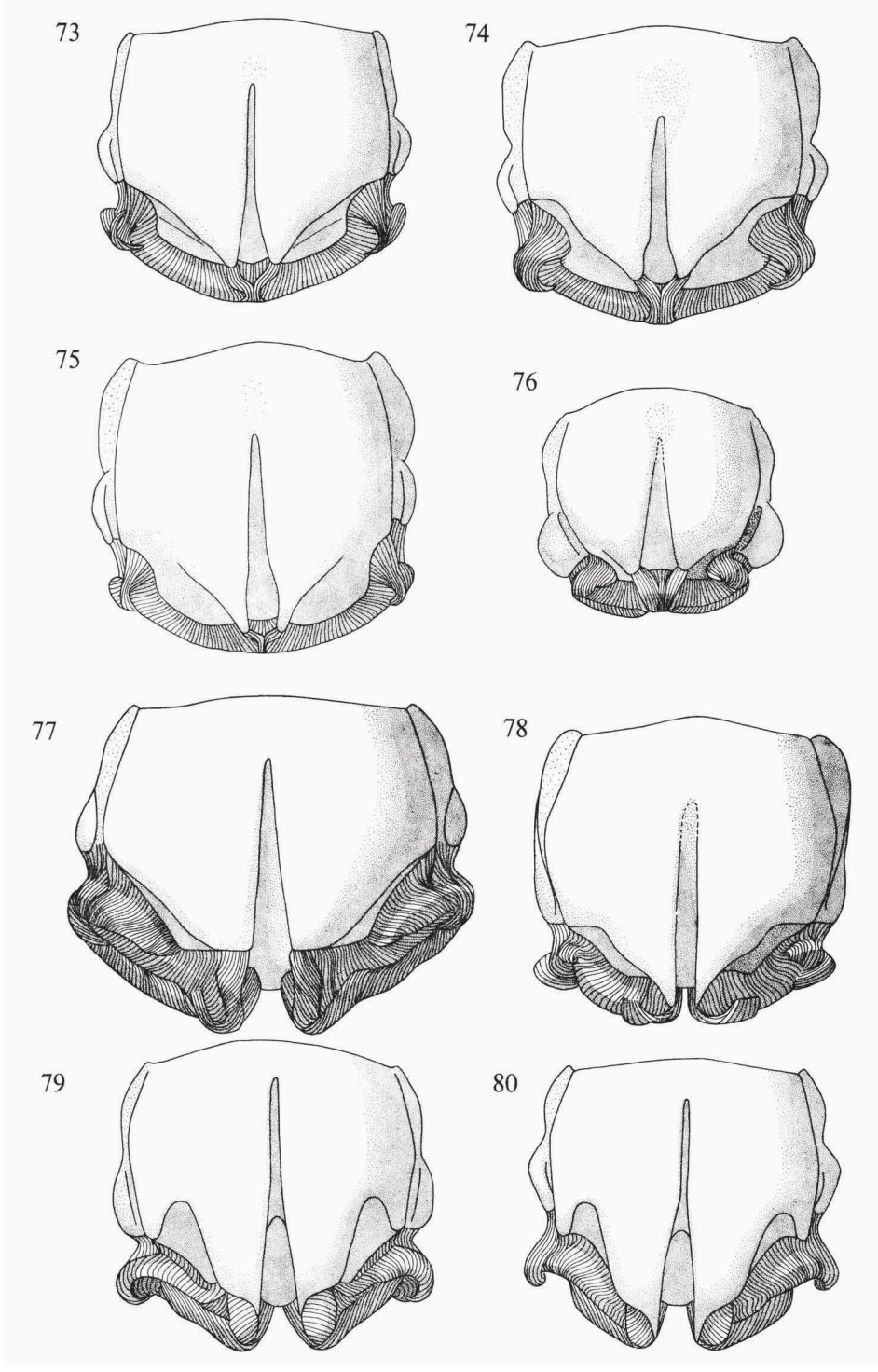
Figs. 51-56. Fore-body (lateral view) of: 51, *Corythoderus gibbiger* ♀; 52, *C. braminus*; 53, *Paracorythoderus ridens* ♀; 54, *P. casperi*; 55, *P. marshalli* ♂; 56, *Hemicorythoderus vaneyeni*.



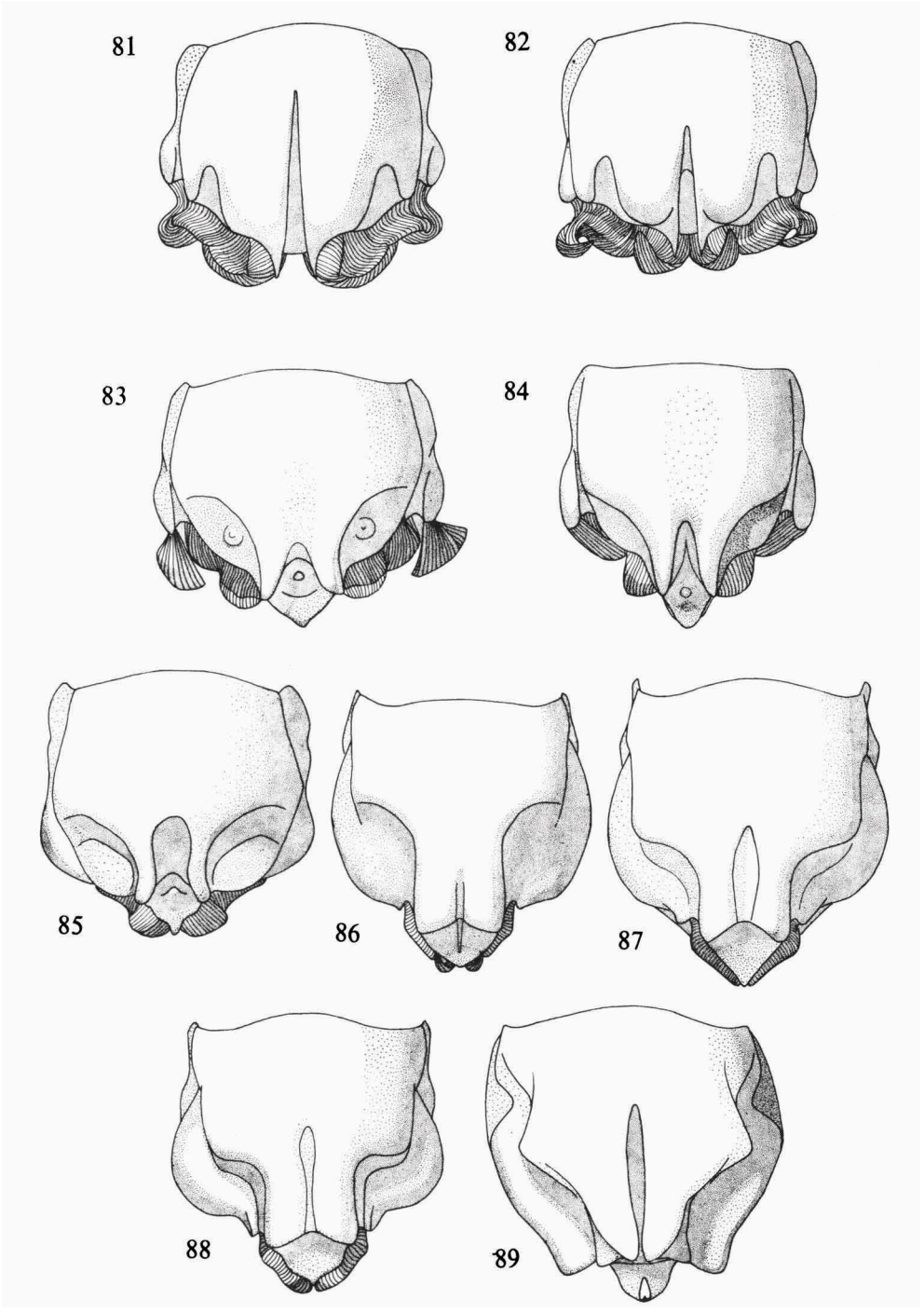
Figs. 57-64. Pronotum (dorsal view) of: 57, *Chaetopisthes fulvoides* ♀; 58, *Ch. fulvus*; 59, *Ch. latipes* ♀; 60, *Ch. oberthueri* ♀; 61, *Ch. sulciger* ♂; 62, *Ch. popei* ♂; 63, *Ch. longulus* ♂; 64, *Ch. saetiger* ♀.



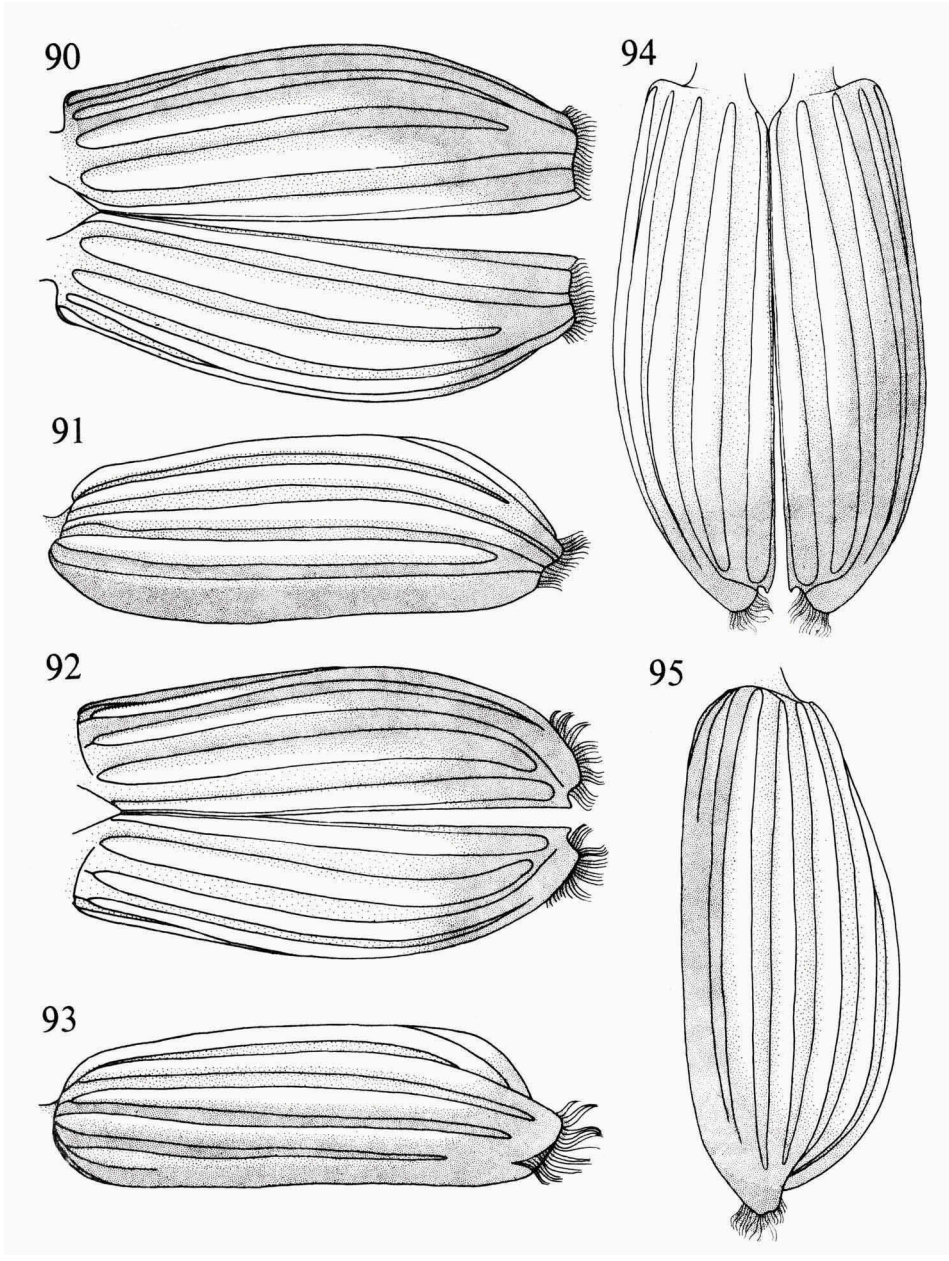
Figs. 65-72. Pronotum (dorsal view) of: 65, *Chaetopisthes singalensis* ♂; 66, ***Ch. simplicipes*** ♀; 67, *Ch. ventriosus* ♀; 68, *Ch. semisulcatus* ♂; 69. *Ch. angustipes* ♀; 70, *Ch. septentrionalis* ♂; 71, *Ch. meridionalis* ♀; 72, *Ch. brevipes* ♂.



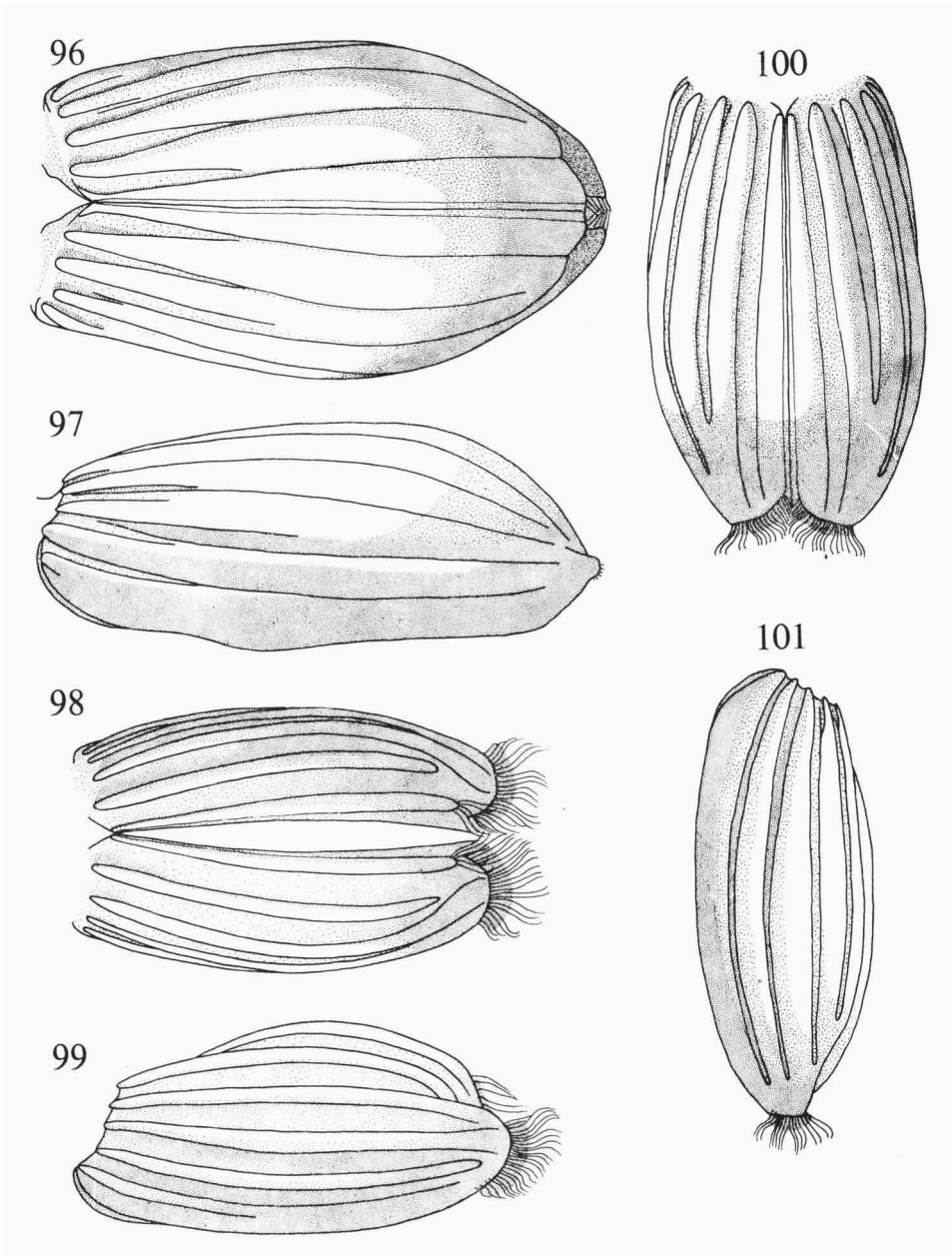
Figs. 73-80. Pronotum (dorsal view) of : 73, *Chaetopisthes assmuthi* ♀ ; 74, *Ch. heimi* ♂ ; 75, *Ch. brunneus* ♂ ; 76. *Ch. cincinnatus* ♀ ; 77, *Termitopisthes forticulus* ♀ ; 78, *T. submissus* ♀ ; 79, *T. parallelus* ♀ ; 80, *T. wasmanni* ♀.



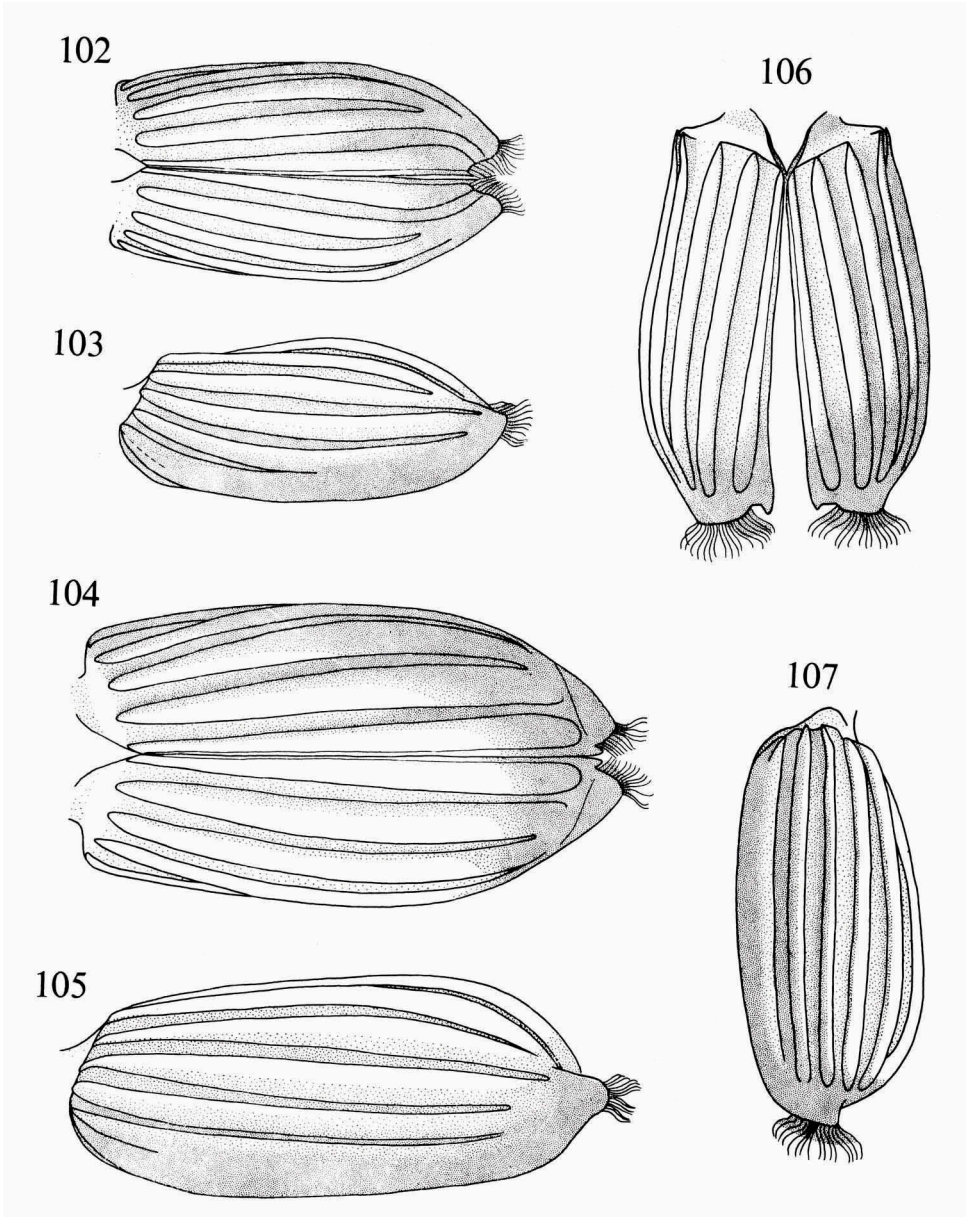
Figs. 81-89. Pronotum (dorsal view) of: 81, *Termitopisthes schmidti* ♂; 82, *T. kistneri* ♂; 83, *Corythoderus gibbiger* ♀; 84, *C. braminus* ♀; 85, *C. loripes* ♂; 86, *Paracorythoderus ridens* ♀; 87, *P. marshalli* ♂; 88, *P. casperi*; 89. *Hemicorythoderus vaneyeni.*



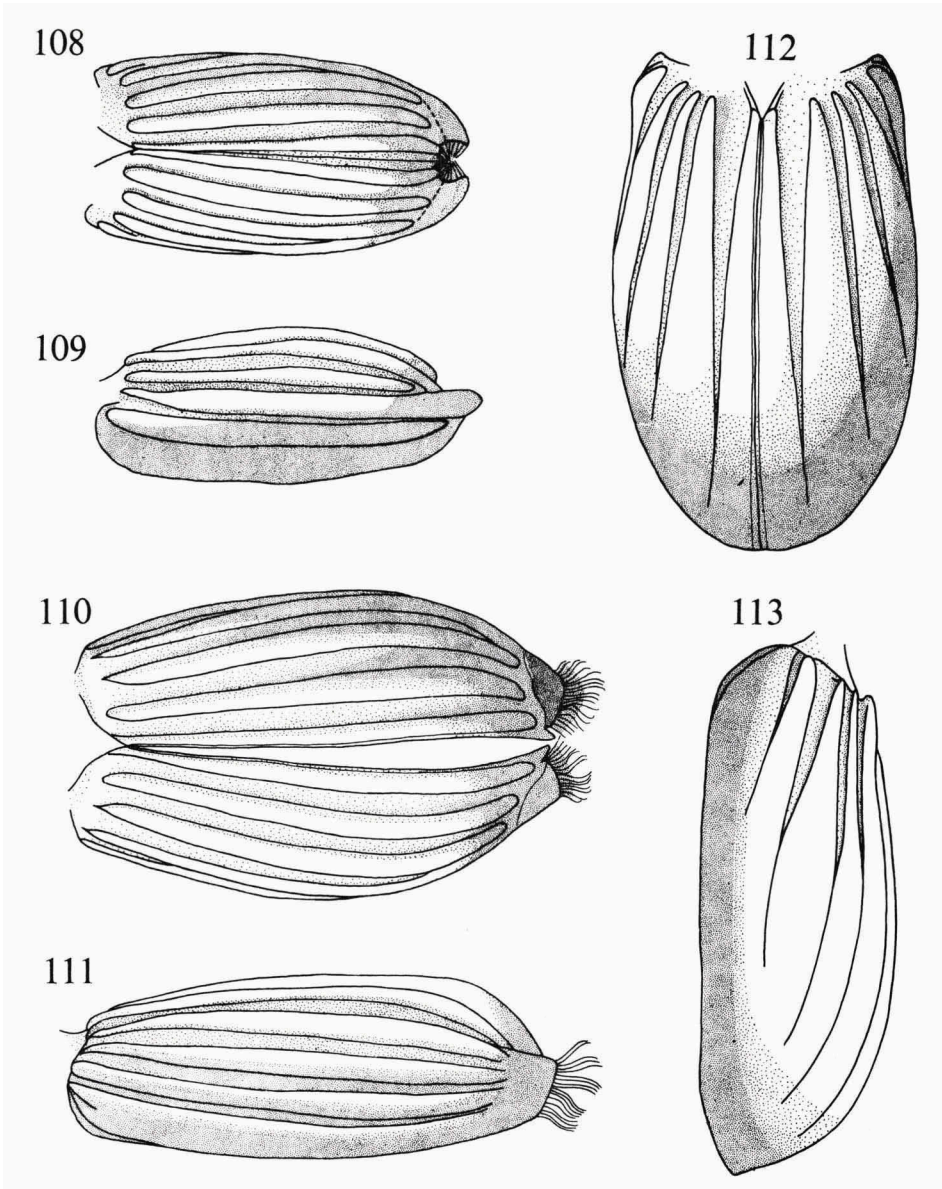
Figs. 90-95. Elytra (dorsal and dorsolateral views) of: 90-91, *Chaetopisthes fulvoides* ♀; 92-93, *Ch. latipes* ♀; 94-95, *Ch. oberthueri* ♀.



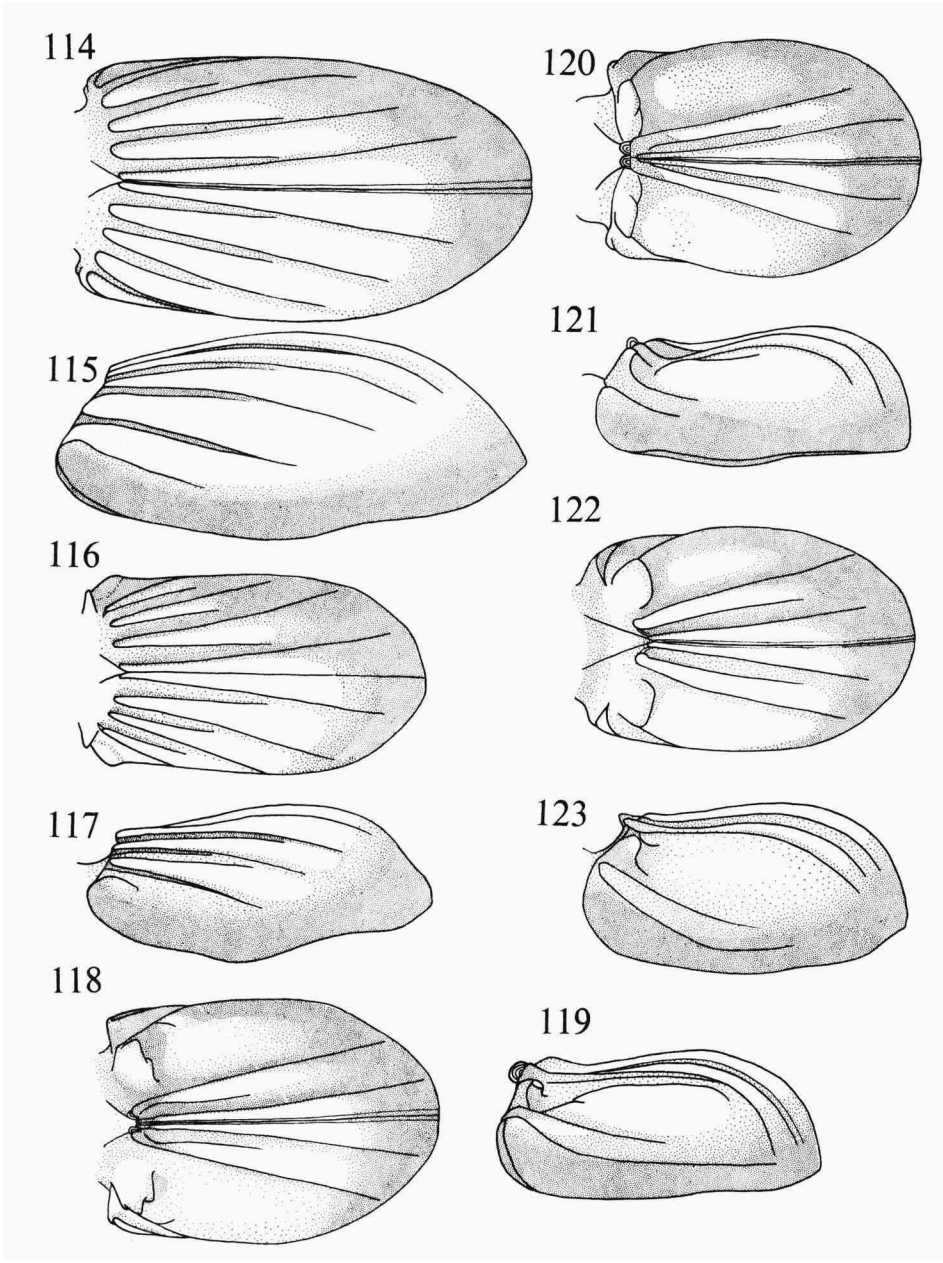
Figs. 96-101. Elytra (dorsal and dorsolateral views) of: 96-97, *Chaetopisthes popei* ♂; 98-99, *Ch. saetiger* ♀; 100-101, *Ch. ventriosus* ♀.



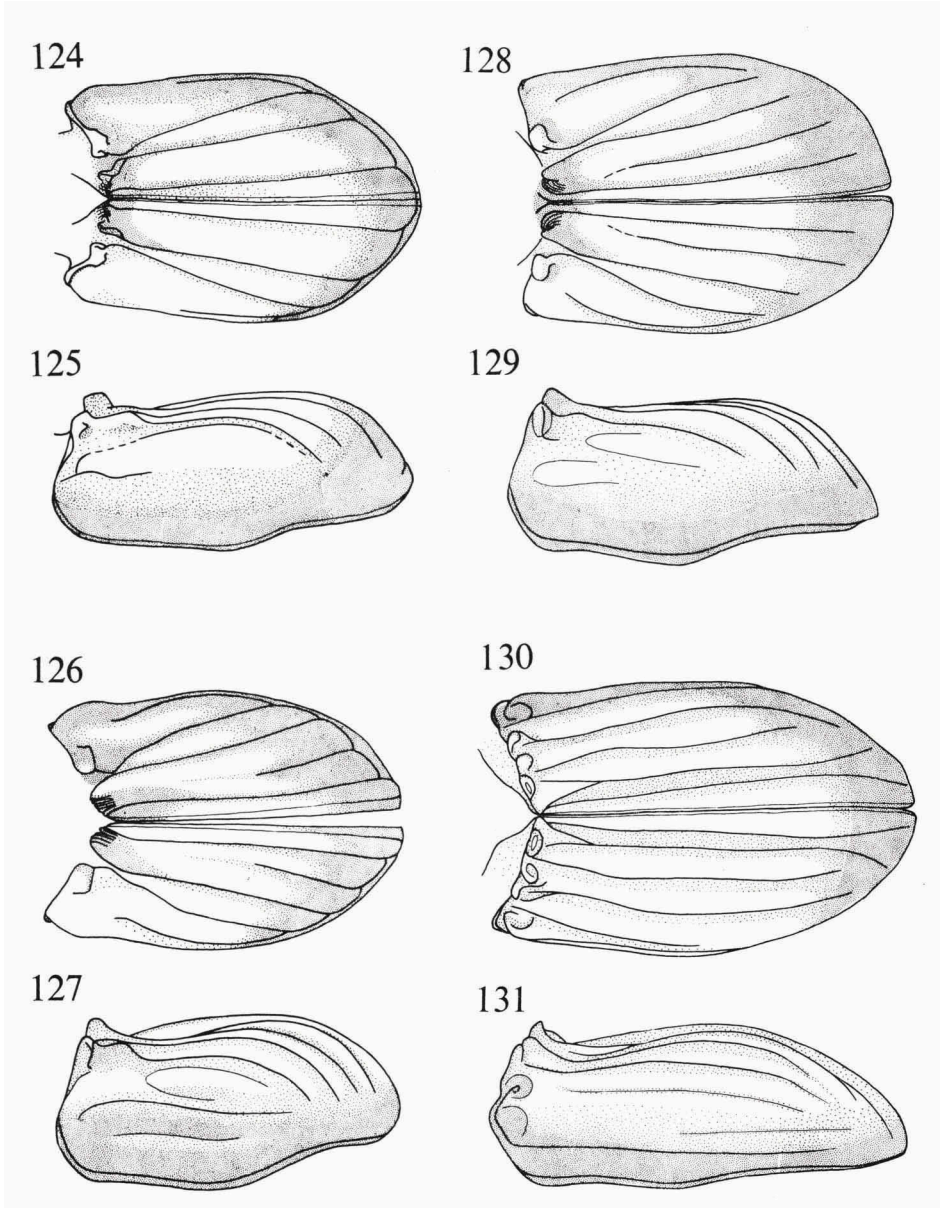
Figs. 102-107. Elytra (dorsal and dorsolateral views) of: 102-103, *Chaetopisthes semisulcatus* ♂; 104-105, *Ch. angustipes* ♀; 106-107, *Ch. septentrionalis* ♂.



