

A GENERIC LEVEL REVISION AND
CLADISTIC ANALYSIS OF THE
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(HEMIPTERA, LYGAEIDAE,
RHYPAROCHROMINAE)

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B. JANE HARRINGTON

*Assistant Professor, Department of Entomology
University of Wisconsin*

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ABSTRACT

The present study examines the rhyparochromine tribe Myodochini at the generic level on a world basis. A key to 56 genera is provided and diagnoses and brief summary descriptions of salient morphological features are given for all genera.

Thirteen new genera (*Ashlockaria*, *Bacacephalus*, *Ereminellus*, *Froeschneria*, *Humilocoris*, *Megacholula*, *Neopamera*, *Paracholula*, *Paraparomius*, *Pseudoparomius*, *Slaterobius*, *Stalaria*, and *Stridulocoris*) and the new species *Megacholula englemanni* are described.

The following new synonymies are made: *Exptochiomera* with *Prytanus*; *Neocattarus* with *Cholula*; *Sphaerobius* with *Erlacda*; and *Sphaerobius gracilis* with *Erlacda arhaphaeoides*.

New combinations include: *Ashlockaria sobrius*; *Bacacephalus globiceps*; *Cholula firmus*, *C. irrorandus*, *C. maculatus*, *C. parvus*, *C. vicens*; *Ereminellus arizonensis*; *Froeschneria infumatus*, *F. multispinus*, *F. oblitus*, *F. piligerus*, *F. vicinialis*; *Horridipamera bergrothi*, *H. ebenau*, *H. inconspicuus*, *H. perlongus*, *H. pullatus*, *H. rusticus*, *H. spinicrus*, *H. subsericeus*; *Humilocoris cephalotes*; *Ligyrocoris occultus*; *Neopamera albocinctus*, *N. bilobata*, *N. brachialis*, *N. costalis*, *N. crassicornis*, *N. honduranus*, *N. insularis*, *N. intermedius*, *N. mumfordi*, *N. neotropicalis*, *N. paganus*, *N. platanus*, *N. procerulus*, *N. recinctus*, *N. serripes*, *N. sororculus*, *N. tineodes*, *N. tuberculatus*, *N. vicarius*, *N. vividus*; *Orthaea consuta*, *O. procinctus*; *Pamerana punctulatus*, *P. scotti*, *P. sinae*; *Paracholula thoracicus*, *P. vegetus*; *Paraecocosmetus albofasciatus*, *P. crassiceps*, *P. gemmatus*, *P. harimaensis*, *P. malayus*, *P. mimulus*, *P. nervosus*, *P. sladeni*, *P. vi-*

talisi; *Paraparomius lateralis*, *P. leptopoides*; *Paromius limbatus*; *Prytanus albomaculata*, *P. caeca*, *P. confusa*, *P. dissimilis*, *P. foeda*, *P. formosa*, *P. fusicornis*, *P. intercisa*, *P. minima*, *P. oblonga*, *P. plebeius*, *P. tumens*; *Pseudopachybrachius basalis*, *P. capicolus*, *P. nesovinctus*, *P. pacificus*, *P. reductus*, *P. undulatus*, *P. vinctus*; *Pseudopamera ater*, *P. insititius*, *P. setosa*; *Pseudoparomius linearis*; *Remaudiereana africana*, *R. andrewsi*, *R. annulipes*, *R. boninensis*, *R. castanea*, *R. flavipes*, *R. horvathi*, *R. inornatus*, *R. kydippe*, *R. nigra*, *R. nigriceps*, *R. noctuabundus*, *R. octonotata*, *R. puberulus*, *R. robustus*, *R. sidnicus*, *R. sobrina*, *R. tibialis*; *Slaterobius insignis*, *S. quadristriatus*; *Stalaria ferruginosus*, *S. kiseis*, *S. nysias*; *Stigmatonotum afrus*, *S. geniculatus*; *Stridulocoris gracilis*.

A cladistic analysis of the myodochine genera is presented with emphasis on the valuable character system of the male genitalia. Plesiomorphic and apomorphic states are designated for all characters employed, and only synapomorphic character states are employed to infer relationship and to construct a generic cladogram for the tribe Myodochini.

The phylogeny shown in the cladogram is viewed against the current known distributions of the various living myodochine species and used to propose a broad zoogeographic hypothesis about the origins of the tribe and major monophyletic assemblages within the Myodochini. Almost total lack of transoceanic sister groups at the generic level suggests a postGondwanaland origin and evolution for the tribe, and the distributional patterns also attest to the isolated evolution of two major lineages in North America.