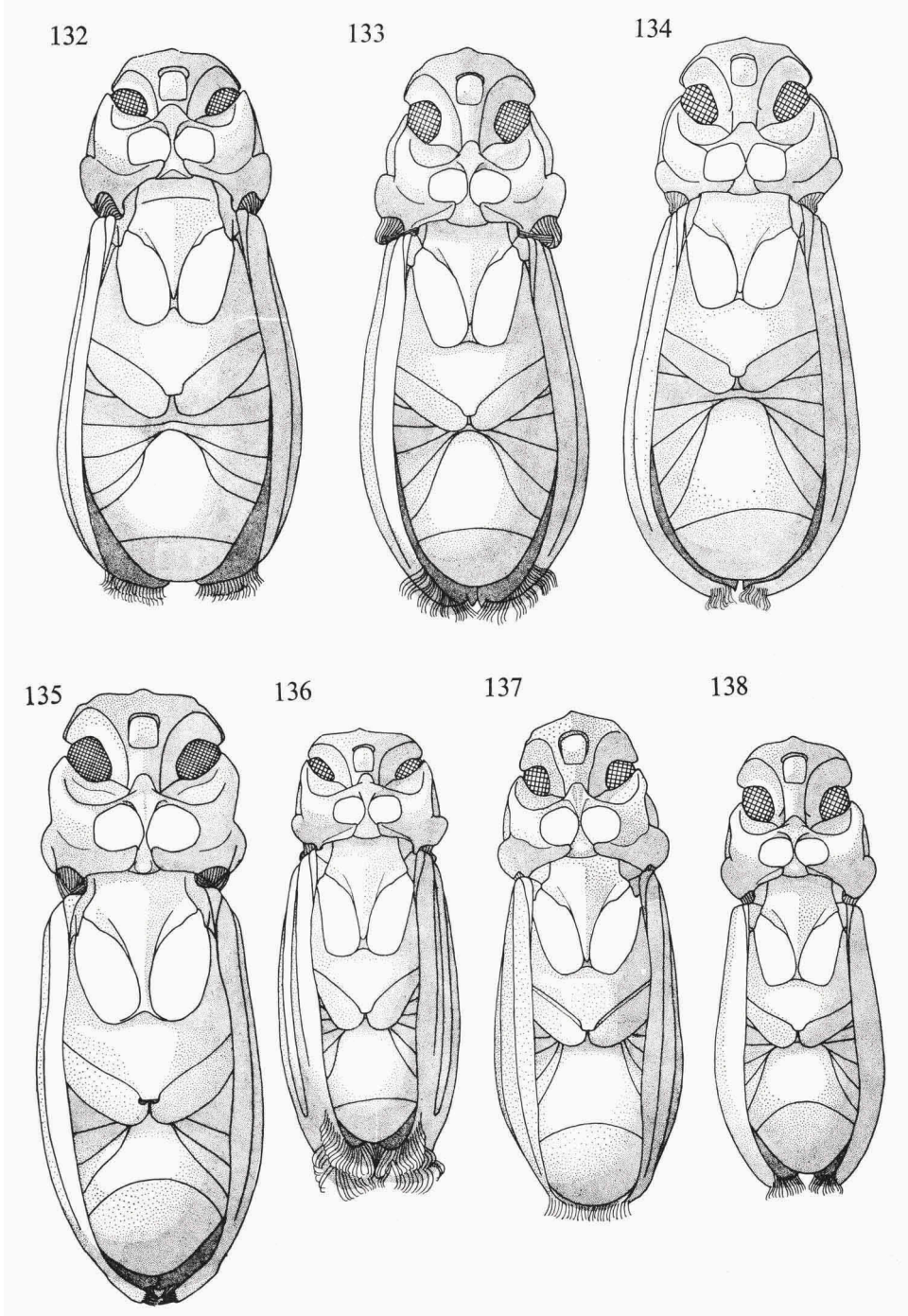
Figs. 108-113. Elytra (dorsal and dorsolateral views) of: 108-109, *Chaetopisthes cincinnatus* ♂; 110-111, *Ch. meridionalis* ♀; 112-113, *Termitopisthes forticulus* ♀.



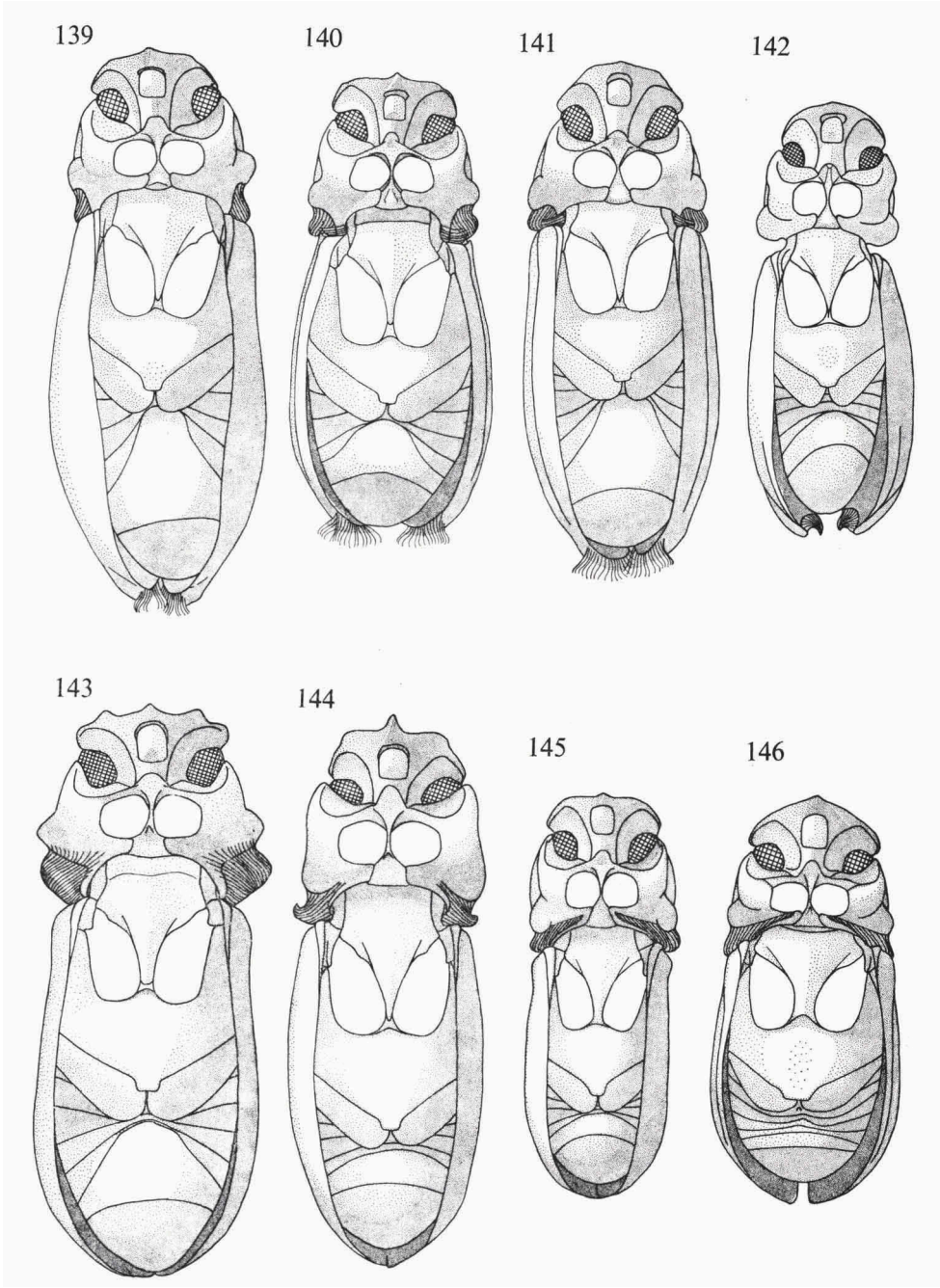
Figs. 114-123. Elytra (dorsal and dorsolateral views) of: 114-115, *Termitopisthes submissus* ♀; 116-117, *T. kistneri* ♂; 118-119, *Corythoderus gibbiger* ♀; 120-121; *C. braminus* ♀; 122-123, *C. loripes* ♂.



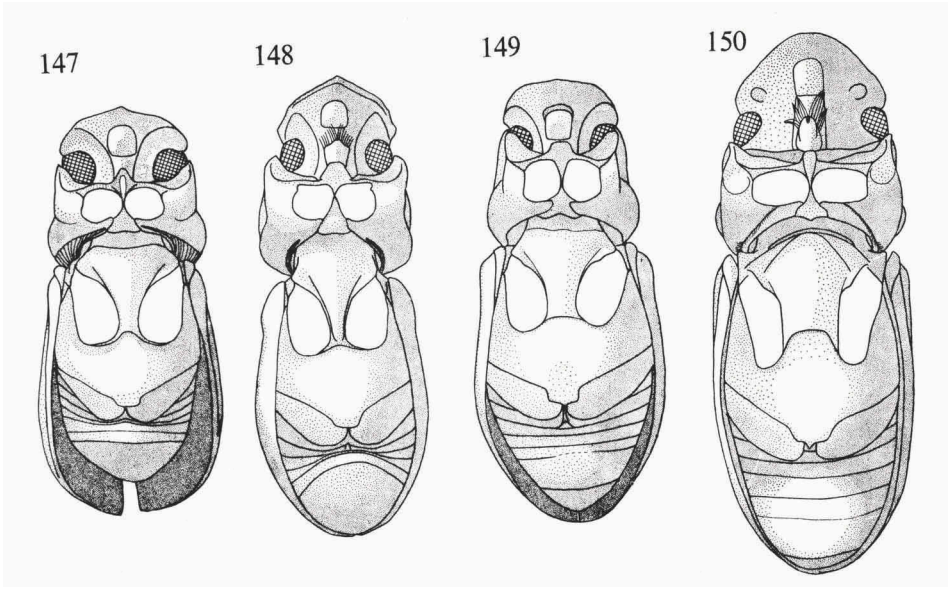
Figs. 124-131. Elytra (dorsal and dorsolateral views) of: 124-125, *Paracorythoderus ridens* ♀; 126-127, *P. casperi*; 128-129, *P. marshalli* ♂; 130-131, *Hemicorythoderus vaneyeni*.



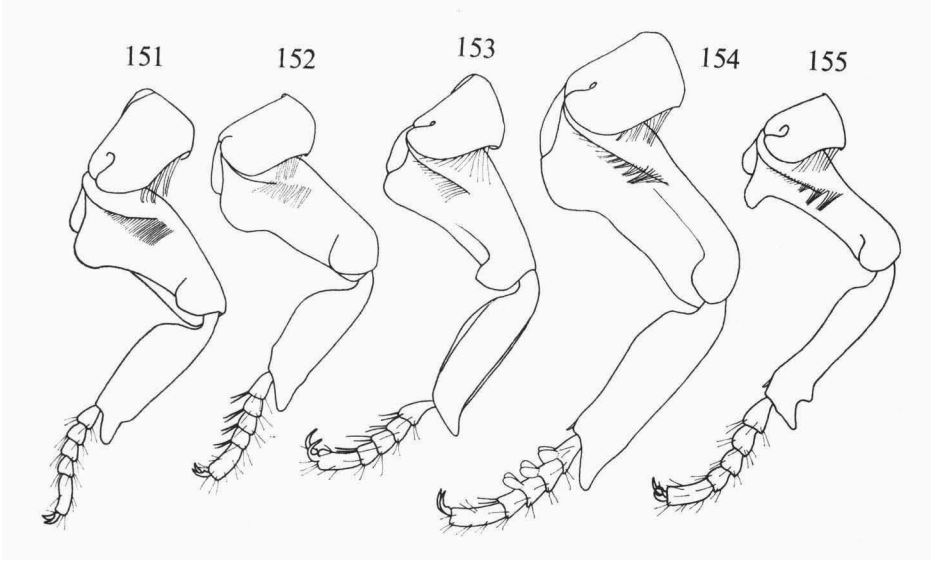
Figs. 132-138. Ventral side of: 132, *Chaetopisthes fulvoides* ♀ ; 133, *Ch. latipes* ♀ ; 134, *Ch. oberthueri* ♀ ; 135, *Ch. popei* ♂ ; 136, *Ch. saetiger* ♀ ; 137, *Ch. ventriosus* ♀ ; 138, *Ch. semisulcatus* ♂.



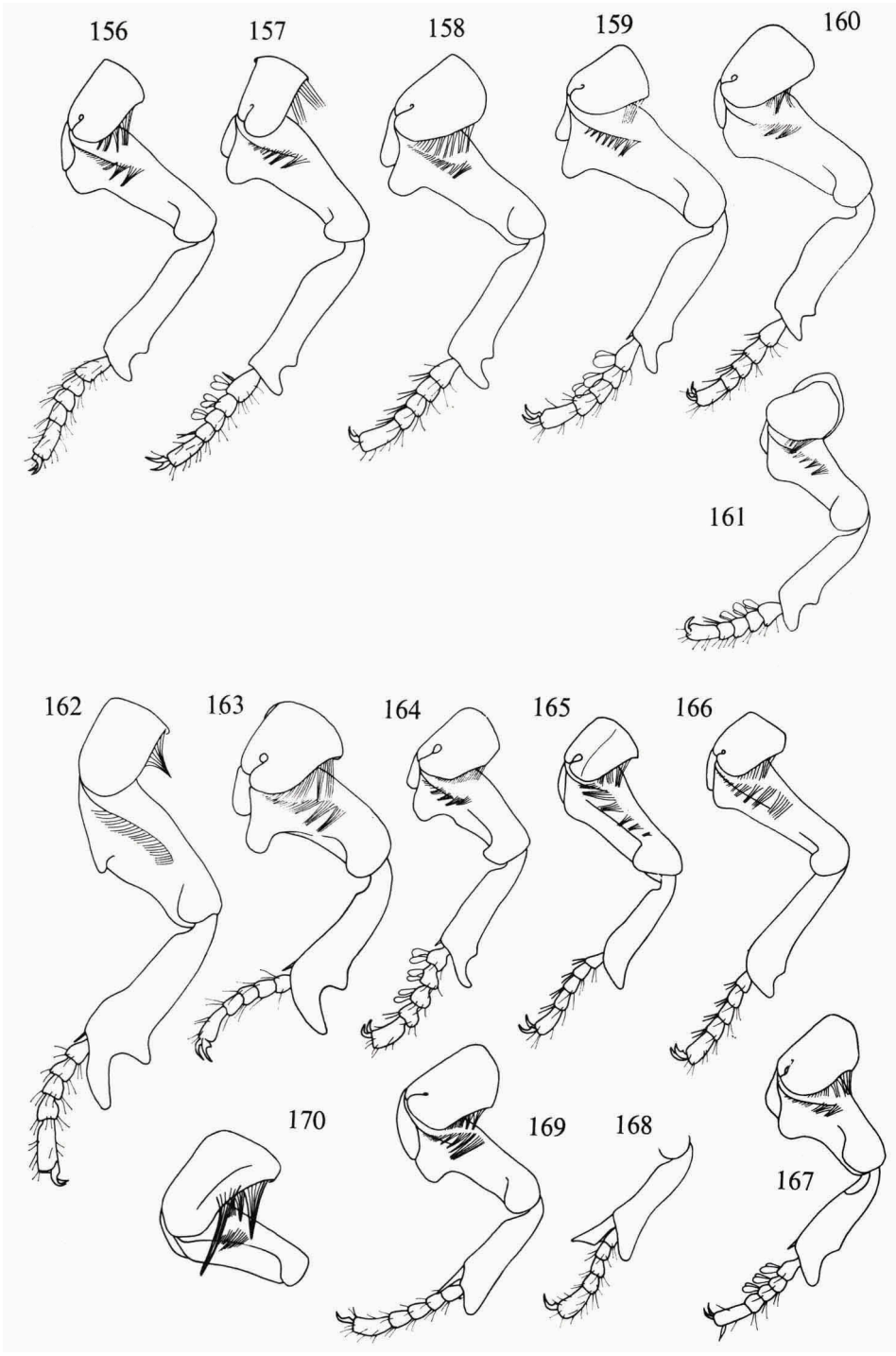
Figs. 139-146. Ventral side of: 139, *Chaetopisthes angustipes* ♀ ; 140, *Ch. septentrionalis* ♂ ; 141, *Ch. meridionalis* ♀ ; 142, *Ch. cincinnatus* ♂ ; 143, *Termitopisthes forticulus* ♀ ; 144, *T. submissus* ♀ ; 145, *T. kistneri* ♂ ; 146, *Corythoderus gibbiger* ♀.



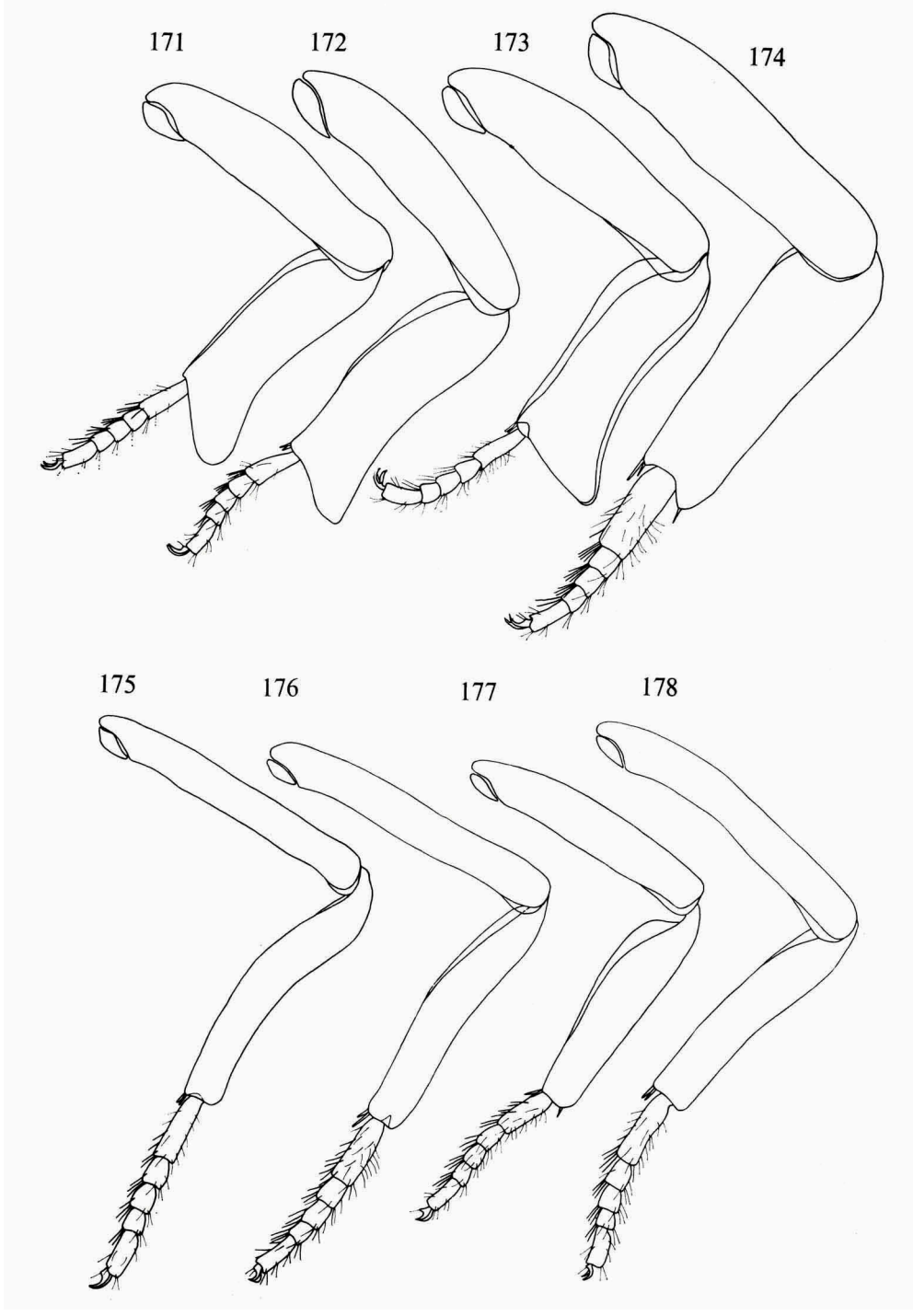
Figs. 147-150. Ventral side of: 147, *Corythoderus braminus* ♀ ; 148, *C. loripes* ♂ ; 149, *Paracorythoderus ridens* ♀ ; 150, *Hemicorythoderus vaneyeni.*



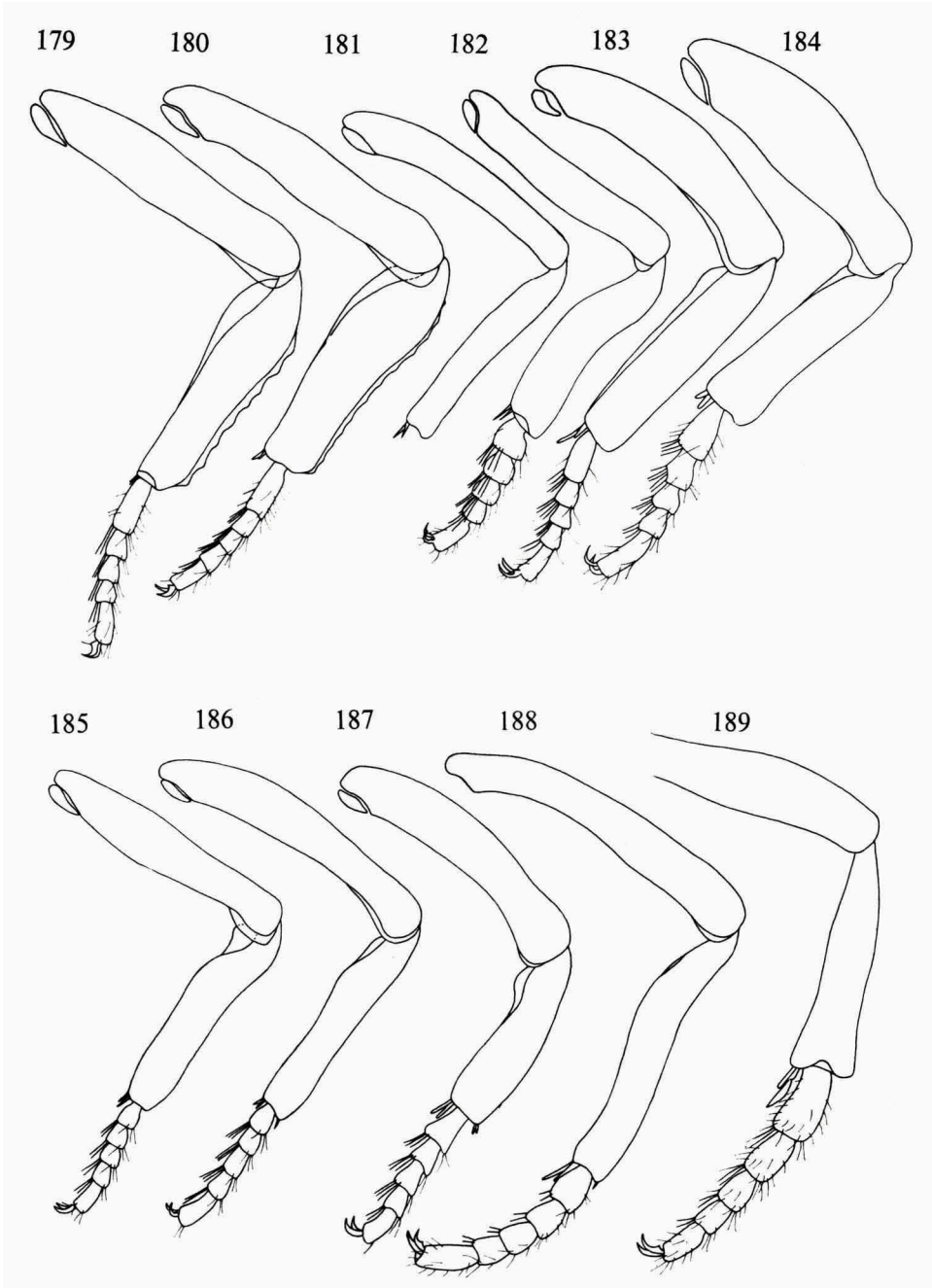
Figs. 151-155. Fore leg (ventral view) of: 151, *Chaetopisthes fulvoides* ♀ ; 152, *Ch. oberthueri* ♀ ; 153, *Ch. latipes* ♀ ; 154, *Ch. popei* ♂ ; 155, *Ch. saetiger* ♀.



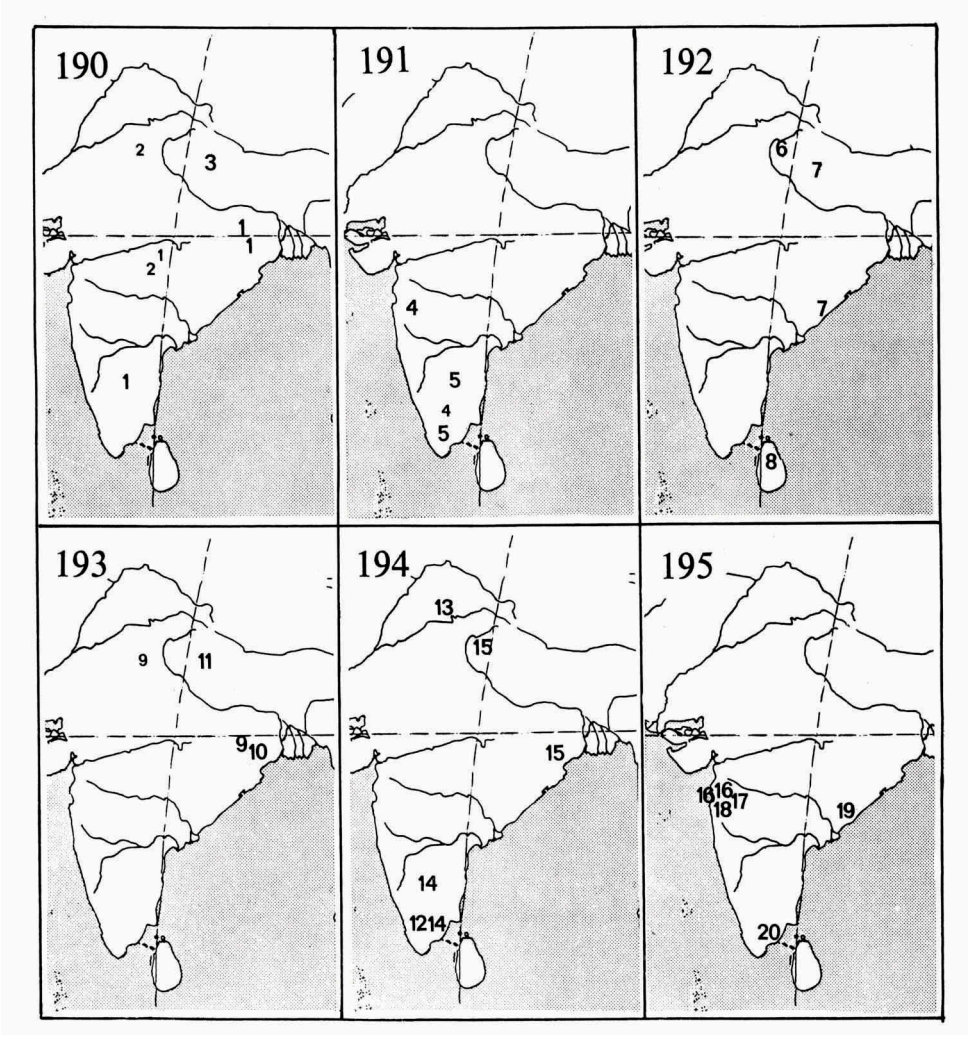
Figs. 156-170. Fore leg (ventral view) of: 156, *Chaetopisthes ventriosus* ♀; 157, *Ch. semisulcatus* ♂; 158, *Ch. angustipes* ♀; 159, *Ch. septentrionalis* ♂; 160, *Ch. meridionalis* ♀; 161, *Ch. cincinnatus* ♂; 162, *Termitopisthes forticulus* ♀; 163, *T. submissus* ♀; 164, *T. kistneri* ♂; 165, *Corythoderus gibbiger* ♀; 166, *C. braminus* ♀; 167, *C. loripes* ♂; 168-169, *Paracorythoderus ridens*, ♂ (168), ♀ (169); 170, *Hemicorythoderus vaneyeni* (coxa and femur only).



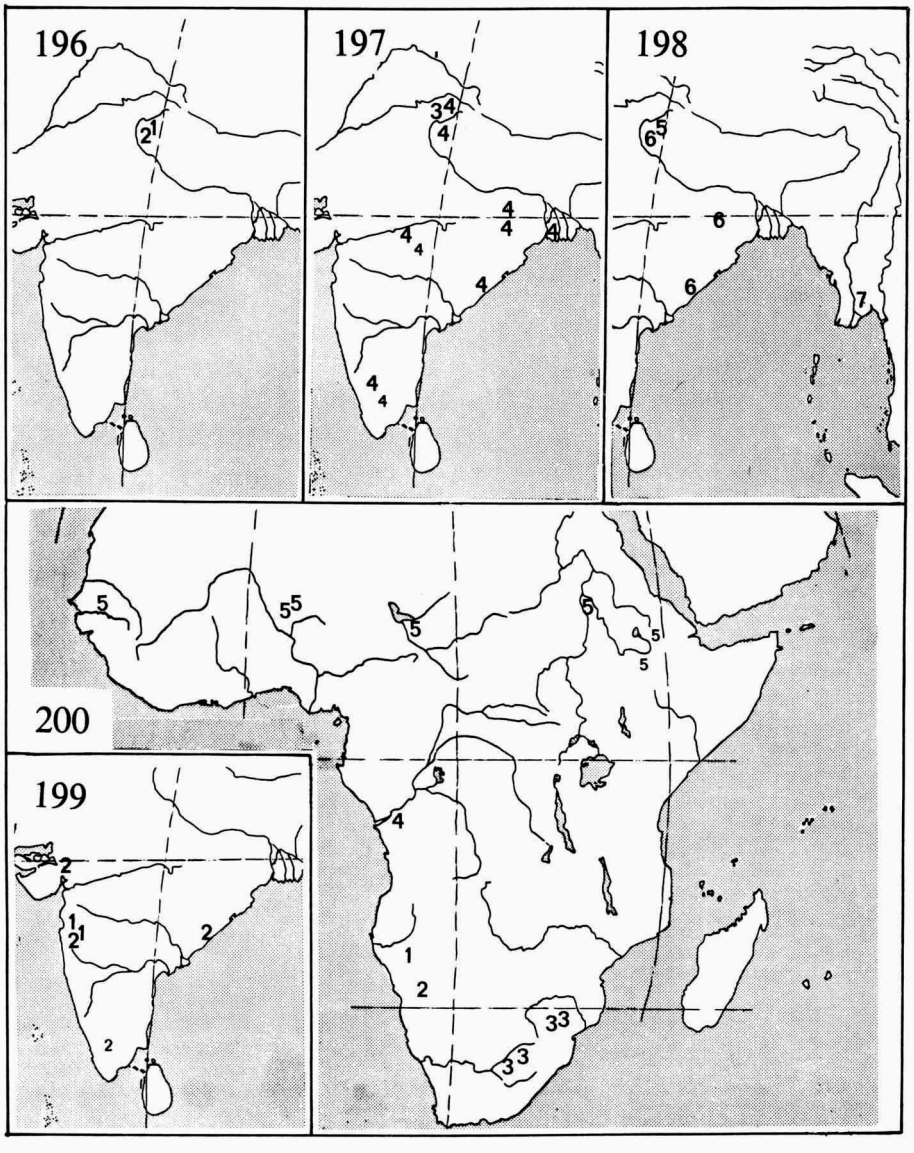
Figs. 171-178. Hind leg (ventral view) of: 171, *Chaetopisthes oberthueri* ♀ ; 172, *Ch. fulvoides* ♀ ; 173, *Ch. latipes* ♀ ; 174, *Ch. popei* ♂ ; 175, *Ch. saetiger* ♀ ; 176, *Ch. ventriosus* ♀ ; 177, *Ch. semisulcatus* ♂ ; 178, *Ch. angustipes* ♀.



Figs. 179-189. Hind leg (ventral view) of: 179, *Chaetopisthes septentrionalis* ♂; 180, *Ch. meridionalis* ♀; 181, *Ch. cincinnatus* ♂; 182, *Termitopisthes kistneri* ♂; 183, *T. submissus* ♀; 184, *T. forticulus* ♀; 185, *Corythoderus braminus* ♀; 186, *C. gibbiger* ♀; 187, *C. loripes* ♂; 188, *Paracorythoderus ridens* ♀; 189, *Hemicorythoderus vaneyeni*.



Figs. 190-195. Approximate localities of *Chaetopisthes* species (1-20) in the Indian region. Numbers refer to species; smaller type numbers = locality data insufficiently detailed. Species: *fulvoides* (1); *fulvus* (2); *latipes* (3); *tibialis* (4); *popei* (5); *longulus* (6); *saetiger* (7); *singalensis* (8); *simplicipes* (9); *ventriosus* (10); *semisulcatus* (11); *angustipes* (12); *septentrionalis* (13); *meridionalis* (14); *brevipes* (15); *assmuthi* (16); *heimi* (17); *brunneus* (18); *cincinnatus* (19); *oberthueri* (20).



Figs. 196-200. Approximate localities of *Termitopisthes* and *Corythoderus* group species. Numbers refer to species; smaller type numbers = locality data insufficiently detailed. 196, *Termitopisthes forticulus* (1), *submissus* (2); 197, *T. parallelus* (3), *wasmanni* (4); 198, *T. schmidti* (5), *kistneri* (6), *termiticola* (7). 199, *Corythoderus gibbiger* (1), *braminus* (2). 200, *Paracorythoderus ridens* (1), *P. casperi* (2), *P. marshalli* (3), *Hemicorythoderus vaneyeni* (4), *Corythoderus loripes* (5).

Chapter 5. **Chaetopisthes** Westwood

Chaetopisthes Westwood, 1847: 242 (diagnosis).
Chaetopisthides Wasmann, 1918: 15 (diagnosis in key).
Neochaetopisthes Wasmann, 1918: 16 (diagnosis in key).
Miochaetopisthes subgen. nov. (cf. key below).

Generic diagnosis. — Pronotum with small lateral lobe, rostrally broadened lateral sulcus, long median sulcus; continuous, slightly curled pronotal trichomes. Median pronotal lobe absent. Elytron with five complete sulci and with distinct apical trichomes. Anal sternite medially strongly expanded.

Clypeus usually with slightly broadened lateral margins; clypeal outline more or less trapeziform or triangular. Pronotum (lateral view) slightly convex; lateral lobe small and slightly extended by a free caudal end; lateral sulcus broad, deep and diverging rostrad. Median pronotal sulcus long, extending over more than half of pronotal disc, basal broadening variably. Paramedian lobe variably pronounced; caudal impression indistinct or distinct, rather shallow. Median lobe absent. Elytral sulci extending from base to near apex. Intervals with parallel or slightly convex sides; their basal points obtuse or acuminate, not dentiform and elevated. No basal trichomes. Sutural margin of interval 1 with transparent apical extension. Apical trichomes mostly placed on apical lobe. Pronotal trichomes mostly visible on ventral side, not extended to midline. Posterior part of prosternum variably convex, with straight caudal border. Intercoxal part of mesosternum narrow (0.02-0.05 mm), sides converging caudad. Intercoxal part of metasternum narrow. Anal sternite medially with flap-like rostral expansion. Fore tibia with one or two external teeth, terminal spur small or absent. Middle and hind tibiae roundish-complanate, or distinctly complanate, variably dilated. Hind femora slightly curved upwards.

Sexual dimorphism. Males with membranous small flaps on first three or four tarsal segments of fore leg; females with broader, more extended anal sternite and in general somewhat larger; abdomen broader, more swollen.

Type-species. — Of *Chaetopisthes*: *Ch. fulvus* Westwood, by monotypy; of *Chaetopisthides*: *Ch. sulciger* Wasmann; of *Neochaetopisthes*: *Ch. assmuthi* Wasmann; of *Miochaetopisthes*: *Ch. cincinnatus* sp. nov.; the last three by present designation.

Composition and distribution. — Four subgenera and 20 species, from India, Sri Lanka and Burma.

Synoptic table of *Chaetopisthes* species (for explanation of characters, see figures)

Head

1. Lateral sides of clypeus: a, not broadened, clypeus medially not dentate; b, broadened, clypeus medially dentate or subdentate.
2. Juxtaocular area of frons: a, not or hardly impressed; b = slightly impressed; c, strongly impressed.

Pronotum

3. Lateral view of pronotal disc: a, flat; b, (slightly) convex.
4. Anterolateral corner of pronotum in dorsal view: a, slightly dilated; b, strongly dilated.
5. Lateral lobe: a, slightly extended, rather small; b, extended, rather large; c, strongly extended, large.
6. Median sulcus: a, over virtually entire length narrow, not so deep; b, somewhat broader and deeper, more or less parallel; c, basal part distinctly broadened, deeper.
7. Paramedian lobe and caudal impression: a, lobe not pronounced, caudal impression indistinct; b, lobe slightly pronounced, caudal impression narrow and moderately concave; c, lobe distinctly pronounced, caudal impression broad and very distinct.
8. Caudal end of lateral lobe (in lateral view): a, on same level as sublateral angle of disc and trichome-connection of lateral sulcus, or slightly extending caudad; b, distinctly extended caudad, sublateral angle of disc and trichome-connection of lateral sulcus on a level with about the middle of the lateral lobe.
9. Pronotal trichomes: a, without special bundle on sublateral angle of disc; b, with special bundle on sublateral angle of disc.
10. Proportions of pronotal disc: a, disc longer than broad; b, disc broader than long or of about equal length and width.

Elytra

11. Shape of raised elytral intervals: a, rather narrow and with more or less parallel sides; b, broad and with slightly convex sides.
12. Convexity of elytral intervals: a, slightly convex; b, moderately convex; c, very strongly convex.
13. Elytral sulcus 5: a, not reduced, complete and distinct; b, caudal half reduced or very vague.
14. Confluence of elytral intervals: a, no subapical confluence of intervals, interval 2 reaching to apex; b, subapical confluence of intervals 2 and 3, or interval 2 ending subapically.
15. Basal points of elytral intervals: a, obtuse; b, more or less acuminate.
16. Development of apical lobe of elytron: a, apical lobe not distinct; b, apical lobe slightly developed; c, apical lobe strongly developed.
17. Apical trichomes: a, large; b, smaller; c, very small, directed medially.
18. Apical lobe formed by: a, intervals 3, 4 and 5; b, intervals 3 and 4; c, interval 4.

Ventral side

19. Posterior part of prosternum: a, slightly convex; b, strongly convex; c, distinctly bulbous.
20. Intercoxal part of mesosternum: a, virtually flat; b, slightly keeled; c, more strongly keeled.
21. Anal sternite: a, with slight median expansion, no flap-like shape; b, with strongly flap-shaped, median expansion.

Legs

22. Basal lobe of fore femur: a, broad, not very extended, trochanter distinct but not pronounced; b, less broad and more extended, trochanter the same; c, the same, trochanter strongly pronounced, jointly with basal lobe giving a bidentate impression.
23. Number of teeth on fore tibia: a, distinctly two teeth; b, one distinct tooth and a vague one; c, only one tooth.
24. Middle and hind tibiae: a, slightly thickened; b, complanate.
25. Middle and hind tibiae (conditional on 24b): a, slender or slightly broadened, mostly slightly S-curved; b, distinctly broadened; c, strongly broadened, with strongly dilated outer apical angles.
26. Transparent membranes along tibiae: a, absent; b, only along proximal posterior curve; c, along posterior side, sometimes with narrow membrane along other side; d, along both sides.
27. First tarsal segment of middle and hind leg: a, not broadened; b, broadened.
28. Length of first segment of hind tarsus: a, as long as, or slightly longer than fifth tarsal segment; b, about one and a half times longer; c, about two times longer.

Hyphen: intermediate state occurs.

Key to *Chaetopisthes* species

1. Lateral margin of clypeus not broadened (fig. 25). Lateral lobe of pronotum strongly swollen, semi-circular (fig. 46); median sulcus regularly widened caudally. Anal sternite with slight median expansion (fig. 142). Middle and hind tibiae slender and slightly thickened, no transparent membranes. Length ♂ 2.7 mm. *Miochaetopisthes*, subg. nov., one species only . . . . *Ch. cincinnatus*

— Lateral margin of clypeus broadened. Lateral lobe of pronotum more or less extended, oblong-oval; median sulcus with parallel sides or with irregular widening caudally. Anal sternite with strong median broadening (figs. 132-141). Middle and hind tibiae slender or dilated, complanate; femora always, tibiae mostly, with transparent membranes 2

2. Middle and hind tibiae never with dilated outer apical angle . . 6

— Middle and hind tibiae strongly broadened and complanate; hind tibia always, middle tibia sometimes with strongly dilated outer apical angle (figs. 171-173) . . . . subgenus *Chaetopisthes*, 3

3. Lateral sulcus of pronotum long, trichome attachment more or less level with caudal end of lateral lobe. Elytral intervals 2 and 3 not confluent subapically; apical lobe distinctly developed. Outer apical angle of middle and hind tibiae dilated 4

— Lateral sulcus of pronotum rather short, trichome attachment level with about the middle of the lateral lobe (fig. 37). Elytral intervals 2 and 3 confluent subapically; apical lobe at most poorly developed. Outer apical angle of only hind tibia dilated. Length ♂ 3.3-3.6 mm, ♀ 3.6-4.0 mm . . . . *Ch. fulvoides*

Chaetopisthes species: characters and character states

character no.:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. *fulvoides*	b	a	b	a	a	c	a	b	b	b	a	b	a	b
2. *fulvus*	b	a	b	a	a	a	a-b	a	b	b	a	b	a	a
3. *latipes*	b	a	a	a	a	a	a-b	a	b	b	a	b	a	a
4. *oberthueri*	b	a	a	a	a	c	b-c	a	(b)	b	a	b	a	a
5. *sulciger*	b	a	a	b	b	b	b	a	a	a	b	a-b	a	b
6. *popei*	b	a	b	b	b	b	b	a	a	a	b	a	a	b
7. *longulus*	b	a	b	a	a	c	a-b	a	a	b	a	c	a	b
8. *saetiger*	b	a	b	a	a	c	b	a	a	b	a	c	a	b
9. *singalensis*	b	c	b	a	a	c	b	a	a	b	a	b	a	b
10. *simplicipes*	b	a	b	a	a	c	a	b	a	b	b	a	b	b
11. *ventriosus*	b	a	b	a	a	c	b	a	a	b	a	a	a	b
12. *semisulcatus*	b	a	b	a	a	b-c	b	a-b	a	b	a	a	b	b
13. *angustipes*	b	a	b	a	a	c	c	a	b	b	b	a	a	b
14. *septentrionalis*	b	b	b	a	a	c	b	a	b	b	a	c	a	a
15. *meridionalis*	b	a	b	a	a	c	b	a	b	b	a	b	a	a
16. *brevipes*	b	a	b	a	a	c	b	a-b	b	b	b	b	a	a
17. *assmuthi*	b	a	b	a	a	c	c	a	b	b	a	b	a	a
18. *heimi*	b	a	b	a	a	c	c	a	b	b	a	b	a	a
19. *brunneus*	b	a	b	a	a	c	c	a	b	b	a	b	a	a
20. *cincinnatus*	a	a	b	a	c	c	c	a	b	b	a	a	b	a

character no.:	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1. *fulvoides*	b	a	a	–	b	b	b	b	b	b	c	b-c	a	a
2. *fulvus*	b	c	a	b	a	a	b	bc	c	b	c	d	a	b
3. *latipes*	b	c	a	b	b	b	b	b	c	b	c	d	a	b
4. *oberthueri*	a-b	c	b	a	a	b	b	b	b	b	c	b	a	b
5. *sulciger*	a	b	a	c	c	c	b	a	b	b	b	d	b	b-c
6. *popei*	a	c	c	c	c	c	b	a	b	b	b	b	b	c
7. *longulus*	a	c	a	b	b	c	b	b	a	b	a	b	a	b
8. *saetiger*	a	c	a	b	b	b	b	b-c	a	b	a	a	a	b
9. *singalensis*	b	c	a	a	b	c	b	c	a	b	a	b	a	b
10. *simplicipes*	a	b	b	a	b	b	b	b	a	b	a	b	a	b
11. *ventriosus*	a	b	b	a	b	c	b	b	a	b	a	b	a	b
12. *semisulcatus*	a	c	b	a	b	c	b	b	a	b	a	b-c	a	b
13. *angustipes*	a-b	c	b	a	b	a	b	c	a	b	a	b	a	c
14. *septentrionalis*	b	b	a	a	c	c	b	c	a	b	a	c	a	a
15. *meridionalis*	b	c	a	a	b	a-b	b	b	a	b	a-b	c	a	a
16. *brevipes*	a	c	a	a	a	c	b	c	a	b	a-b	c	a	b
17. *assmuthi*	b	c	a	a	c	b	b	b-c	a	b	a	d	a	b
18. *heimi*	a	c	a	a	c	c	b	b	a	b	a-b	d	a	b
19. *brunneus*	a	c	a	a	c	b	b	b	a	b	b	d	a-b	b
20. *cincinnatus*	a	c	c	c	b	b	a	b	a	a	–	a	a	a

4. Median sulcus of pronotum more or less widened caudally (figs. 59, 60). Intercoxal part of mesosternum slightly convex. Dilation of outer apical angle of hind tibia less than 1½ times (figs. 171, 173) 5
— Median sulcus of pronotum over whole length narrow (fig. 58). Intercoxal part of mesosternum flat. Outer apical angle of hind tibia extremely dilated, dilation more than 1½ times. Length 3.4 mm . . . . . *Ch. fulvus*
5. Median sulcus of pronotum only broadened at its caudal end; paramedian lobes not pronounced, not extending caudal border of pronotum (fig. 59). Elytra from lateral view rather flat; apical trichome somewhat extended laterally (fig. 92-93). Middle and hind tibiae with transparent membranes along both sides (fig. 173). Length ♂ 3.4 mm, ♀ 3.7-3.8 mm . . . . . *Ch. latipes*
— Median sulcus of pronotum distinctly broadened over its caudal half; paramedian lobes more or less pronounced, extending caudal border of pronotum (fig. 60). Elytra from lateral view somewhat convex; apical trichome rather small, not extended laterally (figs. 94. 95). Middle and hind tibiae with a transparent membrane only along posterior side (fig. 171). Length 3.1 mm (♀) . . . . . *Ch. oberthueri*
6. Anterolateral corner of pronotum (dorsal view) only slightly dilated; median sulcus (slightly) broadened caudally; pronotal disc broader than long or about square; trichomiferous border with or without special bundle on sublateral angle of disc. Middle and hind tibiae mostly slender, sometimes broadened; first tarsal segments not or slightly broadened . . . . . subgenus *Neochaetopisthes,* 8
— Anterolateral corner of pronotum (dorsal view) strongly dilated (figs. 61, 62); median sulcus over whole length moderately broad; pronotal disc longer than broad; trichomiferous border without special bundle on sublateral angle of disc. Middle and hind tibiae distinctly broadened and complanate; first tarsal segment also distinctly broadened . . . . . subgenus *Chaetopisthides,* 7
7. Lateral view of pronotum flat; largest breadth of pronotum level with anterolateral corner (fig. 61). Sulci of elytron distinct and rather deep; apical lobe slightly pronounced and obtuse, apical trichome large and caudally directed. Middle and hind tibiae distinctly broadened, transparent membranes along both sides. Length ♂ 3.7-3.8 mm, ♀ 4.1 mm . . . . . *Ch. sulciger*
— Lateral view of pronotum slightly convex; largest breadth of pronotum level with lateral lobe (fig. 62). Sulci of elytron vague and shallow; apical lobe distinctly pronounced and pointed; apical trichome small,

medially directed (figs. 96, 97). Middle and hind tibiae more strongly broadened, narrow transparent membrane only along proximal-posterior curve (fig. 174). Length ♂ 3.9-4.2 mm . . . . . *Ch. popei*

8. Pronotal trichomes with distinct special bundle on sublateral angle of disc (figs. 69-75); caudal impression variably distinct. Elytron without subapical confluence of intervals 2 and 3, except in one species. Transparent membranes of middle and hind tibiae along proximal-posterior curve, or along one, or along both sides 14

— Pronotal trichomes without special bundle on sublateral angle of disc (figs. 63-68); caudal impression indistinct, or narrow, and very slightly concave. Elytron with subapical confluence of intervals 2 and 3, or with subapical ending of interval 2. Transparent membranes of middle and hind tibiae only along proximal-posterior curve or absent . . . 9

9. Caudal part of median sulcus two or three times broader than rostral part. Surface of elytral intervals slightly or strongly convex; sulci narrower than intervals; apical trichome connection restricted to elytral apex 11

— Caudal part of median sulcus four or more times broader than rostral part. Surface of elytral intervals strongly convex; sulci as broad as or broader than intervals; apical trichome very large, its connection to elytral apex strongly extended (figs. 98-99). Legs very long and slender 10

10. Pronotal disc about square (fig. 63). Length of the apical trichome hairs ca. 0.20 mm. Basal lobe of fore femur broad. Middle and hind tibiae with transparent membrane along proximal-posterior curve. Colour light brown. Length ♂ 3.3 mm, ♀ 3.7 mm . . . . . *Ch. longulus*

— Pronotal disc broader than long (fig. 64). Length of the apical trichome hairs ca. 0.30 mm. Basal lobe of fore femur narrow (fig. 155). Middle and hind tibiae without transparent membrane. Colour bright yellow-brown. Length ♀ 3.2-3.5 mm . . . . . *Ch. saetiger*

11. Head without deep impression along the eyes. Elytral intervals slightly convex, their basal points obtuse; apical lobe slightly or strongly developed. Fore trochanter not or hardly pronounced, no bidentate impression 12

— Head with very deep impression along the eyes. Elytral intervals strongly convex, their basal points acuminate; apical lobe strongly developed. Trochanter of fore leg and basal lobe of fore femur strongly pronounced, jointly giving a bidentate impression. Length ♂ 3.3 mm (fig. 65) . . . . . *Ch. singalensis*

12. Paramedian lobe not pronounced, caudal impression indistinct (fig. 66). Lateral sulcus rather short, trichome connection level with about the middle of the lateral lobe. Elytral sulci apically tapering and more or less effaced. Length ♂ 2.7-3.1 mm, ♀ 2.9-3.4 mm . . *Ch. simplicipes*

— Paramedian lobe pronounced, and somewhat extended caudally, caudal impression vague. Lateral sulcus long, trichome connection level with caudal part or caudal end of lateral lobe (figs. 41-42). Elytral sulci more or less parallel, apically not obsolescent; first sulcus distinctly reaching apex 13

13. Median sulcus with distinctly broadened caudal part (fig. 67). Fifth elytral sulcus complete and distinct (fig. 101); apical lobe slightly developed, apical trichome mainly caudally directed (fig. 100). Middle and hind tibiae with a transparent membrane along proximal half of posterior side (fig. 176). Length ♀ 3.4 mm . . . . . *Ch. ventriosus*

— Median sulcus only very slightly broadened caudally (fig. 68). Fifth elytral sulcus with obsolescent caudal half (fig. 103); apical lobe rather strongly developed, apical trichome caudally and medially directed (fig. 102). Middle and hind tibiae with a transparent membrane along three-fourths of posterior side (fig. 177). Length ♂ 2.9-3.0 mm . . . . . *Ch. semisulcatus*

14. Caudal impression of pronotum broad and rather strongly concave; paramedian lobe more pronounced (figs. 73-75). Elytral intervals strongly convex. Middle and hind tibiae with transparent membranes along both sides 18

— Caudal impression of pronotum narrow and at most slightly concave. (If broad and moderately concave, then elytral intervals only slightly convex). Middle and hind tibiae with transparent membrane only along posterior side, and sometimes with narrow milled membrane along other side (figs. 178-180) 15

15. Caudal impression of pronotum (rather) narrow, at most slightly concave. Elytral intervals strongly convex; no subapical confluence of intervals 2 and 3. Middle and hind tibiae slightly broadened subbasally; transparent membrane along half or entire posterior side and narrow, milled membrane along other side (figs. 179-180); length of first tarsal segment of hind leg less than one and a half times that of fifth segment 16

— Caudal impression of pronotum broad and moderately concave (fig. 69). Elytral intervals broad, slightly convex; vague subapical confluence of intervals 2 and 3 (fig. 104). Middle and hind tibae not broadened, with more or less parallel sides; transparent membrane only on proximal-

posterior curve, no milled membrane along other side; first tarsal segment of hind leg nearly twice as long as fifth segment (fig. 178). Length ♀ 3.7 mm . . . . . *Ch. angustipes*

16. Gena hardly impressed in front of eye. Elytral intervals rather strongly convex, sulci moderately defined; base of intervals not elevated; apical lobe strongly developed and inflated. Hind tibiae somewhat broader, about three and a half times longer than broad 17

— Gena with rather deep impression in front of eye (fig. 23). Elytral intervals strongly convex, sulci deep, and well defined; base of intervals 4 and 5 pointed and somewhat elevated; apical lobe slightly developed (figs. 106-107). Hind tibiae more slender, about four and a half times longer than broad (fig. 179). Length ♂ 3.2-3.3 mm (fig. 70) . . . . . *Ch. septentrionalis*

17. Caudal impression of pronotum distinct, slightly concave (fig. 71). Basal points of elytral intervals slightly acuminate; sulci broader, about half as broad as intervals (fig. 110). Posterior part of prosterum strongly convex; intercoxal part of mesosternum very slightly convex. Basal lobe of fore femur broad, slightly pronounced, trochanter not pronounced. Colour brown; trichomes yellow-brown. Length ♀ 3.4-3.6 mm . . . . . *Ch. meridionalis*

— Caudal impression of pronotum very narrow and hardly concave (fig. 72). Basal points of elytral intervals obtuse; sulci narrow. Posterior part of prosternum very slightly convex; intercoxal part of mesosternum distinctly keeled. Basal lobe of fore femur and trochanter pronounced, jointly giving a bidentate impression. Colour yellow-brown; trichomes yellow-white. Length ♂ 3.2 mm . . . . . *Ch. brevipes*

18. Basal points of elytral intervals obtuse. Fore trochanter hardly pronounced, broad basal lobe of fore femur moderately pronounced, not giving a bidentate impression. Hind tibia broader, about four times longer than broad. Colour light red-brown or dark-brown . . . 19

— Basal points of elytral intervals acuminate. Fore trochanter slightly pronounced, narrow basal lobe of fore femur strongly pronounced, jointly giving a more or less bidentate impression. Hind tibia only slightly broadened subbasally, rather slender, more than five times longer than broad. Colour yellow-brown. Length ♂ 2.9-3.4 mm, ♀ 3.2-3.8 mm (fig. 73) . . . . . *Ch. assmuthi*

19. Paramedian lobe not reaching over caudal border of pronotum (fig. 74); lateral lobe drop-shaped, about twice as long as broad. Rostral expansion of anal sternite in females broad, about 0.45 mm. First tarsal segment of hind leg hardly broadened. Colour light red-brown. Length ♂ 3.5-3.7 mm, ♀ 4.1-4.4 mm . . . . . *Ch. heimi*

— Paramedian lobe somewhat longer, slightly reaching over caudal border of pronotum (fig. 75); lateral lobe oblong oval-shaped, about three times longer than broad. Rostral expansion of anal sternite in females narrower, about 0.30 mm. First tarsal segment of hind leg slightly broadened. Colour dark red-brown. Length ♂ 3.7 mm, ♀ 4.1-4.4 mm . . . . . *Ch. brunneus*

1. **Chaetopisthes (Chaetopisthes) fulvoides** sp. nov.

(figs. 15, 37, 57, 90, 91, 132, 151, 172)

Description (holotype, female). — Approximate length 3.7, width 1.55, height 1.25 mm. Colour yellow-brown, shiny; pilosity and trichomes pale-yellow.

Cephalic contours, fig. 15. Clypeus with reflexed lateral margin, medially subdentate; clypeal surface somewhat rugulate-punctate; clypeogenal suture vaguely costate. Clypeofrontal surface slightly convex; slightly curved down rostrad. Frons and gena with abundant punctation and pilosity, setae fine, erect to semierect, their length ca. 0.05 mm.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 37, 57. Pronotal disc rather convex; posterior part (dorsal view) circular; median sulcus extending over basal 0.8 of disc; sulcus very narrow, rather deep, only posterior part broader and deeper; lateral sulcus deep, well defined, rather short, slightly diverging to concave anterolateral corner; lateral lobe weakly pronounced, somewhat elongate-oval, with a widening on the dorsal side; pronotum (dorsal view) with distinct lateral constriction. Basal paramedian lobe not pronounced, indistinct; caudal impression indistinct; further details pronotal base and trichomes, fig. 57. Pronotal disc abundantly punctate; small punctures with erect seta ca. 0.06 mm long, sparse; appressed, shorter setae abundant. Scutellum triangular, apex acute.

Elytral contours, disposition of sulci, trichomes, figs. 90, 91. Elytron with 5 sulci extending from base to near apex; all sulci distinct, continuous, rather deep and moderately defined; reflexed lateral surface of elytron narrow, unmodified. All elytral intervals convex; basal points of intervals obtuse, points of intervals 3, 4 and 5 slightly acuminate, not dentiform; sutural margin of interval 1 with small transparent, pointed flap; intervals 2-3 confluent at apex; interval 5 ending subapically. Punctation and pilosity of intervals similar to those on pronotum; lateral declivity of elytra abundantly setose, setae short and curled or appressed. Apical trichome connected to entire caudal border of elytron, consisting of two transverse rows of serried, long (ca. 0.15 mm) bristles; no apical lobe distinguishable.

Ventral side, fig. 132. Apex of prosternal apophysis rounded off; ventral surface of apophysis concave, medially costate; posterior part of prosternum with a strong bulbous elevation. Intercoxal part of mesosternum slightly convex, otherwise unmodified. Metasternum convex, wings weakly declivous along middle-coxal border. Abdominal sternites greatly foreshortened, largely because of enormous expansion of anal sternite; general surface of anal sternite convex. Pygidium evenly convex. Derm of pectus and anal sternite sparsely punctate, rest of abdomen with abundant punctation; punctures with fine semierect or appressed seta, length of setae variable.

Contours of legs, figs. 151, 172. Fore tibia with one distinct external apical denticle and a vague subapical one. Base of fore femur with dentiform protrusion, trochanter hardly produced. Fore-femoral and fore-coxal bristle rows, fig. 151. Fore tarsi complanate. Middle and hind tibiae strongly complanate and dilated; distal-external angle of middle tibia obtuse, that of hind tibia angularly extended; proximal-posterior border with narrow transparent membrane; terminal spurs diminutive. Middle and hind tarsi slender, complanate; approximate length proportions hind tibia and tarsal segments 1-5 102/20/8/7/6/15. Middle and hind femora strongly complanate, their axis distinctly curved upward, sides very weakly convex; distal-posterior curve with small transparent membrane. Most of legs abundantly setose, setae fine, semierect, ca. 0.06 mm long and a few longer ones.

Some measurements in mm (explanation, figs. 6-9):

A 0.42	C 0.86	E 1.23	G 0.97	I 2.20	K 0.48	M 0.55
B 0.60	D 1.10	F 1.03	H 2.15	J 0.77	L 0.03	N 0.74

Variation. — Sometimes elytral interval 2 not confluent with 3, but ending subapically. Intervals 3 and 4 sometimes distinctly confluent at apex, forming part of the apical lobe. Transparent membranes of middle and hind tibiae sometimes only along half of the posterior side.

Sexual dimorphism. — Differences are those mentioned in generic diagnosis, and the following: abdominal venter of females with two shallow paramedian impressions on anterior part, producing a slight median elevation; abdomen more "inflated" than that of males. Median breadth of anal sternite 0.36-0.40 (♂), 0.73-0.74 mm (♀). Total length 3.3-3.6 (♂), 3.6-4.0 mm (♀).

Identification. — *Chaetopisthes fulvoides* is closely related to *fulvus, oberthueri* and *latipes*, sharing the dilated legs and narrow median sulcus. In addition to the characters mentioned in the key and the synoptic table, *fulvoides* is also different in having a more distinctly rounded pronotal base and a strongly convex pronotal disc.

Host. — Unknown.

Distribution. — Central, Northwest and South India.

Material examined.

Chota Nagpore, Nowatoli, R. P. Cardon (♀ holotype, BM); paratypes as follows: Chota Nagpore, Nowatoli, 7.viii.1897, R. P. Cardon (1 ♀ 1 ♂, BM); 2 ♂, 1 ♀, but with data vii-viii. 1897, Paris ex R. Oberthür; Mhow, Malwa (Central India), Captn. Boys (1 ♀, Hope collection, Oxford, also paralectotype 2/4 of *Ch. fulvus);* Chota Nagpur, Nowatoli, R. P. Cardon (1 ♀, BM); Chikkaballapura, S. India, T. V. Campbell (1 ♂, BM); India, Bihar Prov., Ranchi, Namkum, 1928 (2 ♂, BM, L).

2. **Chaetopisthes (Chaetopisthes) fulvus** Westwood

(fig. 58)

Westwood, 1847: 242 (diagnosis); Gestro, 1891: 905 (comparison); Wasmann, 1894: 155 (note); Wasmann, 1899a: 123 (note); Wasmann, 1899b: 152 (comparison); Wasmann, 1903a: 150 (comparison); Kolbe, 1909: 62 (note); Schmidt, 1910: 140 (note); Wasmann, 1918: 16 (key & diagnosis); Arrow, 1920: 434 (note); Schmidt, 1922: 546 (key & diagnosis); Champion 1923: 574 (diagnosis), 575 (comparison); Balthasar, 1941: 93 (note); Balthasar, 1964: 628 (key), 629 (diagnosis).