INTRODUCTION

The Myodochini, with 56 genera and more than 260 species, is the largest tribe in the lygaeid subfamily Rhyparochrominae. Members occur in all six major zoogeographic regions and representatives also are known from several remote Pacific Oceanic islands.

All members of the tribe whose feeding habits are known are seed-predators. In fact, except for the blood-feeding tribe Cleradini, this specialized phytophagous habit is characteristic for the subfamily (Sweet, 1964).

Some myodochine genera seek seeds still in the seed head, others in the ground nests of rodents, and yet others in bird droppings on leaves. The majority of the species, however, are ground bugs. There they can usually be found in the litter layer, feeding on fallen seeds within the natural seed shadow of a plant. Sweet (1964) has studied the biology of certain Nearctic members in detail and reports some seed-defense behavior.

Most of the myodochini are small, dull-

colored, often cryptic insects and many are not generally collected except by specialists. Despite the large number of taxa described since Stål's (1874) key to genera, the group had not attracted much taxonomic interest, beyond the alpha level and a few generic revisions, until quite recently, when Malipatil (1978) published a revision of the tribe for the Australian region.

My initial involvement with the tribe was an effort to revise the large cosmopolitan genus *Pachybrachius*. Upon discovering that *Pachybrachius* was highly polyphyletic, I saw the necessity for generic level work before any meaningful alpha taxonomy could be done. The present resulting work is the first modern worldwide examination of the tribe in its entirety. Emphasis has been placed on delimiting the genera and proposing a generic phylogeny.

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SYSTEMATIC HISTORY OF THE TRIBE MYODOCHINI

Although there were earlier groupings, as noted in Slater (1964a), the Myodochini were first defined and named by Stål (1872) as the division Myodocharia. Even at that early date, Stål clearly recognized the positions of the abdominal spiracles as good indicators of higher group relationships within the subfamily Rhyparochrominae. Yet, Breddin (1907) was the first to actually characterize the tribe Myodochini (which he referred to as the Pamerioidea) as having abdominal spiracles II through IV dorsal. Currently, this derived pattern of abdominal spiracles remains the most reliable character for distinguishing the tribe.

Since Stål's early definition, the major nomenclatural problem for the group has been the status of the name for the type genus, *Myodocha*. Slater, Barber and Sailer (1959, 1961) have discussed this elaborate case in detail. Their 1961 appeal to the International Commission on Zoological Nomenclature led, in 1963, to Opinion 669 which relegated *Myodochus* Olivier, 1811 to the Official List of Rejected and Invalid Generic Names in Zoology; designated *Myodocha* Latreille, 1810 as the official name of the genus, placing it on the Official List of Generic Names in Zoology; recognized *Myodocha serripes* Olivier, 1811 as the type species of the genus and placed that species name on the Official List of Specific Names in Zoology; and placed the family-group name Myodochini Stål, 1872 (correction of Myodocharia Stål, 1872 by Van Duzee, 1916) on the Official List of Family-Group Names in Zoology.

Numerous authors, including Scudder (1957), have followed Puton (1879) in calling the group the Plociomerini, and, as noted above, Breddin (1907) used the name Pamerioidea. Yet, both are clearly junior synonyms of Myodochini, *Plociomerina*, in fact, being a misspelling of *Ptochiomera* Say (see Barber, 1928). Scudder (1957) reduced the taxon to a subtribe of his expanded Rhyparochromini, but Slater and Sweet (1961) returned it to tribal status.

Sweet (1967) removed a group of Australian and Neotropical genera, composed

chiefly of a complex of Australian taxa which Gross (1962) had designated as "Aberrant Australian Brachypterous Myodochine Bugs," to a new tribe Udeocorini, and suggested the probable origin of the Myodochini from a Neotropical udeocorine stock. Members of the Myodochini are distinguished from members of the tribe Udeocorini by the lack of inner laterotergites.

Although many myodochine species were described by such early workers as Linnaeus, Fabricius, Hahn, Dallas, Herrich-Schaeffer, Say, Signoret, Guerin, Fieber, Uhler, Baerensprung, Motschulsky, and Walker, the first major study of the group as a whole was Stål's key to the genera in 1874. Working with the large and diverse Neotropical fauna, Distant (1880–1893) described numerous species and nearly one-third of the genera for the tribe. Around the turn of the century, additional descriptions were contributed by European workers such as Bergröth, Reuter, Horvath, Scott, Kirkaldy, and Breddin.

Early in the twentieth century, Barber began a more thorough analysis, primarily of the Nearctic fauna. He described several new genera and species, producing many publications on the group, the most notable of which are his three careful generic revisions (1921, 1928a, 1953).