Notes. — Westwood did not specify the number of specimens he had seen, although he stated to have dissected the mouthparts of three specimens. In the Oxford museum there are four apparent syntypes, numbered 475 1/4 to 475 4/4. Specimen 1/4 resembles Westwood's picture and has the mouthparts removed; it is here designated as lectotype; numerous labels, as follows: "♂", "W" (lozenge-shaped label, means ex collection Westwood), "type of Westwood" (presumably a Champion label), "*C. fulvus*/♂ Westw." (also Champion?), "Central India/Boys", "*Chaetopisthes/fulvus* Westw./Trans. Ent. Soc. IV: 242/pl.17.f.6/Central India. Boys." (handwritten); pink label without text, "TYPE/HOPE/Trans. Ent. Soc./4.p.242/T.17.f.6/Coll. Hope Oxon." (white label, partly printed, partly handwritten), "Type col.: 475 1/4/ *Chaetopisthes/fulvus* Westw./Dep. Oxford" (white label); our lectotype label added. The actual sex of this specimen not established by dissection (specimen too fragile).

Specimen 2/4 was correctly labelled ♀, but it obviously belongs to a different species, viz. *Ch. fulvoides,* just described. The specific differences between *fulvus* and *fulvoides* were hitherto attributed to sexual dimorphism. One *fulvus* specimen in the BM labelled ♂ is *fulvus* indeed (but ♀), while the two BM specimens labelled ♀ are in fact *fulvoides.* The "*fulvus*" specimen in W is also a *fulvoides* (♀).

Specimens 3/4 and 4/4 of the Oxford type-series of *fulvus,* both labelled ♀ evidently belong to *Termitopisthes wasmanni* (q.v.), as already suggested

by Champion (1923: 574). The Oxford specimens 2/4 to 4/4 have been labelled paralectotype of *Chaetopisthes fulvus*.

The sex labels on these type-specimens may well have been added by Champion and/or Arrow, who seem to have been the first to discuss the sexual dimorphism, although without examining the genitalia for a final verification. The incorrect views on sexual dimorphism among the Corythoderini created considerable confusion, and even led Balthasar (1941) to propose a new name, *Chaetopisthes arrowi* (cf. also notes under *Termitopisthes wasmanni*).

Identification. — *Chaetopisthes fulvus* is a close relative of *latipes*. Besides the differences mentioned in the key and the synoptic table *fulvus* has more strongly dilated hind tibiae and a more strongly oval lateral pronotal lobe.

Host. — Unknown.

Distribution. — Central and North India.

Material examined.

Central India, Mhow, Malwa, Capt. Boys (1, lectotype Oxford); three paralectotypes belong to other Corythoderini: *Chaetopisthes fulvoides* (1 ♀), *Termitopisthes wasmanni* (2 specimens); q.v. India bor. (1 ♀, BM).

3. **Chaetopisthes (Chaetopisthes) latipes** sp. nov.

(figs. 16, 38, 59, 92, 93, 133, 153, 173)

Description (holotype, female). — Approximate length 3.7, width 1.4, height 0.9 mm. Colour light yellow-brown, shiny; pilosity pale-yellow, trichomes yellow-brown.

Cephalic contours, fig. 16. Clypeus with reflexed lateral margin, medially subdentate; clypeal surface with some shallow foveoles; clypeogenal suture indistinct, vaguely costate. Clypeofrontal disc evenly convex, strongly curving down rostrad. Genal and frontal punctation sparse, several punctures and clypeal foveoles with fine erect seta, length 0.08-0.12 mm.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 38, 59. Pronotal disc medially slightly impressed, with well-defined narrow median sulcus, extending over basal 0.7 of disc; lateral sulcus wide, deep, well defined, extending onto shallowly concave anterolateral corner; lateral lobe of pronotum bean-shaped with pointed caudal end; pronotum in dorsal view laterally constricted about halfway its length. Basal paramedian lobe only subdistinct; caudal impression very shallow; further details pronotal base and trichomes, fig. 59. Pronotal disc with numerous very short, somewhat curled setae, each placed in minute puncture; setae ca. 0.03 mm long, densities posteriorly on pronotal disc ca. 80 setae/0.25 sq. mm; longer erect setae (0.07-0.12 mm) sparse, placed in larger punctures. Scutellum shortly triangular, apex acute.

Elytral contours, disposition of sulci, trichomes, figs. 92, 93. Elytron with 5 sulci extending from base to near apex; sulcus 1 halfway elytral length more or less effaced; others distinct, continuous, rather deep, especially near base; reflexed lateral surface of elytron narrow, base shortly sulcate. Interval 1 weakly convex over most of its length; other elytral intervals rather strongly convex; basal points acuminate, not dentiform; intervals 3 and 4 confluent and inflated at apex, forming the apical lobe; sutural margin of interval 1 ending in a more or less transparent, pointed flap. Intervals each with a row of long hairs placed far apart, ca. 8-12 hairs on each interval. Apical trichome placed on pronounced apical lobe, consisting of dorsal and ventral row of long (0.2-0.3 mm), serried bristles; in caudal view arranged in elongate, transverse ellips.

Ventral side, fig. 133. Apex of prosternal apophysis shortly rounded off; ventral surface of apophysis concave, somewhat uneven; posterior part of prosternum convex, unmodified. Prosternum shallowly concave. Metasternal disc convex, wings and anterior surface of disc strongly declivous. Abdominal sternites greatly foreshortened, largely because of enormous expansion of anal sternite (fig. 133); general surface of anal sternite evenly convex. Pygidium evenly convex. Most of derm of pectus and abdomen abundantly punctate (× 100), many punctures with a short semierect seta, length 0.03 mm, and with sparse long, erect setae, length 0.10-0.15 mm.

Contours of legs, figs. 153, 173. Fore tibia with apical denticle only, and with narrow transparent membrane along internal side. Base of fore femur with broad dentiform protrusion, trochanter unmodified. Fore-femoral and fore-coxal bristle rows, fig. 153. Fore tarsus complanate. Middle and hind tibiae very strongly dilated, complanate, lateral borders lined with transparent membranes; terminal spurs diminutive. Middle and hind tarsi complanate, approximate length proportions of middle tibia and tarsal segments 1-5: 83/22/10/9/8/16. Middle and hind femora strongly complanate, their axis distinctly curved upwards, sides (in ventral view) weakly convex, distal-posterior curve with transparent membrane. Legs all abundantly punctate, many punctures with fine, short or long, erect to semierect seta.

Some measurements in mm (explanation, figs. 6-9):

A 0.45	C 0.88	E 1.22	G 0.91	J 0.68	L 0.02	N 0.61
B 0.58	D 1.03	F 0.96	H 2.18	K 0.54	M 0.47	

Sexual dimorphism. — Differences as mentioned in generic diagnosis. Females with longer hind tibia: 0.85 mm (♂), 0.95 mm (♀). Median breadth anal sternite: 0.30 mm (♂), 0.61 mm (♀). Total length 3.4 mm (♂), 3.7-3.8 mm (♀).

Identification. — A close relative of *Chaetopisthes fulvus* and *oberthueri*. Differences as mentioned in the key, the synoptic table, and the identification notes under *fulvus*.

Host. — Unknown.

Distribution. — North India.

Material examined.

Fyzabad, Unit. Prov., India, R. W. G. Hingston (♀ holotype; 1 ♀ 1 ♂, paratypes; BM).

4. **Chaetopisthes (Chaetopisthes) oberthueri** sp. nov.

(figs. 17, 36, 60, 94, 95, 134, 152, 171)

Description (holotype, female). — Approximate length 3.1, width 1.1, height 1.0 mm. Colour light yellow-brown, shiny; pilosity pale yellow, trichomes yellow-brown.

Cephalic contours, fig. 17. Clypeus with reflexed lateral margin, medially subdentate; clypeal surface without distinct impressions; clypeogenal suture indistinct, vaguely costate. Clypeofrontal disc evenly convex, curving down rostrally. Cephalic surface abundantly punctate-setose, setae fine, erect, length ca. 0.08 mm.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 36, 60. Pronotal disc medially slightly impressed, with well-defined median sulcus, extending over basal 0.7 of disc, basal 0.4 broadened caudad; lateral sulcus wide, deep, well defined, extending onto shallowly concave antero-lateral corner; lateral lobe of pronotum bean-shaped, with pointed caudal end; pronotum in dorsal view laterally constricted halfway its length. Basal paramedian lobe well pronounced; further details pronotal base and trichomes, fig. 60. Pronotal disc with numerous short, more or less curled setae, each placed in a minute puncture, ca. 0.04 mm long, very dense posteriorly on pronotal disc (ca. 40/0.1 sq. mm); longer erect setae (0.07-0.17 mm) sparse, mainly laterally on pronotal declivity, placed in larger punctures. Scutellum shortly triangular, apex acute.

Elytral contours, disposition of sulci, trichomes, figs. 94, 95. Elytron with 5 sulci extending from base to near apex; sulci all continuous, rather deep, especially near base; reflexed lateral surface of elytron narrow, unmodified. Interval 1 very weakly convex, basally narrow, poorly pronounced; other intervals moderately convex; basal points subobtuse; intervals 3-5 confluent and inflated at apex, forming the apical lobe; sutural margin of interval 1 apically unmodified. Intervals as well as sulci abundantly finely setose

(× 20). Apical trichome placed on pronounced apical lobe, consisting of a distinct small tuft of long (0.1-0.15 mm), serried bristles.

Ventral side, fig. 134. Apex of prosternal apophysis shortly rounded off; ventral surface of apophysis concave, somewhat uneven; posterior part of prosternum convex, unmodified. Mesosternum shallowly concave. Metasternal disc flattened, wings and anterior part curving down. Abdominal sternites greatly foreshortened, largely because of enormous expansion of anal sternite (fig. 134); general surface of anal sternite evenly convex. Pygidium evenly convex. Most of derm of pectus and abdomen abundantly punctate (× 100), many punctures with a short semierect seta, length 0.03 mm, or with a long erect seta, length ca. 0.1 mm.

Contours of legs, figs. 152, 171. Fore tibia with apical denticle and indication of anteapical denticle, without transparent membrane. Base of fore femur lobate, trochanter unmodified. Fore-femoral and fore-coxal bristle rows, fig. 152. Fore tarsi complanate. Middle and hind tibiae very strongly dilated, complanate, only base of internal borders lined with transparent membrane; terminal spurs diminutive. Middle and hind tarsi complanate, approximate length proportions of hind tibia and tarsal segments 1-5: 55/13/4/4/4/8. Middle and hind femora strongly complanate, their axes strongly curved upwards, sides (in ventral view) weakly convex, with slight transparent membrane. Legs all abundantly punctate-setose.

Some measurements in mm (explanation, figs. 6-9):

A 0.33	C 0.86	E 1.18	G 0.90	I 2.05	K 0.49	M 0.52
B 0.57	D 1.10	F 0.95	H 1.80	J 0.75	L 0.03	N 1.37

Identification. — Also a species belonging in the group around *Chaetopisthes fulvus*. Differences with *latipes* mentioned in the key and the synoptic table.

Host. — Unknown.

Distribution. — South India.

Material examined.

Holotype only, from "Ramnad/Hindoustan" [= Ramanthapuram], from the R. Oberthür collection in the Paris museum.

Note. — Named after René Oberthür (1852-1944), former owner of the enormous beetle collection that continues to surprise coleopterists visiting the Paris museum.

5. **Chaetopisthes (Chaetopisthides) sulciger** Wasmann

(fig. 61)

Chaetopisthes sulciger Wasmann, 1899a: 123 (note); Wasmann 1899b: 152 (diagnosis); Wasmann, 1903a: 149 (comparison); Kolbe, 1909: 56, 62 (notes); Schmidt, 1910: 140 (note); Wasmann, 1911: 402 (note); Wasmann, 1918: 15 (diagnosis); Schmidt, 1922: 546 (key), 547 (diagnosis); Wasmann, 1923: 579 (comparison); Balthasar, 1964: 629 (key & diagnosis).

Chaetopisthes tibialis Wasmann, 1923: 579 (diagnosis); Champion, 1923: 575 (diagnosis), 576 (comparison); Balthasar; 1964: 629 (key), 630 (diagnosis).

Notes. — Wasmann had two specimens of his *sulciger*, which are both in his own collection. The ♀ syntype is here designated as lectotype; labels as follows: "Type" (red label, black print), "*Chaetopisthes/(Chaetopisthides)/sulciger* Wasm./Typus" (red ink, Wasmann's handwriting), "Sangamner/(Ahmednagar)" (black, ditto), "b. *Odontotermes/wallonensis* Mitt/en im Nest", "Heim/No. 11" (both black ink, ditto); with termite worker; paralectotype ♂ same labels, except that the red type label and the indication "Typus" on the name label fail.

Chaetopisthes tibialis Wasmann was based on the following differences with *sulciger*: colour a clearer yellowish-red, the large punctures of the elytral interval more distinct, middle and hind tibiae much longer and broader. We compared the specimens concerned and could only establish the colour difference. There is also a slight difference in the shape of the median pronotal sulcus, which is approximately parallel-sided in the *tibialis* specimen, the sides being somewhat divergent in *sulciger*. These differences seem to fall within the variation of a single species, *sulciger*.

Sexual dimorphism. — Sexual differences include those mentioned in the generic diagnosis. Female with elytra and abdomen much larger than male. Median breadth anal sternite 0.44-0.46 (♂), 0.93 mm (♀). Total length 3.7-3.8 (♂), 4.1 mm (♀).

Identification. — Presumably related to *Chaetopisthes popei*, mainly because of the pronotal characters and those of the legs. Besides the characters mentioned in the key and the synoptic table it differs from *popei* in having a narrower head and a narrower prontal disc, a less elongated lateral lobe, and an only sparse elytral pilosity. Colour yellow-brown.

Host. — In 1898 *Ch. sulciger* was found, together with *Corythoderus gibbiger*, in the middle of a nest of *Odontotermes wallonensis* (Wasmann). *Ch. "tibialis"* was only attracted to light.

Distribution. — South India.

Material examined.

Lectotype and paralectotype as specified above; Ahmednagar, Heim (♂ "cotype" of *sulciger*, BM); Kendal, Ahmednagar Distr., vii.1903, Heim (1 ♂, W); Khandesh, S. India, T. R. Bell (♂ holotype of *tibialis*, W; 1 ♂ 1 ♀, BM, apparently not seen by Wasmann).

6. **Chaetopisthes (Chaetopisthides) popei** sp. nov.

(figs. 18, 40, 62, 96, 97, 135, 154, 174)

Description (holotype, male). — Approximate length 3.9, width 1.6, height 1.3 mm. Colour red-brown, shiny; pilosity pale-yellow, trichomes yellow-brown.

Cephalic contours, fig. 18. Clypeus with reflexed lateral margin, medially subdentate, clypeal surface rugulate-punctate; clypeogenal suture vaguely costate. Clypeofrontal surface distinctly curved down rostrad. Genal and frontal punctation distinct, abundant; each puncture, also the clypeal ones, with a fine erect seta, length ca. 0.05 mm, clypeal setae slightly shorter.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 40, 62. General surface of pronotum slightly convex; median sulcus extending over basal 0.6 of disc, its depth increasing caudad; lateral sulcus deep, well defined, extending onto concave anterolateral corner; lateral lobe pronounced, elongated with largest breadth in anterior part; pronotum (dorsal view) slightly constricted laterally halfway its length; anterolateral parts of pronotum somewhat dilated. Basal paramedian lobe small but distinct; caudal impression narrow and shallow; further details pronotal base and trichomes, fig. 62. Pronotal punctation and pilosity similar to those on head, ca. 35 setae/0.25 sq. mm, length 0.04-0.06 mm; micropunctation abundant (× 100). Scutellum triangular, apex acute.

Elytral contours, disposition of sulci, trichomes, figs. 96-97. Elytron with 5 sulci extending from base to near apex; all sulci distinct and deep near base, narrowing and effaced towards apex; base of reflexed lateral surface of elytron slightly concave. Surface of intervals convex near base, flattened towards apex; basal points obtuse, not dentiform; sutural margin of interval 1 with slight transparent flap. Intervals, distal and lateral declivities, with punctation and pilosity similar to those on pronotum, also with abundant micropunctation (× 100). Basal points of intervals with some longer setae (ca. 0.1 mm). Apical trichome placed on internal side of pronounced apical lobe, trichome small, directed medially.

Ventral side, fig. 135. Apex of prosternal apophysis rounded off; ventral surface of apophysis concave with fine longitudinal grooves; posterior part of prosternum with a strong bulbous elevation. Intercoxal part of mesosternum slightly convex, otherwise unmodified; metasternum slightly convex,

anterior surface of wings and disc strongly declivous. Abdominal sternites greatly foreshortened, largely because of enormous expansion of anal sternite. General surface of anal sternite slightly convex. Pygidium evenly convex. Most of derm of pectus and abdomen fairly abundantly punctate, punctures small, many of them with an erect to semierect short seta, length of pectoral setae ca. 0.02-0.04 mm, length of abdominal setae ca. 0.03-0.10 mm. Meso- and metasternum with few longer setae, ca. 0.10-0.15 mm, in larger punctures.

Contours of legs, figs. 154, 174. Fore tibia with one distinct apical denticle, and a vague subapical one; superior surface of fore tibia strongly convex. Base of fore femur with broad, dentiform protrusion, trochanter unmodified. Fore-femoral and fore-coxal bristle rows, fig. 154. Fore tarsi complanate. Middle and hind tibiae strongly dilated, complanate; proximal-posterior curve with narrow transparent membrane; terminal spurs fine but distinct. Middle and hind tarsi complanate, approximate length proportions hind tibia and tarsal segments 1-5: 120/34/9/8/8/17. Middle and hind femora strongly complanate, their axis distinctly curved upwards, with almost straight parallel sides, distal-posterior curve with very narrow transparent membrane. Most of legs abundantly punctate, many punctures with fine erect to semierect seta of variant length (0.03-0.08 mm).

Some measurements in mm (explanation, figs. 6-9):

A 0.45	C 1.02	E 1.33	G 1.10	I 2.45	K 0.65	M 0.55
B 0.67	D 1.26	F 1.21	H 2.35	J 0.75	L 0.05	N 0.40

Variation. — Slight differences in colour. Total length 3.9-4.2 mm (♂).

Identification. — Presumably related to *Chaetopisthes sulciger*, judged from the various pronotal characters and the shape of the legs. Besides the characters mentioned in the key and the synoptic table it differs from *sulciger* in having a broader head, a broader pronotal disc, a more elongated lateral pronotal lobe, and a more abundant elytral pilosity.

Host. — Unknown.

Distribution. — South India.

Material examined.

Chikkaballapura, S. India, T. V. Campbell (♂ holotype, BM); Kodai Kanal, S. India, T. V. Campbell (1 ♂ paratype, BM); Pongemia Iwigs, Sidlaghata, iv.1957, K. S. S. Sastry (1 ♂ paratype, L).

Note. — Dedicated to our fellow coleopterist of the BM, R. D. Pope, who kindly assisted with the loan of the unstudied specimens kept in his institution.

7. **Chaetopisthes (Neochaetopisthes) longulus** Wasmann
(fig. 63)

Wasmann, 1923: 581 (diagnosis); Champion, 1923: 577 (note); Balthasar, 1964: 628 (key), 632 (diagnosis).

Note. — Wasmann based his diagnosis on one ♀ specimen, now in the BM. The two specimens labelled "*longulus* Wasm." (handwriting of Champion), are undoubtedly identical to the type.

Sexual dimorphism. — Differences as mentioned in the generic diagnosis. Median breadth anal sternite ca. 0.35 (♂), ca. 0.55 mm (♀). Total length 3.3 (♂), 3.7 mm (♀).

Identification. — *Chaetopisthes longulus* has a strong resemblance to *saetiger*, mainly with respect to the elytral characters. Besides the differences mentioned in the key and the synoptic table, *longulus* has a more rugulate-punctate clypeus and less luxuriant apical elytral trichomes.

Host. — Unknown, captured at light.

Distribution. — North India.

Material examined.

Tanakpur, Haldwani Dn., 15.v.1923, H. G. Champion (1 ♂, BM); Haldwani Dist., Kumaon, v.1923, H. G. Champion (1 ♀, BM); ditto but without date (♀ holotype, BM).

8. **Chaetopisthes (Neochaetopisthes) saetiger** sp. nov.
(figs. 19, 44, 64, 98, 99, 136, 155, 175)

Description (holotype, female). — Approximate length 3.2, width 1.2, height 1.1 mm. Colour light yellow-brown, shiny; pilosity pale; trichomes yellow-white.

Cephalic contours, fig. 19. Clypeus with weakly reflexed, slightly broadened lateral margin, medially subdentate; clypeal surface with a few large foveoles and abundant small punctures; clypeogenal suture vaguely costate, laterally slightly swollen. Clypeofrontal surface slightly convex, distinctly curved down rostrad. Gena and frons with sparse, vague punctation, each puncture bearing a long erect seta, length ca. 0.10 mm; micropunctation distinct abundant, with hardly visible pilosity.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 44, 64. Pronotal disc convex with very distinct anteromedian impression; median sulcus extending to nearly basal 0.7 of disc, deep with narrow rostral part and distinctly broadened caudal part; lateral sulcus deep and broad, well defined, extending and diverging onto strongly concave anterolateral corner; lateral lobe pronounced, somewhat reniform; pronotum in dorsal view with

distinct lateral constriction. Basal paramedian lobe distinct; caudal impression very narrow, shallow; further details pronotal base and trichomes, fig. 64. Pronotal disc with punctation and pilosity similar to those on head; densities of long setae on disc ca. 12/0.25 sq. mm. Scutellum triangular.

Elytral contours, disposition of sulci, trichomes, figs. 98, 99. Elytron with 5 sulci extending from base to near apex, well defined, deep and very broad; reflexed lateral surface small, basal part distinctly sulcate. Intervals narrow, with parallel sides, surface strongly convex; basal points obtuse, slightly elevated. Sutural margin of interval 1 apically broadened, ending in a pointed transparent flap. Interval 2 ending subapically; intervals 3 and 4 somewhat inflated at apex, partly forming the apical lobe. Intervals and lateral declivity sparsely punctate, each puncture with long erect seta, length ca. 0.10 mm, their numbers roughly 10-15 setae per interval; elytra also with a secondary pilosity, except on intervals 1-3, of very short appressed setae. Apical trichome very luxuriant, placed on distinctly pronounced apical lobe, largely formed by apex of interval 1, apicomedian border and apicolateral border; consisting of serried bristles, long ca. 0.30 mm, in caudal view arranged approximately in a circle.

Ventral side, fig. 136. Prosternal apophysis narrow, apex rounded off; ventral surface slightly concave and with fine longitudinal grooves; posterior part of prosternum convex. Intercoxal part of mesosternum narrow, very slightly convex. Metasternum rather convex, wings slightly declivous. Abdominal sternites greatly foreshortened, largely because of enormous expansion of anal sternite. General surface of anal sternite evenly convex; pygidium ditto. Derm of pectus and abdomen with only a few long erect setae, length ca. 0.12 mm; further more derm of pectus sparsely, abdomen abundantly set with short appressed setae, each placed in a very small puncture.

Contours of legs, figs. 155, 175. Fore tibia with two distinct external denticles. Base of fore femur with narrow, extended protrusion, trochanter slightly produced. Fore-femoral and fore-coxal bristle rows, fig. 155. Fore tarsi complanate. Middle and hind tibiae long, slender, complanate, with distinctly curved sides; no transparent membrane; terminal spurs diminutive. Middle and hind tarsi complanate and slender; approximate length proportions hind tibiae and tarsal segments 1-5 104/26/11/10/8/18. Middle and hind femora complanate, long and slender, their axis distinctly curved upwards; sides (in ventral view) more or less subparallel; distal-posterior curve with small transparent membrane. Most of femora sparsely set with long erect setae (length ca. 0.10 mm) and short semierect setae. Tibiae and tarsi with abundant pilosity, length of erect to semierect setae ca. 0.05 mm.

Some measurements in mm (explanation, figs. 6-9):

A 0.40	C 0.78	E 1.07	G 0.79	I 1.85	K 0.43	M 0.44
B 0.56	D 0.90	F 0.82	H 1.72	J 0.60	L 0.03	N 0.53

Variation. — The specimen from Visakhapatnam Dist. is much larger than holotype; it has a less extended and narrower basal protrusion on the fore femur and hardly visible secondary pilosity on the elytra. Median breadth anal sternite 0.53 and 0.63 mm (♀). Total length 3.2 and 3.5 mm (♀).

Identification. — *Chaetopisthes saetiger* strongly resembles *longulus*. Differences already mentioned in the key, the synoptic table and the identification notes under *longulus*.

Host. — Unknown.

Distribution. — North and East India.

Material examined.

Fyzabad, Unit. Prov., India, R. W. G. Hingston (♀ holotype, BM); Chipurupalli, Vizagapatam Dist., India, R. S. Patuck (1 ♀ paratype, BM).

9. **Chaetopisthes (Neochaetopisthes) singalensis** Champion

(fig. 65)

Champion, 1923: 575 (diagnosis); Wasmann, 1923: 580 (comparison); Balthasar, 1964: 628 (key), 631 (diagnosis).

Notes. — Champion based his diagnosis on one specimen, but sexed it incorrectly. The specimen is not a female but a male, as appears from the small transparent flaps on the fore tarsi and the lack of a strong expansion of the anal sternite. The holotype is somewhat damaged, with a hole in the metasternum caused by removed pin. Length 3.3 mm (♂).

Identification. — In the key this species is placed near *Chaetopisthes simplicipes, semisulcatus* and *ventriosus*, mainly on account of the resemblance in pronotal trichomes, the vague caudal impression, the subapical confluence of elytral intervals 2 and 3, and the shape of the legs. Some characters, additional to those in the key and the synoptic table, are the relatively small, oval lateral lobe of the pronotum, the rather strongly convex elytra, and the very small transparent membranes on middle and hind femora and tibiae.

Host. — Unknown.

Distribution. — Sri Lanka.

Material examined.

Ceylon, Trincomali, 8.vi.1907, Bainbrigge Fletcher (♂ holotype, BM).

10. **Chaetopisthes (Neochaetopisthes) simplicipes** Gestro

(fig. 66)

Gestro, 1891: 907 (note and comparison); Wasmann, 1894: 155 (note); Wasmann, 1899b: 156 (note); Schmidt, 1910: 140 (note); Wasmann, 1918: 17 (note); Schmidt, 1922: 548 (note); Champion, 1923: 576 (diagnosis); Wasmann, 1923: 580 (diagnosis); Balthasar, 1964: 628 (key), 632 (diagnosis).

Notes. — Gestro was the first to publish the name of this species, comparing it with others. L. Reiche seems to have coined the name *simplicipes*, but he never published a diagnosis. Clearly *Chaetopisthes simplicipes* was not published by Gestro as a nomen nudum, as stated by Balthasar (1964). Balthasar may have thought of Wasmann's footnote (1918), who suggested, unnecessarily, to abandon the name *simplicipes* altogether.

Champion (1923) based his diagnosis of *simplicipes* on two specimens, and incorrectly sexed them as a pair. Both specimens were studied by us, and obviously two different species are involved. The "immature ♀" of Champion (ex Reiche), which is (Champion, 1923): "presumably referable to the species in M. Oberthür's Collection, mentioned by Dr. Gestro in his account of *C. termiticola*", indeed corresponds to the holotype in the Oberthür collection, now in Paris. Champion's specimen is a ♀ indeed, but why it should be "immature" is not clear. The "mature ♂" of Champion, on which parts of his and Wasmann's diagnoses and their figure (1923) were based, clearly is a different, new species, which is further below described as *Ch. angustipes*, and is in fact a ♀.

Variation. — Pronotal disc variably strongly impressed along median sulcus; elytral sulcus 5 extending to halfway elytral length, or vaguely to near apex.

Sexual dimorphism. — The sexual differences are only those mentioned in the generic diagnosis. From a few specimens genitalia were extracted. Median breadth anal sternite: 0.25-0.35 mm (♂); 0.50-0.60 mm (♀). Total length: 2.7-3.1 (♂); 2.9-3.4 mm (♀).

Identification. — Presumably most closely related with *Chaetopisthes ventriosus* and *Ch. semisulcatus* judged from the resemblance in pronotal trichomes, the vague caudal impression, the slightly convex elytral intervals with a subapical confluence of intervals 2 and 3, and the shape of the legs. Some characters, additional to those in the key and the synoptic table, are the distinctly rounded caudal border of pronotum, the rather large oval lateral lobe, the weakly convex elytra, and the rather abundant erect setae over nearly the whole body.

Host. — Unkown.

Distribution. — North India.

Material examined.

India bor., Laferté (♀ holotype, in R. Oberthür, ex D. Sharp, Paris); India bor., ex coll. Reiche (1 ♀, BM); India, Bihar prov., Ranchi, Namkum, 1928 (11 ♂ 11 ♀, BM; 1 ♂ 1 ♀, L).

11. **Chaetopisthes (Neochaetopisthes) ventriosus** sp. nov.

(figs. 20, 41, 67, 100, 101, 137, 156, 176)

Description (holotype, female). — Approximate length 3.4, width 1.30, height 1.1 mm. Colour light brown, feebly shiny; pilosity pale-yellow, trichomes light brown.

Cephalic contours, fig. 20. Clypeus with reflexed lateral margin, medially subdentate; clypeal surface rugulate-punctate; clypeogenal suture vague, laterally slightly swollen. Clypeofrontal surface evenly convex, distinctly curved down rostrad. Genal and frontal punctation irregular, rather abundant, most punctures (also those on clypeus) with fine erect seta, length ca. 0.06 mm. Micropunctation on head abundant.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs, 41, 67. General surface of pronotum slightly convex, with very shallow anteromedian impression; median sulcus extending over basal 0.8 of disc, caudally increasing in depth and breadth; lateral sulcus rather deep, moderately defined, extending onto concave anterolateral corner; lateral lobe a pronounced elongate ellips; pronotum (dorsal view) laterally constricted halfway its length. Basal paramedian lobe slightly pronounced caudal impression; further details pronotal base and trichomes, fig. 67. Pronotal disc abundantly punctate, punctures distinct, each with fine erect seta, length 0.06-0.09 mm, densities on pronotal disc ca. 35 setae/0.25 sq. mm; pronotal disc further with numerous, very short, curled setae, each placed in minute puncture. Scutellum triangular, apex ca. 80°.

Elytral contours, disposition of sulci, trichomes, figs. 100, 101. Elytron with 5 sulci, all except sulcus 2 extending from base to near apex; sulci 1-4 rather deep, broad, and well defined near base, slightly flattened and, except sulcus 1, narrowing towards apex; sulcus 5 narrow over total length; base of reflexed lateral surface of elytron slightly concave. Intervals weakly convex, broad; basal points obtuse, not dentiform; intervals 2 and 3 confluent near apex, intervals 3 and 4 confluent and somewhat inflated at apex, forming the apical lobe; sutural margin of interval 1 with slightly extended, pointed tip. Intervals and lateral declivity with punctation and pilosity similar to that on pronotum, but with more abundant micropilosity. Apical trichome placed on slightly pronounced apical lobe and apex of interval 1, consisting of rows long (0.15-0.20 mm), serried bristles, in caudal view arranged approximately in a circle.

Ventral side, fig. 137. Apex of prosternal apophysis angular rounded off; ventral surface of apophysis concave, medially slightly costate; posterior part of prosternum convex; pronotal trichomes in ventral view hardly visible. Intercoxal part of mesosternum convex, otherwise unmodified. Metasternum slightly convex. Abdominal sternites greatly foreshortened, largely because of enormous expansion of anal sternite; general surface of anal sternite slightly convex, anterior end covered by hind coxae. Pygidium evenly convex. Derm of pectus with only a few long hairs (ca. 0.15 mm) and a hardly visible micropilosity (× 100) of very short, appressed setae. Abdomen sparsely punctate, punctures with long, erect to semierect setae, length 0.08-0.12 mm; also with micropunctation and hardly visible micropilosity.