Contemporary work on the Myodochini has been published by Ashlock, China, Hoberlandt, Scudder, Slater, Sweet, and Usinger; new genera are still being described. Of the total of 56 myodochine genera recognized in this study, four were described before 1851, 14 in the interval of 1851–1900, 10 from 1901–1925, three from 1926–1950 and six from 1951–1976. Quite recently, Malipatil (1978) revised the tribe for the Australian region and described nine new genera, five of them for previously described species. However, only six of those nine genera are included among the 56 genera dealt with in this study (see classification section for explanation). In the present study 13 new genera are recognized, 12 of them for previously described species.

In view of the amazing diversity of the tribe in the Neotropics, additional taxa al-

most certainly remain to be discovered.

MATERIALS AND METHODS

Determined material of some species has been available for all but two of the 40 previously described myodochine genera listed in Slater (1964a). I was able to examine over 80 percent of the approximately 260 named species.

Dried and alcoholic specimens were examined with a binocular dissecting microscope under powers ranging from 10× to 80×. Measurements were taken by means of a calibrated ocular micrometer and drawings were made to scale with the use of an ocular grid. However, because of great size disparity among the genera, the drawings were not all made at the same magnification. In descriptions the Villalobos color chart (Palmer, 1962) was used as a standard.

The male genital capsule was removed from relaxed specimens with jewelers forceps; cleared for approximately three minutes in a hot potassium hydroxide solution and dissected in distilled water in porcelain spot plates. The dissected material was transferred through another distilled water bath, a bath of 10 percent acetic acid and a solution of 70 percent ethanol (five minutes each) and placed in glycerin for further study and drawing. Once fully examined, the genitalia were stored in glycerin in microvials pinned with the proper specimens. In cases where tribal status was questionable, the abdomen was removed and similarly cleared in potassium hydroxide to reveal spiracular positions and the presence or absence of inner laterotergites.

After study of the various genera, alternate character conditions or states were denoted as plesiomorphic (primitive, ancestral, or generalized) or apomorphic (derived, descendant, or specialized). Often the validity of these inferences was enhanced by establishing congruence with other character distributions, as recommended by Hennig (1966). Synapomorphic, or shared derived characters were then utilized to construct the cladogram of figure 103, which presents a proposed phylogeny, or possible course of evolutionary events, at the generic level for

the Myodochini. (The key to genera which is given is simply a device for identification or a classificatory aid, and makes no attempt to reflect phylogeny.)

This work departs from strict cladistics as advocated by Hennig in three basic facets:

1. Sister groups are *not* afforded the same absolute rank, as they would be in a cladistic system. With the Myodochini, adherence to such a scheme of classification would demand that, if the monotypic genus *Kolene-trus* is recognized as a genus, the entire rest of the world's myodochine species must be lumped together in a taxon also of generic rank. Clearly, this is an extreme case, but it does serve to hold up to question the basic cladistic tenet of equal rank for sister groups.

2. Hierarchical rank has *not* been based on actual or inferred geological ages of the taxa in this study and even most cladistic studies have not adhered to this original Hennigian stricture.

3. Paraphyletic genera *are* recognized and named. As stressed by Hennig (1966), only synapomorphous, or *shared derived*, characters are admissible as evidence of evolutionary relationship while symplesiomorphy, or sharing of primitive traits, does not imply relationship.

According to the specifications of Hennig (1965), a monophyletic group is based on synapomorphy, a polyphyletic group on convergence, and a paraphyletic group on symplesiomorphy. Yet, even with reference to Hennig's own diagrams (fig. 2), I suggest that this is not really the case with regard to paraphyly. Paraphyletic taxa are not deliberately recognized and established on the basis of symplesiomorphy. They indicate, instead, incomplete knowledge and are often an indication of how thoroughly a group has been studied. In the cladogram (fig. 103) of myodochine genera, for example, *Cholula* is a paraphyletic genus. The lack of synapomorphy (*not* the use of symplesiomorphy) for recognizing this genus has been indicated by a dotted line. *Cholula* could be thought of as being synonymous with ancestor 5.

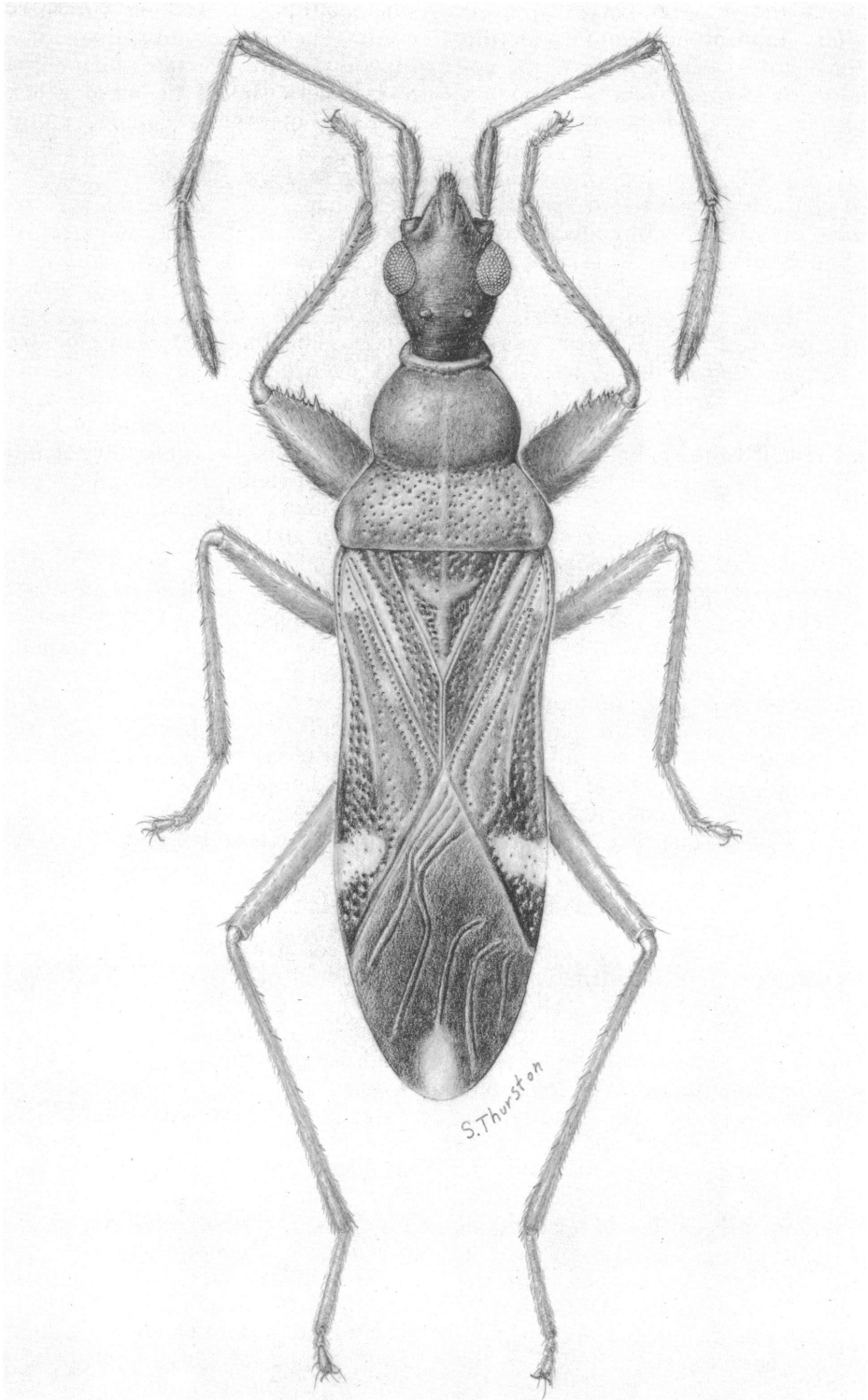


FIG. 1. *Heraeus triguttatus*, dorsal view.

The monophyletic assemblage removed from *Cholula* (ancestor 5) and rendering *Cholula* (ancestor 5) paraphyletic is the genus *Stridulocoris*. *Stridulocoris* is defined on the complex and firm synapomorphic state of having an abdominal stridulatory apparatus (figs. 31, 32). This is an important uniquely derived character, as the two species of *Stridulocoris* are the only myodochines of the large and diverse fauna with male genital Type I to possess stridulatory structures. Here then, the cladist's stricture against recognizing paraphyletic genera seems to demand that evidence actually be discarded or denied. With stress on the importance of synapomorphy, the cladist's approach has reached the shaky stance of "if you don't have two, you must disregard one."