Contours of legs, figs. 156, 176. Fore tibia with two distinct external denticles. Base of fore femur with dentiform protrusion, trochanter unmodified. Fore-femoral and fore-coxal bristle rows, fig. 156. Fore tarsi complanate. Middle and hind tibiae slender, strongly complanate, with weakly curved sides; proximal-posterior curve with narrow transparent membrane; terminal spurs diminutive. Middle and hind tarsi complanate; approximate length proportions hind tibia and tarsal segments 1-5 105/28/11/10/8/19. Middle and hind femora strongly complanate, their axis distinctly curved upwards, with almost straight, subparallel sides; distal-posterior curve with small transparent membrane. Most of legs with abundant punctation and pilosity, length of erect to semierect setae mostly ca. 0.06 mm.

Some measurements in mm (explanation, figs. 6-9):

A 0.42	C 0.79	E 1.14	G 0.92	I 1.93	K 0.45	M 0.45
B 0.57	D 0.95	F 0.97	H 1.85	J 0.64	L 0.03	N 0.60

Identification. — Presumably most closely related to *Chaetopisthes semisulcatus*, judged from the pronotal trichomes, the shape of the legs, and especially from the elytral features (including the broad first sulcus which reaches the elytral apex). Differences with *semisulcatus* already mentioned in the key and the synoptic table.

Host. — Unknown, captured at light.

Distribution. — Northwest India.

Material examined.

India, Bihar Prov., Ranchi, Namkum, 1928 (♀ holotype, BM).

12. **Chaetopisthes (Neochaetopisthes) semisulcatus** sp. nov.

(figs. 21, 42, 68, 102, 103, 138, 157, 177)

Description (holotype, male). — Approximate length 2.9, width 1.05, height 0.9 mm. Colour yellow-brown, shiny; pilosity pale; trichomes yellow-brown.

Cephalic contours, fig. 21. Clypeus with reflexed, slightly broadened lateral margin, medially dentate; clypeal surface with rugulate punctation and with abundant small punctures; clypeogenal suture vaguely costate, laterally swollen. Clypeofrontal surface slightly convex, distinctly curved down rostrad. Frontal punctation abundant, genal punctation sparse, most punctures with erect seta, length ca. 0.06 mm; also with distinct micropunctation.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 42, 68. Pronotal disc convex, with distinct anteromedian impression; median sulcus extending over basal 0.8 of disc, deep and narrow, very slightly increasing in breadth caudally; lateral sulcus deep, well defined, widening onto strongly concave anterolateral corner; lateral lobe pronounced, oblong-oval, with pointed caudal end; pronotum (dorsal view) with distinct lateral constriction. Basal paramedian lobe distinct, slightly extended caudally; caudal impression hardly distinguishable; further details pronotal base and trichomes, fig. 68. Pronotal disc with abundant punctation, punctures distinct, densities on disc ca. 60 punctures/0.25 sq. mm, each with an erect seta, length ca. 0.06 mm. Also with distinct, abundant micropunctation associated with small curled setae. Scutellum triangular.

Elytral contours, disposition of sulci, trichomes, figs. 102, 103. Elytron with 5 rather shallow but distinct sulci; sulci 1-4 extending from base to near apex, sulcus 5 halfway elytral length more or less effaced; reflexed lateral surface of elytron unmodified. Intervals with approximately parallel sides, except interval 1; surface slightly convex; basal points obtuse, slightly elevated. Sutural margin of interval 1 ending in a small transparent flap. Intervals 2 and 3 confluent subapically. Intervals and lateral declivity with about punctation and pilosity similar to those on pronotal disc, micropunctation and pilosity over entire elytral surface. Apical trichome placed on distinctly pronounced apical lobe and apical median side of elytron; consisting of serried bristles, long ca. 0.15 mm, in caudal view arranged approximately in an ellips.

Ventral side, fig. 138. Apex of prosternal apophysis rounded off; ventral surface of apophysis concave, slightly costate medially; posterior part of prosternum strongly convex. Intercoxal part of mesosternum slightly convex, strongly tapering. Metasternum rather convex, wings strongly declivous.

Abdominal sternites greatly foreshortened, largely because of enormous expansion of anal sternite; anterior end of this expansion very broad, general surface evenly convex. Pygidium also evenly convex. Most of derm of pectus and abdomen with sparse, long, erect setae, length ca. 0.10 mm; also with abundant very short, appressed setae, ca. 0.02 mm; each placed in small puncture.

Contours of legs, figs. 157, 177. Fore tibia with two distinct external denticles. Base of fore femur with large dentiform protrusion, trochanter slightly produced. Fore-femoral and fore-coxal bristle rows, fig. 157. Fore tarsi complanate. Middle and hind tibiae strongly complanate, slightly dilated and slightly tapering to apex; most of internal side lined with transparent membrane; terminal spurs fine but distinct. Middle and hind tarsi complanate, slender; approximate length proportions hind tibia and tarsal segments 1-5: 86/26/11/10/9/16. Middle and hind femora complanate, their axis distinctly curved upwards; sides (in ventral view) more or less subparallel; distal-posterior curve with small tranparent membrane. Most of legs with fairly abundant punctation and pilosity, setae erect to semierect, length 0.02-0.05 mm.

Some measurements in mm (explanation, figs. 6-9):

A 0.39	C 0.77	E 1.06	G 0.82	I 1.69	K 0.42	M 0.36
B 0.53	D 0.89	F 0.88	H 1.57	J 0.51	L 0.02	N 0.39

Variation. — The paratype does not have the clypeus with reflexed lateral margins and a median denticle; these may be completely worn off. Median breadth anal sternite 0.39-0.40 mm (♂). Total length 2.9-3.0 mm (♂).

Identification. — Presumably most closely related with *Chaetopisthes ventriosus*; see identification notes under that species.

Host. — Unknown.

Distribution. — East India.

Material examined.

Fyzabad, Unit. Prov., India, R. W. G. Hingston (♂ holotype, 1 ♂ paratype, BM); there are 7 more specimens of the same series in the BM; not examined in detail, excluded from type-series.

13. **Chaetopisthes (Neochaetopisthes) angustipes** sp. nov

(figs. 22, 43, 69, 104, 105, 139, 158, 178)

Chaetopisthes (Neochaetopisthes) simplicipes; Champion & Wasmann, 1923: 576 (diagnosis), 580 (confirmation); misidentification.

Description (holotype, female). — Approximate length 3.7, width 1.4, height 1.1 mm. Colour light yellow-brown, shiny; pilosity pale, trichomes yellow and yellow-brown.

Cephalic contours, fig. 22. Clypeus with distinctly broadened, strongly reflexed lateral margin, medially subdentate; clypeal surface rugulate-punctate; clypeogenal suture vaguely costate and slightly laterally swollen. Clypeofrontal surface slightly convex, curved down rostrad. Gena and frons sparsely punctate, most punctures (also those on clypeus), with erect to semierect seta, length ca. 0.04-0.07 mm. Micropunctation hardly visible.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 43, 69. Pronotal disc convex with a slight anteromedian impression; median sulcus extending over basal 0.75 of disc, rostral part very narrow and rather shallow, caudal part distinctly broadened and deeper; lateral sulcus broad, rather deep, moderately defined, widening onto concave anterolateral corner; lateral lobe pronounced, oval; lateral sides (dorsal view) distinctly constricted halfway. Basal paramedian lobe slightly pronounced, not extended; caudal impression broad, slightly concave; further details pronotal base and trichomes, fig. 69. Pronotal disc with punctation and pilosity similar to those on head; densities on disc ca. 16 setae/0.25 sq. mm. Micropunctation also as on head. Scutellum triangular.

Elytral contours, disposition of sulci, trichomes, figs. 104, 105. Elytron with 5 sulci extending from base to near apex, sulci narrow, moderately defined shallow; reflexed lateral surface broad, basal part vaguely sulcate. Intervals broad, slightly convex; basal points obtuse, not elevated. Sutural margin of interval 1 with slightly extended, obtuse apical end. Intervals 2 and 3 vaguely confluent subapically. Intervals and lateral declivity with punctation similar to those on head and pronotum; also with sparsely set short appressed setae. Apical trichome rather small, placed on well developed apical lobe, consisting of serried bristles, long ca. 0.15 mm, in caudal view arranged approximately in a circle.

Ventral side, fig. 139. Apex of prosternal apophysis more or less rounded off, ventral surface of apophysis concave, uneven; posterior part of prosternum strongly convex. Intercoxal part of mesosternum narrow and virtually flat. Metasternum convex, wings slightly declivous. Abdominal sternites greatly foreshortened, largely because of enormous expansion of anal sternite; general surface of anal sternite evenly convex; pygidium also evenly convex. Most of derm of pectus and abdomen, except pygidium, with sparse long, erect setae, length ca. 0.10 mm, each placed in puncture; also with sparse short semierect or appressed setae; pygidium with abundant long and short, erect to semierect setae.

Contours of legs, figs. 158, 178. Fore tibia with distinct external denticles. Base of fore femur with protrusion, trochanter also produced, jointly giving a bidentate impression. Fore-femoral and fore-coxal bristle rows, fig. 158. Fore tarsi complanate. Middle and hind tibiae complanate, rather slender, with more or less parallel, very weakly curved sides; proximal-posterior curve with narrow transparent membrane; terminal spurs fine but distinct. Middle and hind tarsi complanate and slender; approximate length proportions hind tibia and tarsal segments 1-5: 95/30/11/9/8/16. Middle and hind femora complanate, long and slender with more or less subparallel sides, their axis distinctly curved upwards; distal-posterior curve with small transparent membrane. Femora with sparse, tibiae and tarsi with abundant pilosity; setae erect to semierect, length 0.03-0.08 mm.

Some measurements in mm (explanation, figs. 6-9):

A 0.35	C 0.84	E 1.22	G 0.87	I 2.37	K 0.47	M 0.56
B 0.57	D 1.03	F 0.87	H 2.33	J 0.71	L 0.03	N 0.78

Identification. — The position of *Chaetopisthes angustipes* is not entirely clear. With respect to pronotal features it most resembles *meridionalis*, but with respect to some elytral features, including the subapical confluence of intervals 2 and 3, it more resembles *semisulcatus, ventriosus* and *simplicipes*. In addition to the characters mentioned in the key and the synoptic table, *angustipes* is also distinguished by the following features: clypeus with strongly reflexed lateral margin; well-pronounced, oval lateral lobe; distinct trichomes on paramedian lobe; small, mainly medially directed apical elytral trichomes.

Host. — Unknown.

Distribution. — South India.

Note. — This specimen was formerly considered the male of *Ch. simplicipes* (q.v.) by Champion & Wasmann (1923).

Material examined.

Nilgiri Hills, in valley, 3500', H. L. Andrewes (♀ holotype, BM).

14. **Chaetopisthes (Neochaetopisthes) meridionalis** sp. nov.

(figs. 24, 45, 71, 110, 111, 141, 160, 180)

Description (holotype, female). — Approximate length 3.4, width 1.35, height 0.9 mm. Colour dark brown, shiny; pilosity pale-yellow, trichomes brown-yellow.

Cephalic contours, fig. 24. Clypeus with narrow reflexed lateral margin, medially subdentate; anterior part of clypeus slightly rugulate-punctate; clypeogenal suture vaguely costate. Clypeofrontal surface slightly convex, weakly curved down rostrally. Cephalic punctation abundant, punctures small, many with fine erect to semierect or curved seta, length ca. 0.03-0.06 mm; micropunctation abundant.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 45, 71. Pronotal disc slightly convex, with shallow anteromedian impression; median sulcus extending over basal 0.7 of disc, anterior part narrow, gradually increasing in depth and breadth caudad; lateral sulcus deep, well defined, extending onto concave anterolateral corner; lateral lobe weakly pronounced, oval, with slightly pointed caudal end; pronotum (dorsal view) laterally constricted halfway its length. Basal paramedian lobe small, but distinct; caudal impression distinct, concave; further details pronotal base and trichomes, fig. 71. Pronotal punctation and pilosity similar to those on the head; ca. 75 setae/0.25 sq. mm, length as on head; also with abundant micropunctation. Scutellum triangular.

Elytral contours, disposition of sulci, trichomes, figs. 110, 111. Elytron with five sulci extending from base to near apex; all sulci distinct, continuous, rather deep, well defined; reflexed lateral surface of elytron with short basal sulcus. All elytral intervals convex; basal points of intervals 3 and 4 somewhat acuminate, others obtuse, not dentiform; sutural margin of interval 1 ending in more or less transparent, pointed flap. Intervals and lateral declivity with abundant punctation, most punctures with fine erect to semierect seta, length ca. 0.03-0.07 mm; micropunctation abundant. Apical trichome placed on somewhat inflated, pronounced apical lobe, consisting of rows of long (ca. 0.2 mm) serried bristles, in caudal view arranged approximately in a circle.

Ventral side, fig. 141. Apex of prosternal apophysis rounded off; ventral surface of apophysis concave, medially slightly costate; posterior part of prosternum strongly convex. Mesosternum shallowly concave, intercoxal part very weakly convex. Metasternum moderately convex; anterior parts of wings and disc slightly curved down. Abdominal sternites greatly foreshortened, because of enormous expansion of anal sternite; general surface of anal sternite slightly convex. Pygidium evenly convex. Most of derm of pectus and abdomen abundantly punctate, punctures minute, many with very short, erect or curled seta; also sparse, slightly larger punctures are present, each with fine erect to semierect seta, length 0.07-0.10 mm.

Contours of legs, figs. 160, 180. Fore tibia with two distinct external denticles. Base of fore femur with broad dentiform protrusion, trochanter

unmodified. Fore-femoral and fore-coxal bristle rows, fig. 160. Fore tarsi complanate. Middle and hind tibiae strongly complanate, terminal spurs diminutive. Middle and hind tarsi complanate; approximate length proportions hind tibia and tarsal segments 1-5 97/20/10/8/7/15. Middle and hind femora complanate, their axis somewhat curved upwards, with subparallel sides; distal-posterior curve with transparent membrane. Most of legs with abundant punctation and pilosity; setae erect to semierect, length 0.04-0.09 mm.

Some measurements in mm (explanation, figs. 6-9):

A 0.35	C 0.80	E 1.15	G 0.83	I 2.20	K 0.52	M 0.49
B 0.58	D 1.00	F 0.88	H 2.10	J 0.67	L 0.04	N 0.63

Variation. — Anteromedian impression of pronotal disc not always distinct. Ventral surface of prosternal apophysis in one specimen with fine transverse grooves. Median breadth anal sternite 0.63-0.67 mm (♀). Total length 3.4-3.6 mm (♀).

Identification. — Strongly resembling *Chaetopisthes brevipes* in various characters of the pronotum, elytra and legs. Differences with *brevipes*, additional to those mentioned in the key and the synoptic table, are: the more weakly declivous clypeofrontal surface, the more distinct caudal impression of the pronotum, the smaller trichome on the sublateral pronotal angle, and the oval lateral lobe.

Host. — Unknown.

Distribution. — South India.

Material examined.

Kodai Kanal, S. India, T. V. Campbell (♀ holotype, BM); Chikkaballapura, S. India, T. V. Campbell (2 ♀ paratypes, BM, L).

15. **Chaetopisthes (Neochaetopisthes) brevipes** Wasmann

(fig. 72)

Wasmann, 1923: 580 (diagnosis); Champion, 1923: 577 (note); Balthasar, 1964: 628 (in key), 632 (diagnosis).

Note. — Wasmann based his diagnosis on a single female, now in the BM. Our drawings of the Kumaon specimen were compared with this holotype and were found to agree sufficiently for a positive identification.

Identification. — Strongly resembling *Chaetopisthes meridionalis* in various characters of pronotum, elytra, and legs. Differences with *meridionalis*, additional to those already mentioned in the key and the synoptic

table, are the more strongly declivous clypeofrontal surface, the vaguer caudal impression, the large trichome on the sublateral pronotal angle and the rather reniform lateral lobe. Colour yellow-brown.

Host. — Unknown.

Distribution. — North and East India.

Material examined.

Haldwani Divn., Kumaon, U.P., vi.1923 H. G. Champion (1 ♂, BM); Chota Nagpore, Nowatoli, vii-viii.1897, R. P. Cardon (♀ holotype, BM).

16. **Chaetopisthes (Neochaetopisthes) assmuthi** Wasmann

(fig. 73)

Chaetopisthes assmuthi Wasmann, 1911: 402 (comparison); Wasmann, 1918: 16 (key and diagnosis); Wasmann, 1923: 580 (comparisons); Balthasar, 1964: 628 (key), 630 (diagnosis).

Chaetopisthes heimi, Wasmann, 1903a: 149 (diagnosis); Wasmann, 1903b: 261 (anatomy); misidentification.

Notes. — This species was first mixed with the species treated hereafter, *Ch. heimi*. In 1911 the name *assmuthi* was proposed for one of the components of this mixture, with the note that the anatomical-histological study of "*Ch. heimi*" (Wasmann, 1903b) was actually based on *assmuthi*. Wasmann did not state the total number of specimens in his type-series, nor did he mention which specimens formed part of the type-material of *heimi*. Although eleven specimens in his collection were captured in the same period in 1902, only three specimens (all on the same pin) are labelled type by Wasmann. (One specimen in L and one in the BM were labelled "cotype" by Wasmann). The middle of the three specimens on the pin, intact, is here designated as lectotype of *assmuthi*, the two others are considered paralectotypes; labels as follows: "Assm./n.93" (white label, Wasmann's handwriting), "b.*T. obesus*/27/5.02" (ditto), "Khandala/Bombay Pres./Assmuth!" (printed), "b./*Odontotermes*/*obesus* Ramb." (Wasmann's handwriting), "TYPE" (red label with black print), "*Chaetopisthes*/ (*Neochaetopisthes*)/*Assmuthi* Wasm/Typen" (white label, handwritten by Wasmann in red ink); with termite worker; all types are female.

Variation. — Fore trochanter variably pronounced, prosternal apophysis flat to deeply concave. Some colour variation, most specimens are yellow-brown.

Sexual dimorphism. — Wasmann (1923) implied that he separated the sexes, but he did not mention any differences, nor did he label the specimens in his collection as to sex. The differences we found are those men-

tioned in the generic diagnosis. Females distinctly longer and broader than males. Median breadth anal sternite 0.25-0.30 (♂), 0.60-0.68 mm (♀). Largest breadth (elytra) 1.15-1.27 (♂), 1.25-1.45 mm (♀). Total length 2.9-3.4 (♂), 3.2-3.8 mm (♀).

Identification. — A close relative of *Chaetopisthes heimi* and *brunneus*. Some characters, additional to those already mentioned in the key and the synoptic table, are: rather small, oblong-oval lateral pronotal lobe; very distinct trichomes on paramedian lobe and sublateral angle; colour of trichomes yellow-brown; elytra rather strongly convex; head, pronotum and elytra with distinct primary and secondary pilosity.

Host. — *Odontotermes obesus* (Rambur).

Distribution. — West India.

Material examined.

Khandala, Bombay Pres., P. J. Assmuth: 27.v.1902 (♀ lectotype, 2 ♀ paralectotypes, 3 ♀), 17.v.1902 (2 ♂), 24.v.1902 (2 ♀), 9.vi.1902 (1 ♀), 22.v.1911 (2 ♂), 4.ii.1916 (1 ♂), 9.ii.1916 (1 ♀), without data (2 ♀, 1 ♂); Borivli, Insel Salsette, 5.iv.1911, P. J. Assmuth (1 ♂); all in W; Khandala, Bombay Pres., P. J. Assmuth (no date) (1 ♀, L; 1 ♂ 1 ♀, BM); India, Khandala, 24.v.1902, Assmuth (3 ♀ 8 ♂, Chicago); all the preceding material with *Odontotermes obesus*; India, Khandala, 21.viii.1960, D. H. & A. C. Kistner, ex nest 20 (1 ♂, L; 1 ♀, Chicago).

17. **Chaetopisthes (Neochaetopisthes) heimi** Wasmann

(fig. 74)

Wasmann, 1903a: 149 (diagnosis); Kolbe, 1909: 56, 62 (notes); Schmidt, 1910: 140 (note); Wasmann, 1911: 402 (note); Wasmann, 1918: 17 (key and diagnosis); Schmidt, 1922: 546 (key and diagnosis); Wasmann, 1923: 580 (comparison); Balthasar, 1964: 628 (key), 630 (diagnosis).

Notes. — Wasmann (1903a) based his diagnosis on eight specimens from two different localities, Wallon (Ahmednagar Distr.), and Khandala. Later (1911) he discovered that *heimi* was a mixture of two species, and he proposed the name *Chaetopisthes assmuthi* for the second species (q.v.). Only a few specimens of the original type-series of eight were left in *heimi*, viz., those from Wallon, one ♂ in the Wasmann collection labelled type, and one female in the BM, labelled cotype. The other specimens, all from Khandala, became part of the type-series of *Ch. assmuthi*. In 1911 Wasmann also rectified the identification of the material of his anatomical-histological study: this was based on *assmuthi* instead of *heimi*. In 1918 Wasmann mentioned an incorrect locality for *Chaetopisthes heimi*, apparently confounding it with one of the localities of *Ch. sulciger*.

Sexual dimorphism. — Wasmann (1903a) already separated males and females, mainly on the total length, but his measurements were partly based on specimens of *assmuthi*, which is distinctly smaller than *heimi*. Schmidt (1922) merely copied the remarks of Wasmann. Later on (1923) Wasmann once again separated males and females, but he did not label the specimens as such in his collection, nor did he explicitly mention any differences. The actual sexual differences are those mentioned in the generic diagnosis; females with much larger elytra and more strongly swollen abdomen compared to males. Median breadth anal sternite 0.35-0.36 (♂), 0.70-0.72 mm (♀). Largest breadth (elytra) 1.38-1.44 (♂), 1.67-1.75 mm (♀). Total length 3.5-3.7 (♂), 4.1-4.4 mm (♀).

Identification. — Strongly resembling *Chaetopisthes brunneus*. In addition to the characters mentioned in the key and the synoptic table, also different from *brunneus* in having very distinct trichomes on the paramedian pronotal lobe.

Host. — The holotype and other specimens were found in the nests of *Odontotermes wallonensis* (Wasmann).

Distribution. — East India.

Material examined.

Wallon (Ahmednagar), 1901, Heim (♂ holotype, W); Kendal (Ahmednagar), vii.1903, Heim (1 ♂ 3 ♀, W); Trichonopoly (Tiruchirapalli), R. P. J. Castets (1 ♀, Paris ex R. Oberthür).

18. **Chaetopisthes (Neochaetopisthes) brunneus** Wasmann

(fig. 75)

Wasmann, 1918: 17 (key and diagnosis); Wasmann, 1923: 578 (comparison); Balthasar, 1964: 628 (key), 631 (diagnosis).

Notes. — There are three specimens of *Chaetopisthes brunneus* in the collection of Wasmann, all from the same sample; two of these, on the same pin, are labelled type by Wasmann; the upper one, a male, is here designated lectotype; labels as follows: "n° 44/9.5.1911"; "Kirkee bei/ Poona (Ass/muth!)", "b. *Odontotermes/brunneus* Hag./(Holmgr. det.)" (all white labels, handwritten by Wasmann with black ink), "TYPE" (red label, black print), "*Chaetopisthes/(Neochaetopisthes)/brunneus* Wasm/ Typen." (white label, handwritten by Wasmann with red ink), "♂". Our lectotype label added; also two termite specimens on this pin. Other specimens labelled paralectotype.

Sexual dimorphism. — Differences are those mentioned in the generic diagnosis. Median breadth anal sternite 0.28 (♂), 0.74-0.80 mm (♀). Largest

breadth (elytra) 1.49 (♂), 1.67-1.90 mm (♀). Total length 3.7 (♂), 4.1-4.4 mm (♀).

Identification. — Strongly resembling *Chaetopisthes heimi*. In addition to the characters already mentioned in the key and the table also different from *heimi* in having smaller trichomes on the paramedian pronotal lobe.

Host. — *Odontotermes brunneus* (Hagen).

Distribution. — West India.

Material examined.

Kirkee near Poona, Bombay Presidency, 9.v.1911, P. J. Assmuth (1 ♂ lectotype, 2 ♀ paralectotypes, W).

19. **Chaetopisthes (Neochaetopisthes) septentrionalis** sp. nov.

(figs. 23, 39, 70, 106, 107, 140, 159, 179)

Description (holotype, male). — Approximate length 3.2, width 1.25, height 1.2 mm. Colour light red-brown, shiny; pilosity pale yellow, trichomes brown.

Cephalic contours, fig. 23. Clypeus with reflexed lateral margin, medially dentate; clypeal surface with some shallow foveoles; clypeogenal suture vague, costate; anteromedially to the eye a distinct depression. Clypeofrontal surface evenly convex, strongly curved down rostrad. Genal and frontal punctation sparse, most punctures and clypeal foveoles with long erect seta, length 0.08-0.12 mm.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 39, 70. General surface of pronotum convex, medially weakly depressed; median sulcus extending over basal 0.7 of disc, anteriorly narrow, caudally increasing in depth and breadth; lateral sulcus deep, well defined, extending onto concave anterolateral corner; lateral lobe oval; pronotum (dorsal view) laterally constricted halfway its length. Basal paramedian lobe small but distinct; further details pronotal base and trichomes, fig. 70. Pronotal disc very sparsely punctate with distinct punctures, each with a long semierect seta, length ca. 0.15 mm, ca. 4 setae/0.25 sq. mm; also with fairly abundant micropunctation (× 100) and micropilosity with very short appressed setae. Scutellum triangular.

Elytral contours, disposition of sulci, trichomes, figs. 106, 107. Elytron with five distinct sulci, extending from base to near apex, all continuous and deep; base of reflexed lateral surface of elytron slightly concave. Intervals strongly convex, approximately parallel-sided, except interval 1; basal points more or less acuminate, basal points of intervals 4-5 elevated; sutural margin of interval 1 apically strongly broadened, ending in pointed flap. Intervals

each with row of long hairs placed far apart, 5-7 hairs per interval, their length 0.15-0.20 mm; intervals 4 and 5 and lateral declivity with abundant, very short, appressed setae. Apical trichome placed on slightly pronounced apical lobe, consisting of dorsal and ventral row of long (ca. 0.2 mm) serried bristles, in caudal view arranged in an oval.

Ventral side, fig. 140. Apex of prosternal apophysis rather narrow, rounded off; ventral surface of apophysis concave, somewhat uneven; posterior part of prosternum strongly bulbous. Intercoxal part of mesosternum convex, unmodified; metasternum convex, wings only curved down along mesocoxal border. Abdominal sternites greatly foreshortened because of great expansion of anal sternite; general surface of anal sternite slightly convex. Pygidium evenly convex. Most of derm of pectus and abdomen abundantly punctate, punctures small, many with fine, erect or appressed short seta, length 0.02-0.05 mm; also a few very long hairs present, length ca. 0.2 mm.

Contours of legs, figs. 159, 179. Fore tibia with two distinct external denticles. Base of fore femur as well as trochanter produced, jointly giving a bidentate impression. Fore-femoral and fore-coxal bristle rows, fig. 159. Fore tarsi slender, slightly complanate. Middle and hind tibiae strongly complanate with weakly curved sides, transparent membranes along both sides; terminal spurs fine but distinct. Middle and hind tarsi slender and complanate, approximate length proportions hind tibia and tarsal segments 1-5 90/20/9/9/7/16. Middle and hind femora complanate, their axis distinctly curved upwards, with more or less subparallel sides; distal-posterior curve with transparent membrane. Most of legs with abundant punctation and pilosity, setae erect to semierect of different length, 0.03-0.10 mm, some up to 0.15 mm.

Some measurements in mm (explanation, figs. 6-9):

A 0.38	C 0.80	E 1.13	G 0.88	I 1.76	K 0.50	M 0.45
B 0.55	D 0.97	F 0.90	H 1.68	J 0.61	L 0.03	N 0.36

Variation. — The paratype has less pronounced protrusions on its fore femur and trochanter. Total length 3.2-3.3 mm (♂).

Identification. — Despite distinct elytral differences *Chaetopisthes septentrionalis* is placed near *meridionalis* and *brevipes*, on account of similarities in pronotum and legs. In addition to the differences given in the key and the synoptic table, *septentrionalis* can be distinguished by the following features: clypeofrontal surface strongly declivous; median pronotal sulcus strongly broadened caudally; paramedian pronotal trichomes rather small; elytra strongly convex.

Host. — Unknown.
Distribution. — North India.
Material examined.

Gurdaspur, Punjab, India, 15.vi.1929, Y. Ahmad (♂ holotype, 1 ♂ paratype, BM).

20. **Chaetopisthes (Miochaetopisthes) cincinnatus** sp. nov.

(figs. 25, 46, 76, 108, 109, 142, 161, 181)

Description (holotype, male). — Approximate length 2.7, width 0.95, height 0.8 mm. Colour light-brown, shiny; pilosity and trichomes yellow-white.

Cephalic contours, fig. 25. Clypeus with narrowly reflexed lateral margin, medially not dentate; clypeal surface strongly rugulate-punctate; clypeogenal suture vague, not costate. Clypeofrontal surface slightly convex. Cephalic punctation abundant, consisting of large punctures (each with a fine erect seta, length ca. 0.04 mm), plus an abundant distinct micropunctation.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 46, 76. General surface of pronotum convex, median sulcus anteriorly extending over basal 0.7 of disc, its depth and breadth increasing caudad; lateral sulcus rather deep, well defined, merging into concave anterolateral corner; lateral lobe pronounced, swollen; pronotum in dorsal view slightly constricted halfway its length, anterolateral parts of pronotum somewhat dilated. Caudal impression shallow, basal paramedian lobe distinct; further details of pronotal base and trichomes, fig. 76. Pronotal disc with abundant double punctation, primary punctures large, most of them with a fine erect seta, length ca. 0.04, ca. 15 setae/0.25 sq. mm; secondary punctation abundant. Scutellum triangular.

Elytral contours, disposition of sulci, trichomes, figs. 108, 109. Elytron with four distinct sulci extending from base to near apex, all continuous, rather deep; sulcus 5 shallow and rather indistinct; reflexed lateral surface of elytron unmodified. Intervals convex, approximately parallel-sided except interval 1; basal points obtuse, not dentiform; sutural margin of interval 1 with slight transparant flap. Intervals, distal and lateral declivities abundantly punctate, with large seta-bearing punctures, setae erect or somewhat curled, length 0.03-0.05 mm, secondary punctation abundant, distinct. Apical trichome placed on internal side of the strongly pronounced apical lobe and apex of first interval.

Ventral side, fig. 142. Apex of prosternal apophysis rounded off; ventral surface of apophysis concave, medially slightly costate; posterior part of

prosternum convex. Pronotal trichomes in ventral view hardly visible. Intercoxal part of mesosternum slightly convex; metasternum convex. Abdominal sternites foreshortened, except anal one. General surface of anal sternite convex. Pygidium large, evenly convex. Most of derm of pectus and abdomen with abundant, variably distinct punctation, consisting of punctures of different sizes, associated with abundant pilosity, length of setae 0.04-0.08 mm.

Contours of legs, figs. 161, 181. Fore tibia with two distinct external denticles. Base of fore femur with dentiform protrusion, trochanter slightly produced. Fore-femoral and fore-coxal bristle rows, fig. 161. Fore tarsi complanate. Middle and hind tibiae slender, proximally complanate, distally slightly thickened, no transparent membranes; terminal spurs fine but distinct. Middle tarsus complanate, approximate length proportions middle tibia and tarsal segments 1-5 63/15/9/7/7/13 (hind tarsi missing). Middle and hind femora slender and complanate, their axis distinctly curved upwards, with straight subparallel sides; no transparent membranes. Legs all abundantly punctate, punctures of different sizes; pilosity abundant, length of setae 0.04-0.07 mm.

Some measurements in mm (explanation, figs. 6-9):

A 0.32	C 0.66	E 0.92	G 0.68	I 1.62	K 0.43	M 0.45
B 0.44	D 0.87	F 0.71	H 1.48	J 0.49	L 0.03	N 0.22

Identification. — Probably closely related to the species placed in *Neochaetopisthes*, judging from the pronotal features. In addition to the characters already mentioned in the key and the synoptic table, *Chaetopisthes cincinnatus* has the following distinctive features: strongly rugulate-punctate clypeal surface, pronotal trichomes nearly white; trichomes on paramedian lobe and sublateral angle distinct.

Host. — Unknown.

Distribution. — Eastern India.

Material examined.

Chipurupalli, Vizagapatam Dist., India, R. S. Patuck (♂ holotype, BM).

Chapter 6. **Termitopisthes** Wasmann

Wasmann, 1918: 9 (in key).

Generic diagnosis. — Pronotum with small lateral lobe, parallel-sided lateral sulcus, long, caudally broadened median sulcus; broad, strongly curled pronotal trichomes. Median pronotal lobe absent. Elytron with 5 apically effaced sulci. No elytral trichomes.

Clypeus with variably broadened lateral margins; clypeal outline more or less trapeziform. Lateral lobe of pronotum small and slightly extended, with free caudal end; lateral sulcus broad, deep. Median pronotal sulcus long, extending over more than half of pronotal disc, rather deep, with distinctly broadened basal part. Paramedian lobe not pronounced and obtuse, or distinctly pronounced and acute, caudal impression rather shallow, or narrowly and deeply incising pronotal disc. Pronotal trichomes extending continuously over total pronotal breadth, occasionally interrupted medially, all broad and strongly curled. Elytral sulcus 5 mostly reduced; intervals apically diverging, occasionally with dentiform, elevated basal points. Pronotal trichomes on ventral side variably extended to midline. Posterior part of prosternum flat or convex, with straight caudal border. Intercoxal part of mesosternum, sides converging caudad, narrow to rather broad. Intercoxal part of metasternum narrow. Anal sternite medially broadened, without strong rostral expansion. Fore tibia with two external teeth, terminal spur small or absent. Middle and hind tibiae roundish-complanate, or distinctly thickened. Hind femora slightly curved upwards.

Sexual dimorphism. Males with membranous small flaps on first three tarsal segments of fore leg and relatively larger pygidium, females with larger anal sternite and in general slightly larger.

Type-species. — *Chaetopisthes wasmanni* Schmidt, 1911, by original designation.

Composition and distribution. — Seven species from India and Burma.

Synoptic table of *Termitopisthes* species (for explanation of characters, see figures)

Head

1. Lateral sides of clypeus: a, moderately broadened; b, strongly broadened, sometimes dentiform.
2. Ratio median length of head in front of eyes/largest breadth of head in front of eyes (fig. 6, A/C): a, smaller than 0.45; b, larger than 0.45.

Pronotum

3. Lateral sulcus and lateral lobe of pronotum: a, sulcus very short, about one third of thoracic length, strongly curved; lobe not oblong, obtuse pointed; b, sulcus longer, more than one third of thoracic length, slightly curved; lobe oblong, oval or drop-shaped.
4. Trichome connection lateral sulcus: a, at the caudal end of the lateral sulcus, level with the caudal end of lateral lobe and sublateral angle of disc; b, far extended rostrad in lateral sulcus.
5. Lateral sides of pronotum (in dorsal view): a, not or hardly incised; b, distinctly incised.
6. Median sulcus: a, parallel-sided; b, sides slightly diverging caudad, bottom surface uninterrupted; c, diverging caudally with an interruption about halfway.

7. Paramedian lobe: a, not extending caudal margin of median sulcus, not pointed; b, only with narrow, pointed part extending caudal margin of median sulcus; c, with pointed and slightly broader parts extending caudal margin of median sulcus.
8. Paramedian lobe: a, with same convexity as disc; b, rather strongly bulbous.
9. Caudal impression of pronotum: a, distinct but shallow, caudal margin of disc straight; b, distinct, slightly deeper, caudal margin of disc slightly concavely curved; c, more narrowly and deeply incising pronotal disc, caudal margin of disc strongly concavely curved.
10. Pronotal pilosity: a, primary pilosity only; b, primary and secondary pilosity.

Elytra

11. Elytral sulcus 5: a, distinct; b, vague; c, absent, reduced.
12. Base of elytral sulcus 1: a, not much broader than other sulci; b, very much broader than other sulci.
13. Elytral base: a, without elevations; b, intervals 2, 3, 4 slightly elevated at base; c, intervals 2, 3, 4 more strongly elevated; d, interval 2 very strongly elevated, dentiform.
14. Humeri: a, just distinct not expanded; b, moderately distinct, expanded; c, very distinct, expanded.

Ventral side

15. Posterior part of prosternum: a, flat; b, slightly convex.
16. Trichome on ventral side: a, slightly extended medially; b, strongly extended medially.
17. Anal sternite: a, slightly expanded, shorter than pygidium, always shorter than metasternum; b, strongly expanded, longer than pygidium, females with shorter metasternum.

Legs

18. Basal lobe of fore femur: a, narrow, peaky, slightly extended, trochanter reduced; b, broad, obtuse, strongly extended, trochanter more distinctly pronounced.
19. Spur of fore tibia: a, small but present; b, absent.
20. Middle and hind tibiae and tarsi: a, more or less complanate or only slightly thickened; b, tibiae distinctly thickened, tarsi pearlstring shaped.
21. First tarsal segment of middle and hind legs: a, distinctly elongated, narrow and long; b, not elongated, slightly larger than tarsal segments 2, 3, 4, respectively.

Termitopisthes species: characters and character states

character no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. *forticulus*	b	a	a	a	a	b	a	a	a	a	a	b	b	b	a	a	b	a	a	a	a
2. *submissus*	b	b	b	a	a	a	b	a	b	a	b	a	a	a	a	a	a	b	a	a	a
3. *parallelus*	a	b	b	a	b	c	b	a	c	b	b	b	d	b	b	a	a	b	b	a	b
4. *wasmanni*	a	b	b	a	b	c	c	a	c	b	b	b	d	b	b	a	a	b	b	a-b	b
5. *schmidti*	b	b	b	b	b	b	b	a	c	a	b	b	c	c	b	b	a	b	a	b	b
6. *kistneri*	a	b	b	a	b	c	b	b	c	a	c	a	b	c	b	b	a	b	a	b	b

Key to *Termitopisthes* species

1. Lateral pronotal sulcus longer than one third of thoracic length; lateral lobe oblong. Paramedian lobe extended and pointed (figs. 78-82). Sulcus 5 of elytron vague or absent. Anal sternite slightly broadened over midline. Basal lobe of fore femur broad, strongly extended; fore trochanter distinct 2

— Lateral pronotal sulcus shorter, about one third of thoracic length; lateral lobe not oblong, but obtusely pointed (fig. 47). Paramedian lobe not extended, not pointed (fig. 77). Sulcus 5 of elytron distinct (figs. 112, 113). Anal sternite more strongly broadened over midline, longer than pygidium, in females longer than metasternum (fig. 143). Basal lobe of fore femur narrow, peaky, slightly extended; fore trochanter reduced (fig. 162). Length ♂ 3.6-3.8, ♀ 3.4-4.1 mm . *T. forticulus*

2. Lateral sides of pronotum (dorsal view) distinctly constricted; median sulcus slightly broadened caudad; caudal impression narrowly and deeply incising pronotal disc (figs. 79-82). Base of some elytral intervals more or less elevated; humeri more or less expanded. Posterior part of prosternum slightly convex. First tarsal segment of middle and hind legs not elongated 3

— Lateral sides of pronotum (dorsal view) not constricted (fig. 78); median sulcus parallel-sided; caudal impression distinct, rather shallow (fig. 78). Elytral base without any elevation; humeri only just distinct (figs. 114-115). Posterior part of prosternum flat. First tarsal segment of middle and hind legs distinctly narrow, elongated (fig. 183). Length ♀ 3.4-3.6 mm . . . . . *T. submissus*

3. Pronotum with primary and secondary pilosity. Elytral interval 2 with strongly elevated, dentiform basal point; base of other intervals not elevated; humeri moderately distinct. Trichome connection on ventral side only slightly extended medially. Spur of fore tibia absent. Middle and hind tibiae and tarsi more or less complanate 4

— Pronotum with primary pilosity only. Basal points of elytral intervals 2, 3, 4 more or less elevated; humeri very distinct. Trichome connection on ventral side strongly extended to midline (fig. 145). Spur of fore tibia small but present. Middle and hind tibiae distinctly thickened, tarsi pearl-string shaped 5

4. Pronotum (lateral view) slightly convex; paramedian lobe slightly extending caudal border of median sulcus (fig. 79); caudal border of pronotum curved. Elytra with distinctly parallel sides; bases of elytral intervals obtuse. Colour dark-brown. Length ♀ 3.3 mm *T. parallelus*

— Pronotum (lateral view) flat; paramedian lobe longer, strongly extending caudal border of median sulcus (fig. 80); caudal border of pronotum slightly concave. Elytra with sides basally converging; bases of elytral intervals acute. Colour yellow-brown. Length ♂ 2.7-3.1, ♀ 2.9-3.3 mm . . . . . *T. wasmanni*

5. Trichome connection in lateral sulcus far extended rostrad. Paramedian lobe not bulbous. Fifth elytral sulcus vague; first elytral sulcus very much broader than others; bases of elytral intervals 2, 3, 4 rather strongly elevated. Length ♂ 2.7-3.0, ♀ 2.9-3.0 mm (fig. 81) . . . . . *T. schmidti*

— Trichome connection in lateral sulcus not extended rostrad (fig. 49). Paramedian lobe bulbous (fig. 82). Fifth elytral sulcus reduced (figs. 116, 117); first elytral sulcus not much broader than others; bases of elytral intervals 2, 3, 4 only slightly elevated. Length ♂ 2.6-2.9, ♀ 3.0-3.2 mm . . . . . *T. kistneri*

1. **Termitopisthes forticulus** sp. nov.

(figs. 26, 47, 77, 112, 113, 143, 162, 184, pl. 1)

Description (holotype, female). — Approximate length 3.8, width 1.5, height 1.25 mm. Colour yellow-brown to brown, shiny; pilosity and trichomes light brown-yellow. Habitus, plate 1.

Cephalic contours, fig. 26. Clypeus with broadly reflexed, well-pronounced lateral margins and well-pronounced anteromedian denticle. Clypeogenal transition distinctly costate, laterally swollen; gena with narrowly reflexed lateral margin. Clypeofrontal disc evenly convex. Whole cephalic surface abundantly punctate, punctures coarse, of different sizes, most punctures with a fine erect seta, length of the setae ca. 0.03-0.10 mm.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 47, 77. General surface of pronotum slightly convex, median sulcus extending over basal 0.7 of disc, its depth considerably increasing caudad, caudal end of median sulcus extending far beyond basal paramedian lobes; lateral sulcus deep, well defined, very short; lateral lobe lacking pronounced shape, anteriorly not limited by constriction. Caudal impression shallow, basal paramedian lobe not pronounced; further details of pronotal base and trichomes, fig. 77. Pronotal disc abundantly punctate, punctures isodiametric, their diameters 0.02-0.05 mm, each with fine erect seta, length 0.05-0.10 mm, ca. 25 setae/0.25 sq. mm in middle of disc, and a few longer setae along caudal borders. Micropunctation abundant (× 100). Scutellum triangular, slightly elongate, apex acute.

Elytral contours, disposition of sulci, figs. 112, 113. Elytron with 5 basally well-defined, deep, posteriorly effaced sulci; sulci 1-3 extending from base to large over half the elytral length; 4 extending from base to a little beyond half the elytral length; 5 narrow, shallow, distinct only near base; reflexed lateral surface of elytron slightly convex, proximally wide. Humerus moderately distinct. Basal points of elytral intervals 1, 2, 5 obtuse, basal points of intervals 3 and 4 somewhat acute, basal points of intervals 2, 3, 4 slightly elevated. Intervals with well-defined borders; surface of intervals slightly convex, flattened towards apex. Basal half of intervals and lateral surface sparsely punctate, apical half of intervals and lateral and distal declivities abundantly punctate, punctures of different sizes, many with fine erect or semierect seta, length 0.03-0.11 mm; distal surface also with many curled microsetae; basal points with some longer hairs. Micropunctation fairly abundant (× 100). Elytral apex unmodified.

Ventral side, fig. 143. Apex of prosternal apophysis rounded off, ventral surface of apophysis slightly concave, slightly uneven; posterior part of prosternum flat, with sharp elevation between the fore coxae. Intercoxal part of mesosternum slightly convex, otherwise unmodified. Metasternum convex, anteriorly scarcely declivous. Abdominal sternites greatly foreshortened because of expansion of anal sternite; anterior part of anal sternite slightly more convex than rest. Pygidium evenly convex. Derm of pectus sparsely punctate, abdomen abundantly punctate; most punctures with erect to semierect seta, length ca. 0.09 mm.

Contours of legs, figs. 162, 184. Fore tibia with two large external denticles. Base of fore femur with a small dentiform protrusion, trochanter very small, only visible from posterior side. Fore-femoral and fore-coxal bristle rows, fig. 162. Fore tarsi slightly complanate. Middle and hind tibiae slender, complanate, with straight, subparallel sides; proximal-posterior curve with small transparent membrane; terminal spurs distinct. Middle and hind tarsi slightly complanate, about as long as middle and hind tibiae, approximate length proportions hind tibia and tarsal segments 1-5 80/22/13/12/11/21. Middle and hind femora complanate, their axis distinctly curved upwards; sides (in ventral view) weakly convex; distal-posterior curve with small transparent membrane. Femora sparsely, tibiae and tarsi abundantly punctate, most punctures with fine erect seta, length ca. 0.08 mm.

Some measurements in mm (explanation, figs. 6-9):

A 0.44	C 1.07	E 1.50	G 1.12	J 0.74	L 0.07	N 0.51
B 0.65	D 1.25	F 0.96	H 2.20	K 0.57	M 0.66	

Variation. — Caudal border of paramedian lobe obliquely trunctate, or rectangular. Microsetae of elytra sometimes indistinct.

Sexual dimorphism. — Differences already mentioned in generic diagnosis. Males with less pronounced anteromedian clypeal denticle. Median breadth of anal sternite 0.39-0.41 (♂), 0.45-0.51 mm (♀). Total length 3.6-3.8 (♂), 3.4-4.1 mm (♀).

Identification. — Closely resembles *Termitopisthes submissus*, on account of the pronotal features (lateral constriction of pronotum, caudal impression) and the features of the legs. Besides the characters already mentioned in the key and the synoptic table, it also differs from *submissus* by having a more abundant, more irregular pronotal punctation, by a rounded and more strongly convex elytral apex, by a different shape of the middle and hind tibiae, and by the yellow-brown colour.

Host. — All specimens found in the nests of *Odontotermes obesus* (Rambur).

Distribution. — North India.

Material examined.

Haldwani Divn., Kumaon, U.P., vi.1923, H. G. Champion (♀ holotype, 1 ♂ and 16 ♀ paratypes, BM; 1 ♂ 1 ♀, paratypes, L); Haldwani Distr., Kumaon, India, H. G. Champion (1 ♂ 2 ♀, paratypes, BM).

2. **Termitopisthes submissus** sp. nov.

(figs. 27, 48, 78, 114, 115, 144, 163, 183)

Description (holotype, female). — Approximate length 3.6, width 1.25, height 1 mm. Colour light red-brown, shiny; pilosity pale-yellow, trichomes yellow-brown.

Cephalic contours, fig. 27. Clypeus with broadly reflexed lateral margins and well-pronounced anteromedian denticle; clypeal surface rugulate-punctate; clypeogenal transition laterally swollen, suture vague (× 100), elevated. Genal margin narrowly reflexed, genal surface somewhat uneven. Frontal surface slightly convex, punctation sparse. Many cephalic punctures with fine erect seta, in total ca. 40.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 48, 78. General surface of pronotum convex; median sulcus anteriorly extending beyond middle of disc, its depth increasing caudad; lateral sulcus shallow, gradually obsolescent before reaching anterolateral corner; lateral lobe lacking pronounced shape, anteriorly not limited by constriction. Details of pronotal base, shape and position of trichomes, fig. 48. Pronotal disc sparsely punctate, punctures isodiametric, moderately defined, their diameters

ca. 0.04 mm, each with fine erect seta, long 0.07 mm, ca. 12 setae/0.25 sq. mm. Scutellum triangular, elongate, apex acute.

Elytral contours, disposition of sulci, figs. 114, 115. Elytron with 5 basally well-defined, rather deep, posteriorly effaced sulci; sulci 1-3 extending from base to over half the elytral length, 4 extending from base to about half the elytral length, 5 narrow, shallow, distinct only near base; reflexed lateral surface of elytron evenly convex, very wide. Basal points of elytral intervals obtuse, not dentiform; intervals with well-defined borders, surface of intervals slightly convex flattened towards apex. Intervals as well as distal and lateral declivities with abundant, evenly distributed punctation, each puncture with erect seta, length 0.07 mm, densities on distal declivity ca. 40/0.25 sq. mm; distal surface with numerous curled microsetae (× 100). Elytral apex unmodified.

Ventral side, fig. 144. Apex of prosternal apophysis rounded off; ventral surface of apophysis concave, with triangle of fine grooves; posterior part of prosternum unmodified. Intercoxal part of mesosternum slightly convex, otherwise unmodified; metasternum slightly convex, also unmodified. Anteanal abdominal sternites slightly foreshortened; surface of anal sternite slightly convex. Pygidium evenly convex. Derm of pectus and abdomen sparsely punctate, many punctures with erect to semierect seta, all setae of approximately equal length (0.07-0.09 mm).

Contours of legs, figs. 163, 183. Fore tibia with two distinct external denticles, apical one very long, terminal spur distinct. Base of fore femur as well as trochanter produced, jointly giving a bidentate impression; fore-femoral and fore-coxal bristle rows, fig. 163. Fore tarsi complanate, each tarsal segment slightly thickened distad. Middle and hind tibiae slender, strongly complanate, with straight, subparallel sides; internal border with narrow transparent membrane, terminal spurs fine but distinct. Middle and hind tarsi short, complanate, approximate length proportions hind tibia and tarsal segments 1-5 80/15/9/8/7/15. Middle and hind femora slender, complanate, their axis distinctly curved upwards, with almost straight subparallel sides, distalposterior curve with transparent membrane. Legs all sparsely punctate, many punctures with fine erect to semierect seta, all setae of approximately equal length (0.06-0.08 mm); femora sparsely, tibiae more abundantly setose.

Some measurements in mm (explanation, figs. 6-9):

A 0.48	C 0.88	E 1.16	G 0.98	J 0.62	L 0.04	N 0.22
B 0.59	D 1.12	F 1.09	H 2.00	K 0.63	M 0.64	

Variation. — Paratype dark red-brown. Total length 3.4-3.6 mm (♀).

Identification. — *T. submissus* is more or less intermediate between *T. forticulus* on the one side, and *T. parallelus, T. wasmanni, T. schmidti* and *T. kistneri* on the other, mainly on account of pronotal characters (caudal impression, paramedian lobe). In addition to the characters already mentioned in the key and the synoptic table, *submissus* is also distinguished by the following features: clypeus with strongly pronounced denticle; very shiny pronotal disc, which is sparsely punctate; tapering and slightly convex elytral apex; complanate middle and hind tibiae with more or less parallel sides.

Host. — Unknown, both specimens captured at light.

Distribution. — North India.

Material examined.

Haldwani Divn., Kumaon, U.P., vi.1923, H. G. Champion (♀ holotype, 1 ♀ paratype, BM).

3. **Termitopisthes parallelus** Wasmann

(fig. 79)

Wasmann, 1923: 578 (diagnosis); Champion, 1923: 574 (note); Balthasar, 1964: 624 (in key), 626 (diagnosis).

Note. — The single known specimen of this species is most probably incorrectly sexed. Wasmann labelled it ♂ but did not mention why (genitalia not extracted). The specimen does not possess transparent flaps on the fore tarsal segments 1-3, and because this was found a sexual characteristic in four other species of the genus, the holotype is here supposed to be ♀.

Identification. — Strongly resembling *Termitopisthes wasmanni.* Some differences, additional to those already mentioned in the key and the synoptic table, are: base of fourth elytral interval not extending the third one; middle and hind tibiae somewhat longer (about 0.85-0.90 mm), without curved sides.

Host. — Unknown, captured at light.

Distribution. — North India.

Material examined.

Dehra Dun, U.P., 9.v.1921, Cameron (♀ holotype, BM).

4. **Termitopisthes wasmanni** (Schmidt)

(fig. 80)

Chaetopisthes wasmanni Schmidt, 1911: 33 (diagnosis); Schmidt, 1910: 140 (note); Arrow, 1920: 434 (note); Schmidt, 1922: 546 (in key), 547 (diagnosis).

Termitopisthes wasmanni, T. laticollis, T. nobilis Wasmann, 1918: 14 (in key and diagnosis); Champion, 1923: 572-73 (diagnosis); Wasmann, 1923: 578 (notes); Balthasar, 1964: 624 (in key), 626 (diagnosis).

Notes. — Schmidt designated a holotype (in his own collection, now in Stockholm), and mentioned that there were more specimens in the Berlin museum; two of these now seem to be in the Wasmann collection (labelled "cotype" by Wasmann) and two others of the same sample (Chota Nagpore, Nowatoli, 7.viii.1897, Cardon) in L (ex R. Oberthür). All these specimens are here considered paratypes.

Wasmann (1918) described two new species (*T. laticollis* and *T. nobilis*) which he separated from *T. wasmanni* on the basis of the following features: rectangular anterolateral corner of pronotum (versus rounded and dilated anterolateral corner), lateral sides of pronotum not constricted (versus distinctly constricted), obliquely elevated base of second elytral interval (versus horizontally elevated) and narrower body form, 0.9-1.0 mm (versus broader body form, 1.1-1.3 mm). The first two differences are hardly noticeable on direct comparison of the specimens concerned. The third difference is slight, the last one distinct, but these have to be considered sexual differences. Wasmann did not realize what the actual sexual differences are (see below). This is confirmed by the actual sexes of the material: the two "cotypes" of *wasmanni* are females, whereas the type-material of *laticollis* and *nobilis* consists of males only. The differences on which he based the separation between *laticollis* and *nobilis*, viz., pronotum broader than elytral base and strongly convex (versus hardly broader and slightly convex), elevated base of second elytral interval long and pointed (versus short and obtuse), and slight differences in colour and punctation, are also vague, only partly true, and surely do not warrant a specific separation. These differences can be relegated to intraspecific variation, and therefore *laticollis* and *nobilis* have to be considered junior synonyms of *wasmanni*. Further variation occurs in the convexity of posterior part of prosternum and in the convexity of intercoxal part of mesosternum.

The lectotype of *Termitopisthes laticollis* Wasmann, here designated, is labelled as follows: "Type" (red label, black print), "b. einer hügelbe-/wohn. Termite" (black ink, Wasmann's hand), "Hoshangabad/(Central indien)/ Bainb. Fletcher" (ditto), "no *228*/19.11.1911" (ditto), "*Termitopisthes/ laticollis* Wasm./Typen" (red ink, Wasmann's hand); kept in W. The lectotype of *T. nobilis* Wasmann, here designated, is labelled as follows: "Type" (red label, black print), "wird von d. Termiten ♀ beleckt!" (red ink, Wasmann's hand), "b. *Odontotermes/bangalorensis*/Holmgren H. determ." (black ink, Wasmann's hand), "no. 120/4.11.1911" (ditto), "*Termitopisthes nobilis* Wasm. / Typen" (red ink, Wasmann's hand); also kept in W.

Sexual dimorphism. — Champion separated males and females of *wasmanni* on small differences of the margin of the head, the breadth of the

elytral base, the apical dentation of the fore tibia and the breadth of middle and hind tibiae, and Balthasar (1964) copied this. The actual differences are those mentioned in the generic diagnosis, plus two additional ones: the more horizontally elevated base of second elytral interval of the males, females usually having this base obliquely elevated, and the larger abdomen and larger elytra of females. Median breadth of anal sternite 0.17-0.22 (♂), 0.24-0.28 mm (♀). Largest breadth (elytra) 1.0-1.17 (♂), 1.13-1.30 mm (♀). Elytral length 1.55-1.68 (♂), 1.60-1.80 mm (♀). Total length: 2.7-3.1 (♂), 2.9-3.3 mm (♀).

As for Arrow's remark (1920) that *wasmanni* would be the male of *Ch. fulvus*, we can only confirm Champion's correction (1923).

Identification. — Strongly resembling *Termitopisthes parallelus*. Some differences, additional to those already mentioned in the key and the synoptic table, are: base of fourth elytral interval distinctly extending the third one; middle and hind tibiae slightly shorter (0.75-0.85 mm), with slightly curved sides.

Host. — Found in nests of *Odontotermes obesus* (Rambur) and *Odontotermes bangalorensis* (Holmgren); many specimens captured at light.

Distribution. — Many parts of India.

Material examined.

Chota Nagpore, Nowatoli, 7.viii.1897, R. P. Cardon (2 ♀, paratypes *wasmanni*, W; 1 ♂ 1 ♀, paratypes *wasmanni*, L); Bangalore, Mysore, 4.xi.1911, Assmuth (♂, lectotype *nobilis*); Bangalore, Mysore, 2.xi.1911, Assmuth (♂ paralectotype *laticollis*); Central India, Hoshangabad, 19.xi.1911, Bainb. Fletcher (♂ lectotype *laticollis*), all W. India, Bihar Prov., Ranchi, Namkum, 1928 (5 ♂ 2 ♀, BM); Haldwani Divn., Kumaon U. P., vi.1923, H. G. Champion (1 ♂ 4 ♀, BM); Haldwani Dist., Kumaon, India, H. G. Champion (1 ♂, BM); Central India, Mhow, Malwa, Capt. Boys (2, part of the type-series of *Chaetopisthes fulvus* Westwood, q.v., labelled ♀, but not checked, Oxford); Dehra Dun, 23.iii.1921, Cameron (1 ♀, USNM); Dehra Dun, 24.viii.1921, Cameron (3 ♀, USNM).

5. **Termitopisthes schmidti** Champion
(fig. 81)

Champion, 1923: 571 (diagnosis); Wasmann, 1923: 577 (comparison); Balthasar, 1964: 624 (key), 626 (diagnosis).

Notes. — Champion based his diagnosis on nine specimens; two syntypes are in the Wasmann collection, the rest is in the BM, one of the specimens being labelled "HT" (holotype). This is a ♀, here designated as lectotype, coming from "Tanakpur,/Kumaon. U.P./India H.G.C.". Once again, the type-series is mixed: according to Champion, who separated the sexes on distinct differences in head, in middle and hind tibiae, and in tarsi, one of the

nine syntypes would be a ♀; but in reality this is a ♂ of *Termitopisthes kistneri* described hereafter.

Sexual dimorphism. — As mentioned above, Champion's sexual separation was incorrect. The sexual differences found for *schmidti* are those mentioned in the generic diagnosis; additionally females have a slightly more pronounced fore trochanter and a somewhat flatter posterior part of the prosternum; females not longer but somewhat broader than males. Median breadth anal sternite 0.17-0.20 (♂), 0.23-0.26 mm (♀). Total length 2.7-3.0 (♂), 2.9-3.0 mm (♀).

Identification. — A close relative of *Termitopisthes kistneri*. Besides the characters mentioned in the key and the synoptic table, they also differ in the following features: caudal border of median sulcus with distinct gap in trichome connection; middle and hind tibiae with narrow transparent membrane along proximal-posterior side. Colour yellow-brown.

Host. — Unknown, all specimens captured at light.

Distribution. — North India.

Material examined.

Tanakpur, Kumaon, U.P., H. G. Champion (2 ♂ paratypes, W; 1 ♂ paratype, BM; 2 ♂ 4 ♀, BM, including ♂ holotype; Tanakpur, Haldwani Dn., 15.v.1923, H. G. Champion (2 ♂, BM); Haldwani Divn. Kumaon, U.P., vi.1923, H. G. Champion (2 ♂ 3 ♀, BM; 1 ♂, L).

6. **Termitopisthes kistneri** sp. nov.

(figs. 28, 49, 82, 116, 117, 145, 164, 182)

Description (holotype, male). — Approximate length 2.7, width 1.0, height 0.8 mm. Colour red-brown, shiny; pilosity pale yellow, trichomes pale yellow.

Cephalic contours, fig. 28. Clypeus with reflexed lateral margins, medially subdentate; clypeal surface rugulate-punctate; clypeogenal suture indistinct, vaguely costate; genal margin narrowly reflexed. Clypeofrontal surface evenly convex. Cephalic punctation fairly abundant, punctures distinct, each with a fine erect seta.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 49, 82. General surface of pronotum slightly convex; median sulcus anteriorly extending to middle of disc, its depth increasing caudad; lateral sulcus deep, well defined, extending onto shallowly concave anterolateral corner; lateral lobe slightly pronounced, elongate drop-shaped; pronotum (dorsal view) constricted halfway its length. Caudal impression of pronotum deep and relatively narrow; basal paramedian lobe strongly convex; further details pronotal base, shape and position of trichomes, fig. 82. Pronotal disc fairly

abundant punctate, punctures distinct, isodiametric, their diameters 0.02-0.03 mm, each with fine erect seta, length ca. 0.07 mm, ca. 20 setae/0.25 sq. mm. Scutellum triangular, apex acute.

Elytral contours, disposition of sulci, figs. 116, 117. Elytron with four basally well defined, deep, posteriorly obsolescent sulci; sulci 1-3 extending from base to over half the elytral length, 4 extending from base to about half the elytral length, 5 hardly visible; reflexed lateral surface of elytron evenly convex, anteriorly very wide. Humerus distinct. Intervals with well defined borders, surface slightly convex, flattened towards apex; basal points of elytral intervals obtuse, not dentiform; basal point of interval 2 slightly elevated. Intervals as well as distal and lateral declivities with abundant, evenly distributed punctation, many punctures with a fine erect seta, length 0.07 mm, density on distal declivity ca. 40 setae/0.25 sq. mm; distal surface with many short, appressed microsetae (× 100). Elytral apex unmodified.

Ventral side, fig. 145. Apex of prosternal apophysis truncate; ventral surface of apophysis slightly concave, with fine longitudinal grooves; posterior part of prosternum unmodified. Pronotal trichomes extending to near the midline. Intercoxal part of mesosternum unmodified; metasternum slightly convex, also unmodified. Anteanal abdominal sternites foreshortened; medial surface of anal sternite slightly convex; pygidium evenly convex. Derm of pectus and abdomen sparsely punctate, many puntctures with erect to semierect seta, all of approximately equal length (0.07-0.08 mm).

Contours of legs, figs. 164, 182. Fore tibia with two distinct external denticles, the apical one very long. Base of fore femur as well as trochanter produced, jointly giving a bidentate impression; fore-femoral and fore-coxal bristle rows, fig. 164. Fore tarsi not complanate, each tarsal segment thickened distad. Middle and hind tibiae slender, not complanate, with slightly curved sides; no transparent membranes, terminal spurs fine but distinct. Middle tarsus approximately as long as tibia, hind tarsus slightly shorter than tibia; each tarsal segment strongly thickened distad, except segment 5; approximate length proportions hind tibia and tarsal segments 1-5 75/14/11/9/8/15. Middle and hind femora slender, slightly complanate, their axis distinctly curved upwards, with almost straight subparallel sides; distal-posterior curve with a small transparent membrane. Legs all sparsely punctate, many punctures with fine erect to semierect seta; length of femoral setae ca. 0.08 mm, length of tibial setae 0.04-0.07 mm.