At the particular juncture represented by hypothetical ancestor 5, I can either recognize the paraphyletic genus *Cholula*, against the dictates of cladistics, or suppress the evidence of the strong synapomorphy defining *Stridulocoris*, against the dictates of accepted scientific procedure and common sense. I have chosen the former path. On such a basis, other paraphyletic genera, all indicated by dotted lines, are recognized and named in this study of the Myodochini. On this same basis, I would argue that, when a firm

synapomorphy is lacking but there is not contrary evidence indicating convergence (polyphyly), the practice of naming paraphyletic genera should be more generally accepted. Later more detailed study of the group may reveal other character systems that present the lacking synapomorphy(ies), or perhaps these derived character states may be behavioral, physiological, etc., and go undetected indefinitely without rigorous biological studies not typically undertaken in a taxon as vast as the Insecta. In some cases it is possible that autapomorphic derivations may even have obliterated evidence of the lacking synapomorphy. Such possibilities must have been in the mind of Farris (1974) when he stated "it is probable that there exist monophyletic groups in the conventional sense which possess no single distinguishing character state."

It should also be remembered that any cladogram (be the lines solid or dotted) is merely a hypothesis. The demand is placed not on how a hypothesis is formulated but rather on its internal consistency, explanatory power, predictive power, and potential to be falsified (Popper, 1959). Subject to these criteria, paraphyletic taxa should be just as admissible as monophyletic ones, and a solid line should have no more inherent validity than a dotted one.

CHARACTER ANALYSIS

Generally, in the absence of other evidence, a character state occurring broadly within the tribe Myodochini was assumed to be plesiomorphic, while the alternative condition, occurring in a limited number of taxa, was viewed as apomorphic. Yet, outgroup comparison has also been very important in determining the plesiomorphic or apomorphic states of certain characters. A condition such as pronotal carination found widely throughout all the other tribes of the subfamily Rhyparochrominae was considered plesiomorphic, whether common or rare in the Myodochini. The alternative condition or character state was designated apomorphic. In particular, character states found in the Udeocorini, the tribe Sweet (1967) suggested

as ancestral to the Myodochini, have been considered plesiomorphic in the Myodochini. The Udeocorini is the only rhyparochromine tribe, other than the Myodochini, whose members have abdominal spiracles 2–4 dorsal and thus it must be considered the sister group of the Myodochini. Udeocorine genera surveyed in this study for external character conditions and dissected for genital comparison include *Astemoplites*, *Euander*, *Fontejus*, *Neosuris*, *Porander*, *Serranegra*, *Telocoris*, and *Udeocoris*.

As in many other insect groups, the sclerotized parts of the male genitalia have provided an excellent character system which I have emphasized in this cladistic analysis. The decision of apomorphic vs. plesio-

morphic for various characters of the external morphology has often been based on correlation with the patterns established by the genitalic characters, as well as by the criteria indicated above.

The following characters have been found to be important to the classification of the Myodochini. Additional minor characters, often applicable to only a single genus, are discussed separately in the individual generic diagnoses where any suspected instances of parallelism or convergence are also discussed.

MALE GENITALIA: Terminology and interpretation of the various elements of the lygaeid phallus were discussed in detail by Ashlock (1957), who noted the diversity of myodochine phallic types. The myodochine phallus presents an excellent character system for analyzing relationships and drawing zoogeographic inferences for the tribe. Although there are a few distinctive autapomorphic variations in detail (described in the individual generic diagnoses), the 56 myodochine genera fall into four basic phallic types:

(Type I). The plesiomorphic condition found throughout the Udeocorini examined and known to occur in other rhyparochromine tribes, is present in the myodochine genera *Aegyptocoris*, *Caenopamera*, *Carpilis*, *Cholula*, *Ereminellus*, *Fontathanus*, *Henicorthaea*, *Humilocoris*, *Kolenetrus*, *Megacholula*, *Megapamera*, *Pachybrachius*, *Pamerarma*, *Pamarana*, *Pamerapa*, *Paracholula*, *Prytanus*, *Ptochiomera*, *Sisamnes*, *Remaudiereana*, *Stalaria*, *Stigmatonotum*, *Stridulocoris*, *Suffenus*, and *Valonetus*. This condition (fig. 9) is characterized by a well-developed sperm reservoir with anterolaterally directed wings; long, slender, parenthesis-like holding sclerites; and usually unadorned conjunctiva and vesica. *Fontathanus*, *Henicorthaea*, *Megapamera*, *Pachybrachius*, *Pamerana*, *Pamerapa*, and *Stalaria* show some autapomorphic variations of the conjunctiva but retain the characteristic parenthesis-like holding sclerites of the Type I phallus. *Pamerarma*, with unadorned conjunctiva and vesica, totally lacks holding sclerites. The genitalic uniqueness of

this genus is recognized, but, currently it is retained in the group with Type I male genitalia.

The following three phallic types have all arisen independently from Type I, by my current interpretation, and these three separate apomorphic states are not to be construed as a series of character states arising from or grading into each other.