Some measurements in mm (explanation, figs. 6-9):

A 0.38	C 0.73	E 0.95	G 0.81	I —	K 0.44	M 0.46
B 0.47	D 0.87	F 0.89	H 1.45	J 0.46	L 0.06	N 0.15

Variation. — The two males from Visakhapatnam differ from the rest in having longer hind tibiae (0.90 versus 0.70-0.80 mm) and in the pronotal trichomes, which do not extend so far to the ventral midline.

Sexual dimorphism. — Differences are those mentioned in generic diagnosis. Median breadth anal sternite 0.15-0.16 (♂), 0.21-0.23 mm (♀). Total length 2.6-2.9 (♂), 3.0-3.2 mm (♀).

Identification. — A close relative of *Termitopisthes schmidti*. Besides the characters mentioned in the key and the synoptic table, *kistneri* also differs from *schmidti* in following features: caudal border of median sulcus with united trichomes; middle and hind tibiae without transparent membranes.

Host. — Unknown, 6 specimens from Bihar captured at light.

Distribution. — North and East India.

Material examined.

Tanakpur, Haldwani, 15.v.1923, H. G. Champion (♂ holotype, 1 ♂ paratype, BM); Chipurupalli, Vizagapatam distri., R. S. Patuck (2 ♂ paratypes, BM); India, Bihar Prov., Ranchi, Namkum, 1928 (3 ♂ 2 ♀ paratypes, BM; 1 ♂ paratype, L).

Note. — This species is dedicated to Professor David H. Kistner, leading authority on myrmecophilous and termitophilous Staphylinidae and ardent stimulator of the study of inquilinous insects in general.

7. **Termitopisthes termiticola** (Gestro)

Chaetopisthes termiticola Gestro, 1891: 904 (diagnosis); Wasmann, 1894: 155 (note); Wasmann, 1899a: 123 (note); Wasmann, 1899b: 156 (note); Kolbe, 1909: 56 (note); Schmidt, 1910: 140 (note); Schmidt, 1911: 35 (comparison); Schmidt, 1922: 546 (in key), 548 (diagnosis).

Termitopisthes termiticola; Wasmann, 1918: 14 (in key & diagnosis); Champion & Wasmann, 1923: 579 (comparison); Balthasar, 1964: 623 (in key), 625 (diagnosis).

Notes. — Gestro described this species from one specimen, hitherto the only one known. As it seemed impossible to send it on loan, R. Poggi (Genoa museum) kindly provided additional information, including a sketch of the holotype. Although this was sufficient for establishing its difference from the various new species here described, the information was still too scanty to enable an inclusion of *termiticola* in the synoptic table and the key.

Identification. — *Termitopisthes termiticola* is probably intermediate between *T. submissus* on the one side, and *wasmanni* and *parallelus* on the other. There is a relationship with *submissus* because of the non-constricted lateral side of pronotum (dorsal view), pointed paramedian lobe, the not narrowly, not deeply incising caudal impression, and the distinctly elongated first tarsal segment of middle and hind legs; *termiticola* stands near *was-*

manni and *parallelus* because of the distinctly interrupted median sulcus of the pronotum, and the dentiform, elevated base of second elytral interval. They all share the more or less complanate tibiae. Length ca. 3.3 mm.

Sexual dimorphism. — Unknown.

Host. — Found in termite nest (species unknown) on the foot of a tree.

Distribution. — Burma: Palon (Pegu), ca. 50 km from Rangoon.

Chapter 7. **Corythoderus** Klug

Corythoderus Klug, 1845: plate; Wasmann, 1918: 11 (in key).
Eurycorythoderus Wasmann, 1918: 11 (in key).
Stenocorythoderus Wasmann, 1918: 11 (in key).

Generic diagnosis. — Pronotum with short, broad, deep median sulcus, and with broad caudal impression, deeply hollowing pronotal disc. Pronotal trichomes discontinuous or rather small. Elytron with reduced third sulcus; base with large knob-shaped protrusion and very small trichome.

Clypeus with more or less triangular rostral outline, apex subdentate. Lateral lobe of pronotum small or slightly larger, with or without free caudal end; paramedian lobe rather narrow and distinctly pronounced; caudal impression very broad with a swelling; surface of median lobe with a variably distinct pointed bulb. Pronotal trichomes discontinuous over entire breadth of pronotum, or only somewhat reduced on median lobe and caudal border of pronotum. Elytral sulci 1, 2 and 4 deep and distinct, sulcus 3 reduced, sulcus 5 vague, or fused with sulcus 4; sulci apically effaced and slightly diverging. Base of elytral interval 2 strongly elevated, dentiform or flap-shaped; fused bases of intervals 3 and 4 with a large knob-shaped protrusion with a straight or undulate posterior margin. Pronotal trichomes on ventral side distinctly extended to midline. Posterior part of prosternum flat or somewhat convex with straight caudal border. Intercoxal part of mesosternum moderately broad (0.07-0.10 mm). Intercoxal part of metasternum broad. Anal sternite not distinctly expanded, with more or less parallel sides, transversely convex. Fore tibia with one or two teeth, spur small or absent. Middle and hind tibiae thickened, simply rounded or club-shaped. Hind femora strongly curved upwards.

Sexual dimorphism known of two species (*C. loripes, C. gibbiger*). Males with membranous small flaps on first three tarsal segments of fore leg, females with broader anal sternite.

Type-species. — Of *Corythoderus*: *Corythoderus loripes* Klug, 1845, by monotypy; of *Eurycorythoderus*: *Corythoderus gibbiger* Wasmann, 1899; and of *Stenocorythoderus*: *Stenocorythoderus braminus* Wasmann, 1918; both by present designation.

Composition and distribution. — Three subgenera and three species from India and Africa. The differences between the three groups *Corythoderus*, *Eurycorythoderus*, and *Stenocorythoderus* do not warrant a separate generic status, and consequently they are here united as subgenera under their oldest name. These three subgenera each have a single species, and as the subgeneric differences are given in the key to the genera and subgenera, a separate key to the species is unnecessary.

1. **Corythoderus (Eurycorythoderus) gibbiger** Wasmann

(figs. 29, 51, 83, 118, 119, 146, 165, 186)

Chaetopisthes gibbiger Wasmann, 1899a: 123 (note).
Corythoderus gibbiger; Wasmann, 1899b: 153 (diagnosis); Brauns, 1900: 165 (comparison); Kolbe, 1909: 61 (diagnosis); Schmidt, 1910: 139 (note); Wasmann, 1911: 402 (note); Schmidt, 1922: 543 (in key), 544 (diagnosis).
Eurycorythoderus gibbiger, E. assmuthi, E. fossiger Wasmann, 1918: 13 (in key & diagnoses); Balthasar, 1964: 621-622 (in key, diagnoses).

Notes. — Wasmann (1899b) did not mention the exact number of specimens in his type-series, only stating that he had a large number. The Wasmann collection contains three syntypes, two of them, on the same pin, labelled type. The upper one is here designated as lectotype; it is a ♀ labelled as follows: "Heim/n° 11", "Sangamner/Ahmednagar/1898", "b. *Odontotermes/Wallonensis*/Wasm. im Nest.", "*Corythoderus/gibbiger* Wasm." (all white labels, handwritten by Wasmann, black ink), "Type" (red label with black print), "*Eurycorythoderus/gibbiger* Wasm./Typen" (handwritten by Wasmann, red ink); also two termite specimens present; lectotype label added. The two other syntypes have been labelled paralectotype.

Wasmann (1918) recognized three species within *Eurycorythoderus*, using vague gradual differences, such as: more narrow body-form, longer and narrower paramedian lobes, longer elytra, stronger undulation of the large basal protrusion of the elytron, and deeper hollow behind this protrusion, sparser pilosity (*fossiger*); parallel sides of pronotal disc and dark rust-red colour (*assmuthi*); convex sides of pronotal disc and bright rust-red colour (*gibbiger*); he also used characters of micropunctation, which actually are the same in all his three "species". Balthasar (1964) did not add anything new; he mentioned the same differences that Wasmann did, probably without seeing any type-material. All in all, we consider *E. assmuthi* and *fossiger* junior synonyms of *gibbiger*.

To prevent any future confusion two further lectotypes are here designated. The lectotype of *Eurycorythoderus assmuthi* Wasmann is labelled as follows:

"no 47/13.5.1911" (black ink, Wasmann's hand), "Kirkee bei/Poona (Assmuth)" (ditto), "b. *Odontotermes brunneus* Hag." (ditto), "Type" (red label, black print), "*Eurycorythoderus/Assmuthi*/Wasm. *Typen*" (red ink, Wasmann's hand). The lectotype of *Eurycorythoderus fossiger* Wasmann is labelled as follows: "Heim 132" (black ink, Wasmann's hand), "b. *T. obesus/wallonensis*" (ditto), "Kendal (Ah-/mednagar)/7/03." (ditto), "Type" (red label, black print), "*Eurycorytho-/derus fossiger*/Wasm. *Type.*" (red ink, Wasmann's hand). Both these lectotypes are kept in W.

Sexual dimorphism. — Already mentioned in the generic diagnosis. Median breadth of anal sternite 0.06-0.07 (♂), 0.09-0.11 mm (♀). Total length 2.6-2.9 (♂), 2.5-2.7 mm (♀).

Identification. — Related to *Corythoderus braminus*, judging from various pronotal and elytral characters. The most striking features of *gibbiger* are the deeply hollowed caudal impression with the small pointed bulb, the large three-pointed protrusion on the elytral base, and the posteriorly rather sharp middle and hind tibiae. Colour light red-brown.

Host. — In 1898 *Corythoderus gibbiger* was found together with *Chaetopisthes sulciger* in the middle of a nest of *Odontotermes wallonensis* (Wasmann). Later on the species was also found in the nest of *Odontotermes brunneus* (Hagen).

Distribution. — West India.

Material examined.

Sangamner, Ahmednagar Distr., 1898, Heim (♀ lectotype of *gibbiger*; 1 ♂ 1 ♀, paralectotypes); Kirkee bei Poona, 13.v.1911, Assmuth (♀ lectotype, ♀ paralectotype of *assmuthi*); Kendal, Ahmednagar, vii.1903, Heim (♂ lectotype of *fossiger*). All in W.

2. **Corythoderus (Stenocorythoderus) braminus** (Wasmann)

(figs. 30, 52, 84, 120, 121, 147, 166, 185)

Stenocorythoderus braminus Wasmann, 1918: 12 (diagnosis); Champion & Wasmann, 1923: 570 (diagnosis), 577 (note); Balthasar, 1964: 623 (diagnosis).

Notes. — Analogous with the sexual dimorphism found for *C. loripes* and *C. gibbiger* we may assume that the holotype of *braminus* in the Wasmann collection, a specimen without transparent flaps on its fore tarsi, is a female. The remark of Champion (1923) that one specimen of a sample of three (Khandesh, 1903), with larger and broader head, is presumably a male, like the types, therefore seems to be incorrect. In the BM there are also some specimens of *braminus* from Visakhapatnam and from Poona. (It was impossible to sex all these specimens because of the way they were mounted).

Identification. — Related to *C. gibbiger*, judging from various pronotal and elytral characters. The most striking features of *braminus* are: the relatively narrow median sulcus and shallower caudal impression, the very flat pronotum (lateral view), the obtuse, large protrusion on the elytral base, and the strongly thickened, posteriorly blunt, middle and hind tibiae. Total length 2.6 mm.

Host. — The holotype was found in the nest of *Odontotermes obesus* (Rambur).

Distribution. — Many parts of India.

Material examined.

Anand (Guzerath), 4.i.1912, Assmuth (♀ holotype, W.); Khandesh, T. R. Bell, to light (1 ♀, 1 unsexed, BM), ditto with date 30.iv.1903 (1 ♀, BM); Vizagapatam Dist.: Chipurupalli, R. S. Patuck (1, BM); Poona, 10.iv.1945, D. Leston (1 ♀, BM).

3. **Corythoderus (Corythoderus) loripes** Klug

(figs. 31, 50, 85, 122, 123, 148, 167, 187)

Klug, 1845: pl. 42 fig. 11; Westwood, 1847: 241 (note); Gestro, 1891: 904-7 (comparison); Wasmann, 1894: 155 (note); Wasmann, 1899b: 154-155 (comparison); Kolbe, 1909: 58 (diagnosis); Schmidt, 1910: 139 (note); Wasmann, 1918: 12 (diagnosis); Schmidt, 1922: 543 (in key, diagnosis); Endrödi, 1964: 319-20 (in key); Petrovitz, 1964: 207 (note).

Notes. — Klug did not state the number of specimens on which his diagnosis was based, nor did he designate a type. He mentioned only one area of origin (Aethiopiae, provincia Dongolana). It is unknown where the type-material can be found, but possibly in Berlin. Petrovitz (1964) mentioned a large sample of *loripes*, caught at light by H. Franz in 1957 on the SE bank of Lake Chad. In the BM there are series from four different localities; from all of these one or two specimens were studied in some detail.

Variation. — The specimen from North Nigeria (Zaria, ♀) is much larger (3.1 mm) than the others, the colour is light brown (against dark red-brown) and the transparent membranes on middle and hind tibiae are larger.

Sexual dimorphism. — Already mentioned in the generic diagnosis. Median breadth of anal sternite 0.07 (♂), 0.11-0.15 mm (♀). Total length 2.5-2.6 (♂), 2.6-3.1 mm (♀).

Identification. — *Corythoderus loripes* is most closely related to *Eurycorythoderus* and *Stenocorythoderus* because of pronotal and elytral characters; in some features it more resembles the species of *Paracorythoderus*, such as the strong pronotal convexity, increasing reduction of pronotal trichomes

and stronger swelling of the lateral pronotal lobe. Further striking features of *loripes* are: the lack of a free caudal end on the lateral lobe, the large swelling on the caudal impression, the large obtuse protrusion on the elytral base, and the club-shaped middle and hind tibiae.

Host. — Unknown, according to Wasmann (1918) certainly an *Odontotermes* species.

Distribution. — Ethiopia: provincia Dongolana (not further located); Sudan: Wad Madani; Chad: SE bank of Lake Chad; Nigeria: Kano, Zaria (Samaru); Senegal: Badoumba.

Material examined.

Ethiopie, Abessinien, Raffray (1 ♂, W; 1 unsexed, in Paris); Abyssinia, A. Raffray (2 ♀, BM); Sudan, Wad Madani, 1927 (1 ♀, BM); Nigeria, Kano, iii-vi.1962, P. S. Prevett (1 ♂, BM); N. Nigeria, Zaria, Samaru, 16.iii.1967, J. C. Deeming (1 ♀, BM); Senegal, Badoumbé, i.v.1882, Nodier (1, Tervuren); Kayes (Mali), April, F. de Zeltner, 1905 (1, Paris); St. Louis (? Mauritania), 1899, V. Planchat (3, Paris ex R. Oberthür).

Chapter 8. **Paracorythoderus** Wasmann

Wasmann, 1918: 10 (in key).

Generic diagnosis. — Lateral lobe of pronotum extremely inflated and extended, with small, pointed caudal end. Pronotal trichomes only a narrow fringe, mainly along triangular median lobe. Elytral base with small knob and flap-shaped structures and with small trichome.

Clypeus with simply rounded or slightly triangular rostral outline, without median denticle; clypeal surface with two large, shallow, roundish lateral cavities, or with a curved transverse ridge. Pronotum strongly convex; median sulcus rather short and shallow; paramedian lobe broad, distinctly pronounced; caudal impression deeply hollowing pronotal disc. Narrow pronotal trichome along median lobe and part of caudal border. Elytron with three distinct discal sulci, with or without an incomplete sulcus between the first and second one; sulci 4 and 5 shallow and vague, or even indistinct. Sulci subapically effaced and slightly diverging. Base of interval 2 strongly elevated and flap-shaped; bases of intervals 3 and 4 with a small knob-shaped protrusion. Prosternal apophysis rather broad. Posterior part of prosternum flat with two-pointed caudal border. Intercoxal part of mesosternum broad and about parallel; intercoxal part of metasternum broad. Anal sternite broadened, transversely parallel-sided. Fore tibia with large spur. Legs long and slender, slightly complanate. Hind femora strongly curved upwards.

Sexual dimorphism. Known for two species, *P. ridens* and *P. marshalli*:

females with broader anal sternite and vaguer suture between anal and anteanal sternites. Males of *ridens* with strongly broadened for-tibial spur.

Type species. — *Corythoderus marshalli* Brauns, 1900.

Composition and distribution. — Three species from South and South-west Africa.

Key to *Paracorythoderus* species

1. Clypeus without transverse ridge. Narrow caudal part of pronotal disc, formed by the paramedian lobes, shorter than broad rostral part of disc; median sulcus distinct (figs. 87, 88). Elytron with incomplete sulcus between first and second sulci. Intercoxal part of mesosternum very broad (ca. 0.30 mm). Fore tibia with two teeth. Hind tibia with straight, more or less parallel sides; hind femur about one and a half times longer than tibia. First tarsal segment of middle and hind legs lengthened, longer than each of the subsequent tarsal segments 2
— Clypeus with distinct, bent transverse ridge (fig. 35). Narrow caudal part of pronotal disc about as long as broad rostral part of disc (fig. 86); median sulcus vague. Elytron without incomplete sulcus between the first and second sulci (fig. 124). Intercoxal part of mesosternum less broad (ca 0.20 mm). Fore tibia with one distinct tooth (figs. 168, 169). Hind tibia with curved sides, almost as long as femur. First tarsal segment of middle and hind legs not lengthened, shorter than tarsal segment 5. Very shiny. Length ♂ 2.4-2.6, ♀ 2.5-2.7 mm . . . *P. ridens*
2. Pronotum with short median sulcus, about one third of length of disc (fig. 87); median lobe with straight sides. Lateral pronotal sulcus well defined. Incomplete sulcus of elytron reaching from apex to about two-third of elytral length (fig. 128). Colour red-brown. Length ♂ 2.7-3.1, ♀ 2.9-3.1 mm . . . . . *P. marshalli*
— Median sulcus of pronotum longer, about half the length of pronotal disc (fig. 88); median lobe with undulating sides. Lateral pronotal sulcus less defined, but distinct. Incomplete sulcus of elytron reaching from apex to about half the elytral length (fig. 126). Colour light red-brown. Length 2.9 mm . . . . . *P. casperi*

1. **Paracorythoderus ridens** sp. nov.

(figs. 35, 53, 86, 124, 125, 149, 168, 169, 188)

Description (holotype, female). — Approximate length 2.7, width 1.2, height 1.1 mm. Colour bright brown, shinv: pilosity and trichomes yellow-white to dark-brown.

Cephalic contours, fig. 35. Clypeus with reflexed lateral margins, medially not dentate; clypeal surface with abundant, regular punctation. Clypeogenal transition slightly costate, vague. Clypeofrontal transition distinctly ridged; frontal surface convex; frontal and genal surfaces with variably dense punctation, punctures large, isodiametric, each with a fine erect seta, in total ca. 23.

Pronotal contours, disposition of protrusions, concavities, trichomes, figs. 53, 86. General surface of pronotum strongly convex, median sulcus very shallow and short; lateral sulcus not very deep, gradually widening towards concave anterolateral corner; lateral lobe large, with pronounced shape, reaching from base to anterolateral part of pronotum, basally with small denticle. Caudal impression strongly concave, basal paramedian lobe slightly convex, caudally defined by rather flat, triangular basal median lobe; further details of pronotal base and trichomes, fig. 86. Pronotal disc abundantly punctate with large punctures, isodiametric, well defined, their diameters ca. 0.04 mm, each with a fine erect seta, length ca. 0.05 mm, ca. 15 setae/ 0.25 sq. mm on middle of disc. Scutellum triangular, apex ca. 80°.

Elytral contours, disposition of sulci, trichomes, figs. 124, 125. Elytron with three distinct sulci, extending from base to over halfway elytral length (sulci 1-3); sulci 4 and 5 very vague; reflexed lateral surface of elytron wide, lateral margin distinctly curved, with a transparent membrane along entire border. Humerus distinct. Elytral intervals 1, 2 and 3 distinct, their basal parts strongly modified; base of interval 1 with small elevated extension; base of interval 2 also elevated, with a strongly extended flap; elevated base of interval 3 with a knob-shaped extension; cavity between extensions of intervals 1 and 2 with small basal trichome; intervals medially with vague borders; surface of intervals convex; sutural margin of interval 1 somewhat elevated near base. Intervals and distal declivity sparsely punctate with small punctures, mostly with fine erect to semierect seta, length ca. 0.05 mm, subbasal part of interval 3 with a few slightly longer setae; declined lateral surface with fairly abundant punctation, punctures small and most with a fine appressed seta. Micropunctation indistinct. Elytral apex unmodified.

Ventral side, fig. 149. Apex of prosternal apophysis rounded off; ventral surface of apophysis with a distinct transverse groove; posterior part of prosternum flat, with two-pointed caudal border. Intercoxal part of mesosternum wide, slightly convex. Metasternum convex, with rather deep mediocaudal impression; anterolaterally weakly declivous. Abdominal sternites not foreshortened; the first three visible sternites forming sharp dentiform elevation between the hind coxae; anal sternite weakly convex, with slight median impression; anal sternite medially fused with anteanal sternite, suture only vaguely visible. Pygidium short, convex. Most of pectus and abdomen sparsely

punctate, punctures of different sizes, mostly with fine erect or semierect seta; remaining surface rather smooth.

Contours of legs, figs. 168, 169, 188. Fore tibia with one external-apical denticle; terminal spur large. Base of fore femur with broad dentiform protrusion, trochanter slightly produced. Fore-femoral and fore-coxal bristle rows, fig. 169. Fore tarsi slightly complanate. Middle and hind tibiae slender; middle tibia with straight subparallel sides, hind tibia with curved sides; no transparent membranes; terminal spurs distinct. Middle and hind tarsi complanate, approximate length proportions hind tibia and tarsal segments 1-5 103/17/15/13/12/22. Middle and hind femora slender and somewhat complanate; axis of middle femur weakly, axis of hind femur strongly curved upwards; sides slightly diverging distad; distal-posterior curve with small transparent membrane. Hind leg longer and more slender than middle leg. Legs all with sparse to moderately abundant punctation and pilosity, length of setae 0.04-0.07 mm; part of dorsoposterior surface of middle and hind tibiae with dense, white pilosity.

Some measurements in mm (explanation, figs. 6-9):

A 0.44	C 0.71	E 0.93	G 0.82	J 0.60	L 0.19	N 0.27
B 0.48	D 0.82	F 0.87	H 1.47	K 0.54	M 0.55	

Sexual dimorphism. — Some differences already mentioned in the generic diagnosis; additionally, males with deeper impression of anal sternite and more strongly curved suture between anal and anteanal sternites; males with large, strongly broadened fore-tibial spur, females with large tapering spur. Median breadth of anal sternite 0.18-0.20 (♂), 0.25-0.27 mm (♀). Total length 2.4-2.6 (♂), 2.5-2.7 mm (♀).

Identification. — The most striking differences with the other known *Paracorythoderus* species are the curved transverse ridge on the clypeus and the lack of the incomplete sulcus between the first and second elytral sulci. Some other differences, additional to those mentioned in key, are: sublateral angle of pronotal disc extending to small caudally directed ridge; median lobe mostly vaguely costate; base of second elytral interval very strongly flap-shaped and protrusion on elytral base pointed, angular.

Host. — Unknown.

Distribution. — Namibia.

Material examined.

S.W. Africa, 30 mi ex Tsumeb-Tsintsabris, 26.ix.1966, J. L. Sheasby, T-503 (♀ holotype, 6 ♂ 2 ♀, paratypes, Chicago; 1 ♂ 1 ♀, L).

2. **Paracorythoderus casperi** (Kolbe)

(figs. 34, 54, 88, 126, 127)

Corythoderus casperi Kolbe, 1909: 59 (diagnosis and comparison); Schmidt, 1922: 543 (in key), 544 (diagnosis).
Paracorythoderus casperi; Wasmann, 1918: 12 (in key and diagnosis); Endrödi, 1964: 318 (in key).

Notes. — Kolbe based his diagnosis on more than one specimen without designating a holotype; one of his specimens, apparently a syntype, was sent to Wasmann for comparison with *marshalli*. This syntype remained in the Wasmann collection (Maastricht), and to prevent any possible confusion it is here designated as lectotype: total length 2.9 mm, labelled as follows: "DSW Africa/Okahandya/Casper S.G." (blue label, black print), "*Chaetopisthes/Casperi* n. sp./Typ. Kolbe" (white label, indistinctly written), "*Paracory-/thoderus* m." (white label, handwritten by Wasmann, red ink); lectotype label added.

Identification. — Strongly resembling *Paracorythoderus marshalli*. Besides the differing as already mentioned in the key, *casperi* is also distinguishable from *marshalli* by the following features: more pronounced and slightly infuscated caudal end of lateral lobe; yellow-brown pronotal trichomes; deep but more strongly undulating elytral sulci; distinct second tooth on fore tibia.

Host. — Unknown, according to Wasmann (1918) certainly an *Odontotermes* species.

Distribution. — Namibia.

Material examined. — Lectotype only, as specified above.

3. **Paracorythoderus marshalli** (Brauns)

(figs. 32, 55, 87, 128, 129)

Corythoderus marshalli Brauns, 1900: 164 (diagnosis); Kolbe, 1909: 58 (diagnosis); Schmidt, 1910: 139 (note); Schmidt, 1922: 543 (key), 544 (diagnosis).
Paracorythoderus marshalli; Wasmann, 1918: 12 (in key and diagnosis); Endrödi, 1964: 318 (in key).

Notes. — Brauns stated that the type-series on which his diagnosis was based, was partly to be found in the Brauns collection (Wiener Hofmuseum) and partly in the Wasmann collection. In the latter collection two syntypes were found, one of which is here designated as lectotype: a male, total length 3.1 mm, labelled as follows: "b. *Termes tu-/bicola* Wasm." (Wasmann's handwriting), "Bothaville/(Oranje Frst.)/Brauns!" (print), "*Corythoderus/Marshalli*/Brauns. Typen", "*Paracory-/thoderus* m." (white labels, hand-

written by Wasmann in red ink); also two termite workers present; lectotype label added. The other syntype, also a male, labelled paralectotype.

Sexual dimorphism. — The sexual differences are minimal: females with slightly broader anal sternite and vaguer suture between anal and anteanal sternites, only distinguishable on direct comparison. No differences in breadth of fore tibial spur as in *P. ridens*. From some specimens the genitalia were extracted. Median breadth of anal sternite 0.14-0.18 (♂), 0.18-0.20 mm (♀). Total length 2.7-3.1 (♂), 2.9-3.1 mm (♀).

Identification. — Strongly resembling *Paracorythoderus casperi*. Besides the differences mentioned in the key also different from *casperi* in having: a small, slightly pronounced, not infuscated caudal end of lateral lobe; red-brown pronotal trichomes; well-defined elytral sulci; only a weak second tooth on the fore tibia.

Host. — The type-material was found in the queen cells of various nests of *Termes tubicola* Wasmann, a junior synonym of *Odontotermes transvaalensis* (Sjöstedt). Later also found in the queen cell of a nest of *Odontotermes badius* (Haviland) and in the nests of *Odontotermes latericus* (Haviland) and, again, *Odontotermes transvaalensis* (Sjöstedt). Identification of termite species, according to labels, by W. G. H. Coaton.

Distribution. — South Africa.

Material examined.

Oranje Vrijstaat, Bothaville, Brauns (♂ lectotype, 1 ♂ paralectotype, W.; 1 ♂, collection W. M. Mann, USNM); S. Africa, 32 mi. N. Pretoria, 7.viii.1963, Sheasby (3 ♂ 1 ♀, USNM; 1 ♂ 1 ♀, L); S. Africa, 65 mi. NE. Pretoria, 19.iii.1963, Sheasby (1 ♂, USNM); S. Africa, xii.1964 (1 ♂, USNM); S. Africa, Transvaal, Pienaars River, 32 mi. ex Pretoria, 8.vii.1967, Sheasby (1 ♀, Chicago); S. Africa, Transvaal, Pienaars River, 35 mi. ex Pretoria, 28.viii.1970, Sheasby (4 ♂, Chicago); S. Africa, C.P., 39 mi. ex Schweitzer-Reneke-Christiana, 9.iv.1970, Sheasby (1 ♂ 1 ♀, Chicago); ditto but 10.iv.1970, Sheasby (1 ♂ 1 ♀, Chicago).

Chapter 9. **Hemicorythoderus** gen. nov.

Generic diagnosis. — Pronotum with extremely inflated and extended lateral lobe, with large outwardly directed caudal end; small triangular accessory lobe on laterocaudal side of paramedian lobe; pronotal trichomes reduced. Elytral base with carinate elevations; no elytral trichomes.

Clypeus with rounded rostral outline, rostral margin narrowly reflexed, without median denticle; clypeal surface with two large, shallow, round lateral cavities. Head very broad. Pronotal disc with undulating lateral sides. Lateral lobe strongly bulbous, caudally flattened; lateral sulcus narrow, shallow, rostrally slightly broader and deeper. Median sulcus shallow. Paramedian

lobe distinctly pronounced. Caudal point of median lobe curved upwards. Caudal impression narrow but distinctly hollowing pronotal disc. Elytron with five shallow sulci, subapically effaced (except first one). Intervals 1-4 all with carinate elevations, interval 5 ending in a cavity. Prosternal apophysis narrow. Fore-coxal cavities oblong. Posterior part of prosternum slightly convex. Caudal border medially slightly pointed. Intercoxal part of mesosternum broad, parallel-sided. Intercoxal part of metasternum broad, medially pointed. Anal sternite broadened, transversely parallel-sided. Fore coxal bristle-row extensive. Legs long, slender, slightly complanate; tibiae dilated distad. Sexual dimorphism unknown.

Type-species. — *Corythoderus vaneyeni* Paulian, 1947.

Composition and distribution. — One species from Zaire.

1. **Hemicorythoderus vaneyeni** (Paulian)

(figs. 33, 56, 89, 130, 131, 150, 170, 189)

Corythoderus vaneyeni Paulian, 1947: 42 (diagnosis); Endrödi, 1964: 319 (in key).

Notes. — The holotype, the only one specimen known, is in bad condition, missing fore and middle tibiae and tarsi.

Identification. — Slightly resembling *Paracorythoderus*, on account of the large, inflated lateral lobe, narrow and shallow median sulcus of pronotum, reduced pronotal trichomes, pattern of elytral sulci, broad intercoxal parts, and broadened parallel-sided anal sternite. The striking features of *vaneyeni* are the dark black-brown colour, the swollen lateral lobe with strongly extended caudal end, the completely reduced pronotal trichomes, and the undulating lateral sides of pronotal disc.

Host. — Unknown.

Distribution. — Zaire.

Material examined.

Zaire, Mayidi, 1942, P. van Eyen (holotype, Tervuren).

Species excluded

Termitotrox ancoroides (Petrovitz) comb. nov.

Corythoderus ancoroides Petrovitz, 1956: 662 (diagnosis); Endrödi, 1964: 318 (in key).

Note. — Evidently this species does not belong in the tribe Corythoderini, but in *Termitotrox* (Termitotrogidae), a group of blind, flightless Scarabaeoidea (cf. introduction).

Material examined.

Zaire, Yangambi, 1-5.ix.1954, H. Franz (holotype, Museum G. Frey).

Chapter 10. Annotated checklist of genera, subgenera and species

Genera, subgenera, type-species

1. *Chaetopisthes* Westwood, 1847: 242, *Chaetopisthes fulvus* Westwood (monotypy). — Oriental, 20 spp.
   Subgen. *Chaetopisthes* Westwood, *Chaetopisthes fulvus* Westwood (monotypy).
   Subgen. *Chaetopisthides* Wasmann, 1918: 15, *Chaetopisthes sulciger* Wasmann (monotypy).
   Subgen. *Neochaetopisthes* Wasmann, 1918: 16, *Chaetopisthes assmuthi* Wasmann (present designation).
   Subgen. *Miochaetopisthes* nov., *Chaetopisthes cincinnatus* sp. nov. (present designation).
2. *Termitopisthes* Wasmann, 1918: 9, *Chaetopisthes wasmanni* Schmidt (original designation). — Oriental, 7 spp.
3. *Corythoderus* Klug, 1845: plate, *Corythoderus loripes* Klug (monotypy). — Afrotropical, 1 sp., Oriental, 2 spp.
   Subgen. *Eurycorythoderus* Wasmann, 1918: 11, *Corythoderus gibbiger* Wasmann (original designation).
   Subgen. *Stenocorythoderus* Wasmann, 1918: 11, *Stenocorythoderus braminus* Wasmann (original designation).
   Subgen. *Corythoderus* Klug, *Corythoderus loripes* Klug (monotypy).
4. *Paracorythoderus* Wasmann, 1918: 10, *Corythoderus marshalli* Brauns (original designation). — Afrotropical, 3 spp.
5. *Hemicorythoderus* gen. nov., *Corythoderus vaneyeni* Paulian (present designation). — Afrotropical, 1 sp.

Chaetopisthes species

1. ***fulvoides*** sp. nov. (holotype ♀ in London). ♂ ♀. — India (type-loc. Chota Nagpur). Host unknown.
2. *fulvus* Westwood, 1847: 242 (lectotype in Oxford). ♀. — India (type-loc. Mhow). Host unknown.
3. ***latipes*** sp. nov. (holotype ♀ in London). ♂ ♀. — India (type-loc. Faizabad). Host unknown.
4. ***oberthueri*** sp. nov. (holotype ♀ in Paris). ♀. — India (type-loc. Ramanthapuram). Host unknown.
5. *sulciger* Wasmann, 1899b: 152 (lectotype ♀ in Maastricht), synon. ***Chaetopisthes tibialis***. ♂ ♀. — India (type-loc. Sangamner). Host *Odontotermes wallonensis* (Wasmann).
6. ***popei*** sp. nov. (holotype ♂ in London). ♂. — India (type-loc. Chik Ballapur). Host unknown.
7. *longulus* Wasmann, 1923: 581 (holotype ♀ in London). ♂ ♀. — India (type-loc. Tanakpur). Host unknown.
8. ***saetiger*** sp. nov. (holotype ♀ in London). ♀. — India (type-loc. Faizabad). Host unknown.
9. *singalensis* Champion, 1923: 575 (holotype ♂ in London). ♂. — Sri Lanka (type-loc. Trincomali). Host unknown.
10. *simplicipes* Gestro, 1891: 907 (holotype in Paris). ♂ ♀. — India (type-loc. India bor.). Host unknown.
11. ***ventriosus*** sp. nov. (holotype ♀ in London). ♀. — India (type-loc. Ranchi). Host unknown.
12. ***semisulcatus*** sp. nov. (holotype ♂ in London). ♂. — India (type-loc. Faizabad). Host unknown.

13. *angustipes* sp. nov. (holotype ♀ in London). ♀. — India (type-loc. Nilgiri Hills). Host unknown.
14. *septentrionalis* sp. nov. (holotype ♂ in London). ♂. — India (type-loc. Gurdaspur). Host unknown.
15. *meridionalis* sp. nov. (holotype ♀ in London). ♀. — India (type-loc. Kodai Kanal). Host unknown.
16. *brevipes* Wasmann, 1923: 580 (holotype ♀ in London). ♂ ♀. — India (type-loc. Chota Nagpur). Host unknown.
17. *assmuthi* Wasmann, 1911: 402 (lectotype ♀ in Maastricht). ♂ ♀. — India (type-loc. Khandala). Host *Odontotermes obesus* (Rambur).
18. *heimi* Wasmann, 1903: 149 (holotype ♂ in Maastricht). ♂ ♀. — India (type-loc. Wallon). Host *Odontotermes wallonensis* (Wasmann).
19. *brunneus* Wasmann, 1918: 17 (lectotype ♂ in Maastricht). ♂ ♀. — India (type-loc. Kirkee). Host *Odontotermes brunneus* (Hagen).
20. *cincinnatus* sp. nov. (holotype ♂ in London). ♂. — India (type-loc. Visakhapatnam Dist.). Host unknown.

Termitopisthes species

1. *forticulus* sp. nov. (holotype ♀ in London). ♂ ♀. — India (type-loc. Haldwani). Host *Odontotermes obesus* (Rambur).
2. *submissus* sp. nov. (holotype ♀ in London). ♀. — India (type-loc. Haldwani). Host unknown.
3. *parallelus* Wasmann, 1923: 578 (holotype ♀ in London). ♀. — India (type-loc. Dehra Dun). Host unknown.
4. *wasmanni* (Schmidt, 1911): 33, (*Chaetopisthes*; holotype cf. Stockholm), synon. *Termitopisthes laticollis* Wasmann, *Termitopisthes nobilis* Wasmann. ♂ ♀. — India (type-loc. Chota Nagpur). Host *Odontotermes obesus* (Rambur), *Odontotermes bangalorensis* Holmgren.
5. *schmidti* Champion, 1923: 571 (holotype ♀ in London). ♂ ♀. — India (type-loc. Tanakpur). Host unknown.
6. *kistneri* sp. nov. (holotype ♂ in London). ♂ ♀. — India (type-loc. Tanakpur). Host unknown.
7. *termiticola* (Gestro, 1891): 904 (*Chaetopisthes*; holotype in Genova). — Burma (type-loc. Palon). Host an unidentified termite species.

Corythoderus species

1. *gibbiger* Wasmann, 1899b: 152 (*Eurycorythoderus*; lectotype ♀ in Maastricht), synon. *Eurycorythoderus assmuthi* Wasmann, *Eurycorythoderus fossiger* Wasmann. ♂ ♀. — India (type-loc. Sangamner). Host *Odontotermes wallonensis* (Wasmann), *Odontotermes brunneus* (Hagen).
2. *braminus* (Wasmann, 1918): 12 (*Stenocorythoderus*; holotype ♀ in Maastricht). ♂ ♀. — India (type-loc. Anand, NW. India). Host *Odontotermes obesus* (Rambur).
3. *loripes* Klug, 1845: plate (holotype cf. Berlin). ♂ ♀. — Ethiopia (type-loc. prov. Dongolana), Sudan, Chad, Nigeria, Senegal. Host unknown.

Paracorythoderus species

1. *ridens* sp .nov. (holotype ♀ in Chicago). ♂ ♀. — Namibia (type-loc. Tsumeb-Tsintsabris). Host unknown.
2. *casperi* (Kolbe, 1909): 59 (*Corythoderus*; lectotype in Maastricht). — Namibia (type-loc. Okahandya, Damaraland). Host unknown.

3. *marshalli* (Brauns, 1900): 164 (*Corythoderus*; lectotype ♂ in Maastricht). ♂ ♀. — S. Africa (type-loc. Bothaville). Host *Odontotermes transvaalensis* (Sjöstedt), *Odontotermes badius* (Haviland), *Odontotermes latericus* (Haviland).

Hemicorythoderus species

1. *vaneyeni* (Paulian, 1947): 42 (*Corythoderus*; holotype in Tervuren). — Zaire (type-loc. Mayidi). Host unknown.

Chapter 11. List of localities whence Corythoderini were studied

Approximate location of Asian localities

Anand (India), 22.34 N - 72.56 E: *Stenocorythoderus braminus.*
Bangalore (India), 12.59 N - 77.35 E: *Termitopisthes wasmanni.*
Borivli (India), 19.14 N - 72.51 E: *Chaetopisthes assmuthi.*
Calcutta (India), 22.32 N - 88.22 E: *Termitopisthes wasmanni.*
Chik Ballapur (India), 13.28 N - 77.44 E: *Chaetopisthes meridionalis, Ch. fulvoides, Ch. popei.*
Chota Nagpur (India), 22.00 N - 86.00 E: *Chaetopisthes brevipes, Ch. fulvoides, Termitopisthes wasmanni.*
Dehra Dun (India), 30.19 N - 78.02 E: *Termitopisthes parallelus, T. wasmanni.*
Faizabad (India), 26.47 N - 82.08 E: *Chaetopisthes semisulcatus, Ch. latipes, Ch. saetiger.*
Gurdaspur (India), 32.02 N - 75.31 E: *Chaetopisthes septentrionalis.*
Haldwani (India), 29.13 N - 79.31 E: *Chaetopisthes brevipes, Termitopisthes forticulus, T. submissus.*
Hoshangabad (India), 22.45 N - 77.43 E: *Termitopisthes wasmanni.*
Kendal (India), ca. 19.05 N - 74.44 E: *Chaetopisthes heimi, Ch. sulciger, Eurycorythoderus gibbiger.*
Khandala (India), 20.01 N - 74.48 E: *Chaetopisthes assmuthi.*
Khandesh (India), not further specified: *Chaetopisthes sulciger, Termitopisthes wasmanni, Stenocorythoderus braminus.*
Kirkee (India), 18.34 N - 73.52 E: *Chaetopisthes brunneus, Eurycorythoderus gibbiger.*
Kodai Kanal (India), 10.14 N - 77.29 E: *Chaetopisthes meridionalis, Ch. popei.*
Mhow (India), 22.33 N - 75.46 E: *Chaetopisthes fulvoides, Ch. fulvus, Termitopisthes wasmanni.*
Nilgiri Hills (India), 11.25 N - 76.30 E: *Chaetopisthes angustipes.*
North India, not further located: *Chaetopisthes simplicipes.*
Palon (Burma), 17.20 N - 96.29 E: *Termitopisthes termiticola* (not seen).
Poona (India), 18.32 N - 73.52 E: *Stenocorythoderus braminus.*
Ramanthapuram (India), 9.23 N - 78.53 E: *Chaetopisthes oberthueri.*
Ranchi (India), 23.21 N - 85.20 E: *Chaetopisthes fulvoides, Ch. simplicipes, Ch. ventriosus, Termitopisthes kistneri, T. wasmanni.*
Sangamner (India), 19.34 N - 74.13 E: *Chaetopisthes sulciger, Eurycorythoderus gibbiger.*
Sidlaghatta (India), 13.23 N - 77.52 E: *Chaetopisthes popei.*
Tanakpur (India), 29.05 N - 80.07 E: *Chaetopisthes longulus, Termitopisthes kistneri, T. schmidti, T. wasmanni.*
Tiruchirapalli (India), 10.50 N - 78.43 E: *Chaetopisthes heimi.*
Trincomali (Sri Lanka), 08.34 N - 81.14 E: *Chaetopisthes singalensis.*
Visakhapatnam Dist. (India), 17.44 N - 83.16 E: *Chaetopisthes cincinnatus, Ch. saetiger, Termitopisthes kistneri, T. wasmanni, Stenocorythoderus braminus.*
Wallon (India), ca. 19.05 N - 74.44 E: *Chaetopisthes heimi.*

Approximate location of African localities

Badoumba (Senegal), 13.12 N - 15.44 W: *Corythoderus loripes.*
Bothaville (South Africa), 27.24 S - 26.37 E: *Paracorythoderus marshalli.*
Dongolana provincia (Ethiopia), not further specified: *Corythoderus loripes.*
Ethiopia, not further specified: *Corythoderus loripes.*
Kano (Nigeria), 12.00 N - 8.31 E: *Corythoderus loripes.*
Kayes (Mali), 14.26 N - 11.28 W: *Corythoderus loripes.*
Lake Chad: SE bank (Chad), not further specified: *Corythoderus loripes.*
Mayidi (Zaire), 5.12 S - 15.11 E: *Hemicorythoderus vaneyeni.*
Okahandja (Namibia), 21.59 S - 16.58 E: *Paracorythoderus casperi.*
Pienaars River (South Africa), 25.12 S - 28.17 E: *Paracorythoderus marshalli.*
Pretoria: 65 mi. NE of (South Africa), ca. 29.00 E - 25.10 S: *Paracorythoderus marshalli.*
Saint Louis (if Mauritania, then): 16.01 N - 16.30 W: *Corythoderus loripes.*
Schweitzer-Reneke-Christiana, 39 mi. ex (South Africa), 27.11 S - 25.20 E *Paracorythoderus marshalli.*
Tsumeb-Tsintsabris, 30 mi. ex (Namibia), 19.13 S - 17.42 E: *Paracorythoderus ridens.*
Wad Madani (Sudan), 14.24 N - 33.32 E: *Corythoderus loripes.*
Zaria, Samaru (N. Nigeria), 11.04 N - 07.42 E: *Corythoderus loripes.*

Chapter 12. Phylogeny

The diagnostic information given in the preceding chapters already more or less reflects our ideas about the phylogeny of the Corythoderini. In this chapter the phylogeny of the genera will be discussed in more detail because we believe that the available evidence is, with few restrictions, suitable for a complete analysis. We refrain from an analysis down to the species-level, because the discussion would then soon amount to pure speculation, although limited conclusions certainly can be drawn. It is beyond the scope of this paper to discuss in depth the methodology of phylogenetic research. Neither is it possible to expound here on all the implications of the phylogeny proposed below. Readers not familiar with the cladistic terminology used here will find the English translation of Hennig's fundamental treatise on phylogenetic classification (1966) helpful (it has an index).

The phylogeny of the Corythoderini proposed here (fig. 201) is based on a number of transformation series of homologous character states, here termed morphoclines. The direction of these morphoclines can in our case be determined on one functional and one statistical criterium. The functional criterium is the assumption of a progressive adaptation of the various Corythoderini to their association with termites, i.e., a multiplication and perfection of termitophilous features (such as the symphilous glands mentioned in the introduction). The statistical criterium is that of ingroup uniqueness and outgroup absence, i.e., character states unique in the ingroup (in our case any set of less than five genera) and absent from the outgroup are considered

apomorphous (an example is the median lobe of the pronotal base). In groups with strongly adaptive features like the Corythoderini, these criteria show overlap: the termitophily of the Corythoderini is a unique phenomenon within the Aphodiinae, and features directly related to this way-of-life are, eo ipso, unique. Our general criteria agree with directional arguments 1 and 10 of De Jong (1980).

The evaluation of the phylogenetic significance of the various character states is hampered by our ignorance regarding their detailed operation and their functional integration. How precisely, for instance, are the developments of impressions, projections, elevations, trichomes, c.q. the glandular structures, of both the prothorax and the elytra interrelated, and, consequently, which of the characters should be counted as one because of any interrelations? This is one of the reasons why a purely phenetic approach to a classification of the Corythoderini seems impossible to us. In a phylogenetic analysis this question of character integration may also become important, because in some cases the number of synapomorphies per suprageneric taxon may be convincing evidence. This may be the case (1) when a choice has to be made between a qualification as autapomorphous or parallel, or (2) when the numbers of synapomorphies per taxon are extremely disproportionate, i.e., when primitive and derivative taxa can be distinguished.

The synapomorphies on which the gross phylogeny of the Corythoderini (fig. 201) is based have been drawn from 17 of the 30 characters listed in chapter 4 (characters 3, 8, 10-13, 14-16, 18-20, 21, 23-25, 30). Characters excluded from this list are considered not interpretable as to the two general criteria discussed above (cf. character 5), or they are considered non-homologies (cf. 9). The character states mentioned under each of the five genera in fig. 201 are all apomorphous (denoted b, c, d, e), except where the plesiomorphous state (a) also occurs within the genus (denoted a/b). These character states will here be briefly discussed.

(i) Development of a trichome on the elytral apex (character state 20b), and the probably related apical extension of the sutural margin of elytral interval 1 (19b), *Chaetopisthes*. — Clearly this is an advanced adaptation to their termitophilous way-of-life. The degree of development varies strongly within the genus (compare figs. 108, 110, 141, 142), but we have no doubt as to the autapomorphous nature of trichome development in *Chaetopisthes*.

ii) Development of a median lobe on the pronotal base (10b), *Corythoderus* group of genera, which sometimes has a small protrusion (11b), *Corythoderus*. — The specific function of these character states is not clear, but they certainly are unique among scarabs. The median lobe might well serve

in administering glandular products to their hosts, either as a licking surface or as an evaporative surface.

(iii) Increased projection of paramedian pronotal lobes and extension of caudal impression (8c), increased development of lateral lobe (3b, c), *Corythoderus* group. — Character state 8c seems to be directly related to 10b, the presence of the median lobe. The size of the lateral lobe varies among the three *Corythoderus* species (3a/b), and is very large in *Paracorythoderus* and *Hemicorythoderus*.

(iv) Strong development of the continuous fringe of pronotal trichomes (12b), *Termitopisthes*, reduction of trichomes (13b, c, d), *Corythoderus* group, extension of pronotal trichomes to ventral side (21b, c), *Termitopisthes, Corythoderus*. — The presence of pronotal trichomes may be considered plesiomorphous because of the occurrence of the same character within the cladistic twin of the Corythoderini: the Termitoderini. In that case we can suggest a development of pronotal trichomes in two opposite directions. In *Termitopisthes* the strong and luxuriant trichome development (12b) may be considered apomorphous. However, in the *Corythoderus* group there seems to be a relation between the volume of the pronotal trichomes (13a, b, c, d) and the size of the lateral lobe (3a, b, c), so that here reduction of the trichomes may be considered apomorphous. Because of the strong variation of the trichome development on the pronotal base, their various sections cannot be simply homologized for all the species; parallel developments seem very likely, such as the extension of pronotal trichomes to the ventral side (21b, c) in *Termitopisthes* and *Corythoderus*. However, a stronger development can be judged from just the occurrence of these character states.

(v) Development of divergent pattern of elytral sulci and intervals (15b), *Termitopisthes, Corythoderus* group minus *Hemicorythoderus*, and lateral and distal obliteration (14b, c) of this pattern, *Corythoderus* and *Paracorythoderus*. — Obviously the qualification problem (autapomorphous or parallel development) must be solved here, because of the absence of the divergent pattern (15b) in *Hemicorythoderus*, undoubtedly a member of the *Corythoderus* group. We suggest that the divergent pattern has evolved independently in *Termitopisthes* on the one hand, and *Corythoderus* and *Paracorythoderus* on the other, instead of assuming a "normalization" of the elytral pattern in *Hemicorythoderus*.

(vi) Modification of the elytral base (16b, c, d, e), *Termitopisthes* and *Corythoderus* group, sometimes with small trichome (18b), *Corythoderus* and *Paracorythoderus*. — We can only see a closer relation between 16d en e, the modified elytral base of *Corythoderus* and *Paracorythoderus*. Character

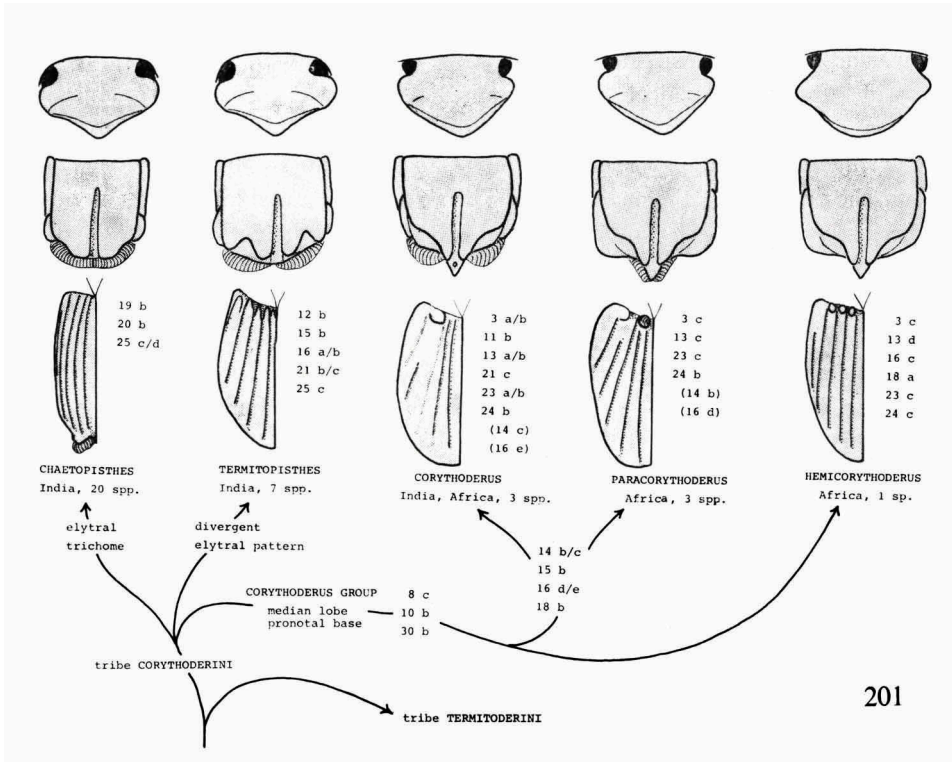


Fig. 201. Phylogenetic scheme of the genera of Corythoderini, with indication of cladistic twin (Termitoderini). Numbers and letters refer to characters as listed in chapter 4 and discussed in chapter 12; only synapomorphies justifying generic and suprageneric groupings indicated. The generalized diagrammatic figures of head, pronotum and elytron (top to bottom) for each of the genera show some of these synapomorphies. Also indicated are known distribution and number of species.

states b and c may well have evolved independently from each other and from d and e.

(vii) Increased separation of the middle and hind coxae (23b, c, 24b, c), *Corythoderus* group. — This has happened independently in almost all scarabaeoid families (cf. Geotrupidae, Cetoniidae). The closest relatives of the Aphodiidae, the Scarabaeidae s. str., all have widely separated middle coxae, but this is, contrary to the situation in the Corythoderini, due to an extreme rostral expansion of the metasternal disc.

(viii) Strong expansion of anal sternite (25c, d), *Chaetopisthes* and *Termitopisthes*. — The function of this expansion is unknown. To our knowledge such an expansion does not occur in other scarabaeoid groups, certainly not

in any of the Laparosticti. This synapomorphy would be the only reason to combine *Chaetopisthes* and *Termitopisthes* in one group. We assume, however, a parallel development: the degree of expansion varies strongly according to species, a slight broadening (25b) also occurring in *Paracorythoderus* and *Hemicorythoderus*.

(ix) Curving of hind femora (30b), *Corythoderus* group. — The function of this character state is also unknown. It does not occur in other aphodiid groups.

The strongest arguments for the phylogenetic scheme (fig. 201) are the synapomorphies discussed under *i*, *ii*, and *iii*, i.e., the apical elytral trichome, the pronotal median lobe, and the further pronotal modifications. Certainly, therefore, the genera *Corythoderus*, *Paracorythoderus*, and *Hemicorythoderus*, belong in one monophyletic group, while the genus *Chaetopisthes* also appears to be a well-defined, monophyletic unit, with numerous, quite diverse species.

The problematic genus is *Termitopisthes*. The only strong synapomorphy, and apparently a parallel development compared to *Corythoderus* and *Paracorythoderus*, is the divergent pattern of elytral sulci and intervals, discussed under *v*. The expansion of the anal sternite, discussed under *viii*, is too variable to consider it a distinct synapomorphy with *Chaetopisthes*. The development of tooth-shaped bases on the elytral intervals (character state 16b) varies according to species and cannot, as already mentioned under *vi*, be compared with the modifications in the *Corythoderus* group. Similarly, the stronger development of the prothoracic trichomes (especially character 21, see above under *iv*) also gives little information about the position of *Termitopisthes*. We are inclined to consider *Termitopisthes* more closely related to *Chaetopisthes*, which would be substantiated by a phenetic analysis. For the time being we are satisfied with the trichotomy suggested in the phylogenetic scheme.

As for the *Corythoderus* group of genera, we here combine *Corythoderus* and *Paracorythoderus*, sharing the more or less identical synamorphies in the elytral characters discussed under *v* and *vi*, while there is no distinct synapomorphy shared by *Hemicorythoderus* with only one of the two genera. There is in some characters (3, 13, 23, 24) a trend (*Corythoderus-Paracorythoderus-Hemicorythoderus*) suggesting parallel developments in *Corythoderus* & *Paracorythoderus* and *Hemicorythoderus*, but this is easily understood by assuming that these developments started with the origin of the *Corythoderus* group and were completed differentially in the respective genera.

A brief argumentation of the monophyly of the group Corythoderini &

Termitoderini (cf. also chapters 1 and 3) seems in order. We believe that some, possibly all, of the grooves and lobes on the termitoderine pronotum are homologous with pronotal elements of the Corythoderini (compare figs. 2 and 14). The median sulci (e) are undoubtedly homologous; the caudal impressions (h, i) may have some relation with the transverse basal groove and with the rest of the pronotal base of Termitoderini. The discal-lateral grooves (those converging rostrad in fig. 14) may be homologous with the extensive caudal impression (h) found in some *Termitopisthes* (cf. fig. 82). Then the lateral lobe and the adjacent longitudinal groove of the Termitoderini may be homologous with d. The posterolateral structures indicated in fig. 14 are trichomes, which may be homologous with those present in the majority of the Corythoderini. These possible homologies, together with the absence of other suitable candidates, have led us to consider the Termitoderini and Corythoderini a pair of cladistic twins, joined by a peculiar, synapomorphous pattern of pronotal modifications.

As for the biogeographical implications of the phylogenetic scheme (fig. 201) very little can be said about the origin of the Corythoderini as a whole, despite our ideas about its cladistic twin being the African Termitoderini. The distribution of the termite host and its relatives, however, might give a clue. Corythoderini are restricted to continental Africa and to the Indian region. The host genus *Odontotermes* has a more extensive range, occurring throughout tropical Africa and tropical Asia, eastward to Celebes and the Philippines, being absent from Madagascar. It seems that *Odontotermes* originated in Africa during the early Tertiary, and reached Asia during the Miocene (Emerson, 1955; Krishna, 1970; etc.). The evidence for this, however, is circumstantial (cf. also Sands, 1980, in litt.), being based presumably on paleogeographical and rough phylogenetic data (i.e. on the events of Afro-Indian-Madagascan continental drift, such as the arrival of India in the Tethys area; and on the occurrence of derivative *Odontotermes* groups and other derivative Macrotermitinae in tropical Asia). The Corythoderini may not yet have succeeded to become established in southeast Asia (where, parenthetically, collecting has been nearly as intensive as in India), and in this there seems to be agreement with other *Odontotermes* guests (cf. *Termitotrox*, already mentioned in the introduction, chapter 1) and, of course, with numerous other late-Cenozoic invaders from Africa.

It seems indisputable that the corythoderine genera *Chaetopisthes* and *Termitopisthes* evolved in the Indian region, both being endemics with numerous species. Whether originally they indeed came from Africa is not clear. The species of the *Corythoderus* group of genera are few and diverse,

and they are not confined to one region. The phylogenetic scheme (fig. 201) allows of two suggestions, one being that the *Corythoderus* group evolved in Africa, with three recognizable stages: *Hemicorythoderus* branching off, a North/South amphi-African split into *Corythoderus* and *Paracorythoderus*, and an invasion of India by *Corythoderus*. The alternative, assuming an Asian origin, requires the assumption of at least two independent invasions deep into Africa, and also the aforesaid amphi-African split. With all these considerations we have reached old grounds of biogeographical speculation, namely those concerning the frequently unknown interrelations of migration, isolation, anagenetic change, evolutionary velocity, absolute age, etc. of the taxa involved. As for the evolution of the *Corythoderus* group, we prefer the first alternative suggested above, which, in our view, is maximally consistent with the other data discussed above.

Very recently (Crowson, 1981) a photograph was published of a "scarabaeoid beetle from the Lower Cretaceous of the Lebanon" (l.c.: 670, 673, 680), suggested to be close to the Corythoderini. Judged from certain details in the photograph (plate 9D) this seems very doubtful to us, although the habitus of the beetle indeed agrees with that of the Corythoderini. We were as yet unable to get hold of the fossil concerned in order to study it thoroughly. If a Lower Cretaceous beetle should turn out to approach the Corythoderini, in cladistic terms, much of what we have stated in this chapter about the history of the tribe is likely to be falsified, even though the phylogenetic scheme (fig. 201) would have to be altered minimally. At the moment we can only place the entire evolution of the corythoderine genera in the Cenozoic (see above).

Summing up, we speculate that the Corythoderini evolved with *Odontotermes* in continental Africa during the early Tertiary, and then followed their hosts into India, at least twice since the Miocene, speciating there intensively, leaving *Corythoderus* group remnants and the Termitoderini behind. They failed to follow their hosts into southeast Asia.

Chapter 13. Acknowledgements

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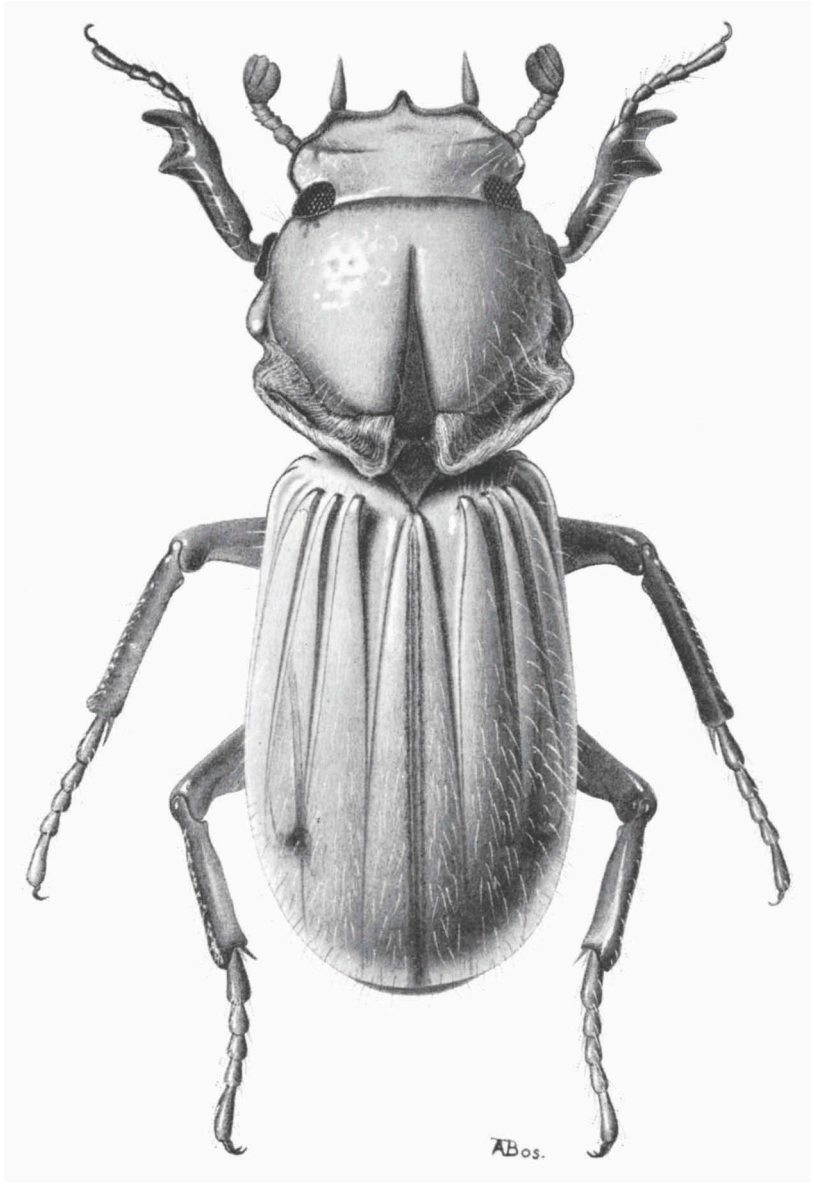
Chapter 15. ALPHABETICAL INDEX TO SPECIES-GROUP NAMES

Asterisk = new species. Synonyms in *italics*.



General appearance of *Termitopisthes forticulus* sp. nov., guest of *Odontotermes obesus* (Rambur) in India; ♀ paratype from Haldwani.