(Type II). Ten genera have a Type II phallus (fig. 10). In this apomorphic phallic condition, presented by *Bacacephalus*, *Eucosmetus*, *Horridipamera*, *Mimobius*, *Paraecusmetus*, *Paraparomius*, *Paromius*, *Pseudopachybrachius*, *Pseudoparomius* and *Togo*, the vesica is adorned by sawtoothed rows of minute, closely spaced spines. Holding sclerites appear to be lacking entirely and the wings of the well-developed sperm reservoir are large and broad, rolling under laterally in a scroll-like fashion. Two large, heavily sclerotized, hollow spines (in some cases unequal with one bifid and in *Mimobius* branched and multiheaded) appear on the conjunctiva very close to its vesical juncture. In the uninflated phallus these large spines lie dorsad of the sperm reservoir.

(Type III). The apomorphic Type III phallus (fig. 11) is characterized by a conjunctiva adorned by many spines, some being grouped in rows or patches. The sperm reservoir is reduced and elongate with narrow, straplike, anteriorly directed wings. Holding sclerites are lacking and there are no spines on the tubular vesica. The five genera in this group, *Froeschneria*, *Ligyrocoris*, *Perigenes*, *Slaterobius*, and *Zeridoneus* are primarily a Nearctic element, although most of the species of *Froeschneria* occur in South America.

(Type IV). Sixteen myodochine genera have a Type IV phallus (fig. 12). This phallic type is not so morphologically distinctive as Type II and Type III. The sperm reservoir is well developed with broad wings. Holding sclerites are typically present, though shortened and characteristically flattened and broadened distally. The vesica is unadorned and the tiny spines which occur (but rarely) on the conjunctiva are very unlike and probably not homologous with those of Type III.

Afrovertanus, *Ashlockaria*, *Catenes*, *Cnemodus*, *Distingphyses*, *Erlacda*, *Heraeus*, *Myodocha*, *Neopamera*, *Orthaea*, *Pephy-sena*, *Pseudocnemodus*, *Pseudopamera*, *Tenuicoris*, *Xenydrium*, and *Zeropamera* share phallic Type IV.

The dorsal aperture of the myodochine pygophore or male genital capsule has four character conditions:

(A). The posterior edge of this opening is very sharp (fig. 4) in *Aegyptocoris*, *Afrovertanus*, *Cholula*, *Henicorthaea*, *Kolenetrus*, *Megacholula*, *Paracholula*, and *Stridulocoris*. This sharp-edged condition, common in the Udeocorini, is considered the plesiomorphic character state for the myodochines.

(B). Almost half of the myodochine genera have an apomorphic condition that can be best described as "subsharp" (fig. 5). Included in this group are *Caenopamera*, *Carpilis*, *Ereminellus*, *Fontathanus*, *Pachybrachius*, *Prytanus*, *Pseudocnemodus*, *Ptochiomera*, *Sisamnes*, *Stigmatonotum*, and *Xenydrium*, and all genera with phallic Types II and III.

(C). With the above-mentioned exceptions of *Afrovertanus*, *Pseudocnemodus*, and *Xenydrium*, genera with phallic Type IV have the posterior margin of the aperture to the male genital capsule broadly rounded (fig. 6). This condition is considered apomorphic relative to the subsharp state.

(D). The remaining apomorphic condition is exhibited by only a few Old World genera. In *Pamerapa*, *Pamerarma*, *Remaudiereana*, and *Stalaria* the posterior margin of the capsule aperture is fairly broadly rounded but with a noticeable median depression (fig. 7). This depression is very deep and distinctive in the autapomorphic state of *Pamerana* (fig. 8).

The claspers or parameres of the Myodochini show minor variation from species to species. They have limited value above the specific level and have not been used in this generic analysis.

PRONOTAL COLLAR: A variety of character states involving the origin, development and posterior demarcation of an ante-

rior pronotal collar can be traced in the Myodochini. *Kolenetrus* has the plesiomorphic condition (fig. 58), with no indication of a collar dorsally on the anterior pronotal lobe.

In *Cholula* (fig. 50), *Megacholula* (fig. 62) and *Suffenus* (fig. 55) a narrow collar can be discerned only medially.

In *Paracholula* (fig. 64) and *Stridulocoris* (fig. 59) a very narrow collar is present across the entire anterior portion of the pronotum.

Aegyptocoris (fig. 43) and *Fontathanus* (fig. 46) show only a slight indication of a collar.

Caenopamera (fig. 51), *Carpilis* (fig. 57), *Ereminellus* (fig. 65), *Henicorthaea* (fig. 54), *Humilocoris* (fig. 60), *Prytanus* (fig. 49), *Ptochiomera* (fig. 56), *Stigmatonotum* (fig. 63), and *Valonetus* (fig. 61) have a distinct collar region noticeable in the lateral pronotal margin from above but not posteriorly demarked by a groove from the rest of the anterior pronotal lobe.

All other myodochine genera have a very distinct collar which is demarked posteriorly by a fine, linelike groove. In some cases, at high magnification, this line appears as a fused row of shining punctures sunk between the adjoining pruinose areas of the collar and the rest of the anterior pronotal lobe.

Pamerarma (fig. 99), *Pamerapa* (fig. 44), *Remaudiereana* (fig. 52), and *Stalaria* (fig. 47) are related on the basis of a distinctive, narrow, ringlike collar which is totally impunctate and very deeply demarked posteriorly.

Other myodochine collar variations include lateral spines on the collar of *Xenydrium* (fig. 92), the blunt "beginnings" of similar but independently derived spines seen on the collar of some specimens of *Togo* (fig. 76), the peculiar median V-shape to the collar of *Paromius* (fig. 66), and the dorsally narrow but ventrally very broad and anteriorly produced collar of *Heraeus* (fig. 87).

CLAVAL PUNCTATION: Three regular rows of punctures (fig. 19) represent the plesiomorphic condition of claval punctation. This character state is found in *Aegyptocor-*

is, *Erlacda*, *Kolenetrus*, *Paracholula*, *Prytanus*, *Ptochiomera*, *Sisamnes*, *Slaterobius*, *Suffenus*, and *Valonetus*. Although the three rows of claval punctures presented by *Slaterobius* and *Erlacda* (both with derived phallic types) may represent a retention of the plesiomorphic condition, they might also be viewed as evolutionary reversions possibly associated with the brachyptery of these two genera.

The state considered apomorphic, on the basis of correlation with the phallic types, typically occurs as four or more rows of claval punctures with only the two rows nearest the corium very precisely aligned (fig. 17). This is the condition found in most myodochine genera and probably has arisen more than once. Some genera such as *Caenopamera*, *Carpilis*, *Ereminellus*, and *Ligyrocoris* are transitional, with but a few scattered punctures added between two of the three rows of the plesiomorphic type (fig. 18).

BUCCULAE: Three character states involving the bucculae and ventral surface of the head are found in the tribe Myodochini. *Cholula*, *Kolenetrus*, *Megacholula*, *Paracholula*, *Stridulocoris*, and *Suffenus* have the bucculae prolonged over most of the ventral surface of the head and enclosing a gular area. Their ultimate juncture posteriorly is rounded or U-shaped (fig. 79). This, the plesiomorphic state, is found throughout the Udeocorini as well as in these "primitive" myodochines with the plesiomorphic phallic Type I. Included within this group is *Paracholula* with a peculiar development of the bucculae (fig. 78).

Most myodochine genera exhibit an apomorphic condition little differentiated from the plesiomorphic state described above but still clearly recognizable (fig. 81). In this apomorphic state, the buccular juncture is not rounded but V-shaped and is often prolonged posteriorly as a slight midventral carina. The bucculae typically join mesally at about the level of the antenniferous tubercles, yet, in *Erlacda*, *Henicorthaea*, *Humilicoris*, *Stigmatonotum*, and *Xenydrium* the V-shaped juncture occurs closer to the labial insertion. In *Distingphyses*, *Pephsena*, and

Tenuicoris (all ant mimics) the median carina is considerably prolonged beyond the buccular juncture.

Caenopamera, *Carpilis*, *Ereminellus*, *Prytanus*, *Ptochiomera*, *Sisamnes*, and *Valonetus* with the synapomorphic condition of a grooved midventral surface of the head containing a U-shaped buccular juncture close to the labial insertion (fig. 80) are essentially a Nearctic element. The tiny Old World ant mimic *Aegyptocoris* is unique with a U-shaped juncture close around the base of the labium but with the ventral surface of the head not grooved.

EYES AND OCELLI: Most myodochine genera have essentially round eyes. This is the plesiomorphic condition.

Elongate, oval eyes are found in *Distingphyses* (fig. 89), *Pephsena* (fig. 86), *Tenuicoris* (fig. 96), and in some species of *Eucosmetus* (fig. 71), and *Paraecusmetus* (fig. 100). This condition has arisen more than once and is probably related to the alteration of head shape involved in the ant mimicry of species of these genera.

The small, monotypic genus *Valonetus* has peculiar substalked, beadlike eyes and ocelli (fig. 61).

Cnemodus alone among the myodochines lacks ocelli (fig. 98). In other myodochine genera the position of the ocelli relative to the eyes has been used as a key character. But this is a morphological area that has been altered repeatedly in the evolution of the tribe and thus has not been used to infer relationship of genera.

STRIDULATORY MECHANISMS: Sweet (1964) has discussed the stridulatory behavior of a number of North American Myodochini as part of a courtship ritual. Ashlock and Lattin (1963) described in detail the microtextures of lygaeid stridulitra and the location and conformation of plectra, including those of the three types of stridulatory mechanisms found in the Myodochini. Most myodochines are nonstridulatory. This is the plesiomorphic state.

The monotypic genus *Pseudocnemodus* is characterized by its peculiar autapomorphic stridulatory apparatus. Arclike, cross-striat-

ed areas on the propleuron and the lateral surface of the head form the stridulitrum (fig. 39) and the plectrum consists of a row of tubercles on the proximal third of the fore femur (fig. 40).

Other myodochine stridulatory mechanisms have lunate, filelike stridulitra laterally on the abdomen. *Afrovertanus* and *Erlacda* have in common a short stridulitrum restricted to sterna II and III (first two visible) (figs. 33, 28). The plectrum for this type of stridulatory apparatus consists of two or three large, chisel-like projections (figs. 34, 29) at the base of the hind femur. A mechanism similar to that of *Afrovertanus* and *Erlacda* involves a larger stridulitrum which extends additionally onto sternum IV (fig. 35), whereas numerous small tubercles arranged in an irregular row or a scattered field on the basal portion of the hind femur form the plectrum (fig. 36). *Froeschneria*, *Ligyrocoris*, and *Pseudopamera* clearly present the latter type of stridulatory apparatus. It is also present but less apparent in *Ashlockaria* and *Slaterobius*.

The related genera *Perigenes* and *Zeridoneus*, which clearly belong in the *Ligyrocoris* complex on the basis of male genitalia, have no such apparatus readily visible, but Sweet (1964) noted what might be construed as stridulatory behavior in the courtship ritual of *Zeridoneus*. Courtship behavior has not been observed for *Perigenes*. While the lack of stridulatory structures in *Perigenes* and *Zeridoneus* might be explained as a secondary loss of such a mechanism within this lineage, a more parsimonious explanation suggested by the stridulatory behavior is that the morphological adaptations for stridulation just never developed in these two genera.

A rather diffuse abdominal stridulitrum (fig. 31), sometimes not readily apparent, has evolved independently in the monotypic genus *Stridulocoris*. The plectrum in this case is a scattered field of very minute tubercles on the base of the hind femur (fig. 32).

PRONOTUM: A progression of character states can be traced in the myodochine pronotum (often best observed in lateral view). In the plesiomorphic condition, typi-

cal in other rhyparochromine tribes, the pronotum is dorsoventrally compressed and a slight lateral carina is present on both the anterior and posterior lobes, though often it is only clearly apparent in the area of the transverse impression between the lobes (fig. 22). Among the myodochines, this condition is present in *Ereminellus* in the southwestern United States, *Megacholula* in the Neotropics, and *Suffenus* in the Old World.

The Nearctic monotypic genus *Kolenetrus* has a very similar compressed condition that may be termed "subcarinate." Among the Neotropical relatives of *Megacholula*, *Cholula* has a compressed pronotum but the carination is visible only on the posterior lobe; *Paracholula* and *Stridulocoris* are less compressed and show no real carination. *Ptochiomera* and *Sisamnes*, which are related to *Ereminellus* on the basis of a midventral head groove, have a distinct carina on the posterior pronotal lobe but a rounded anterior pronotal lobe.

The remaining myodochine genera lack any indication of the plesiomorphic carina and have the pronotum apomorphically rounded laterally on both lobes.

ACETABULUM: The acetabulum for the middle leg is formed by elements of both the meso- and metathorax. In the plesiomorphic state (present in most rhyparochromine tribes, including the Udeocorini and a majority of the Myodochini) a narrow portion of the metepisternum curves forward and touches the mesepisternum so that the mesepimeron is enclosed between them (fig. 37).

In the alternative (apomorphic) condition, the mesepimeron is prolonged and "emergent" or not enclosed by the two episternal parts (fig. 38). This derived state appears to have arisen independently at least four times within the tribe Myodochini. In all instances it is found in long-legged very rapid running forms, being present in *Afrovertanus*, *Megapamera*, *Pamerana*, *Slaterobius*, and the large pruinose Neotropical element with Type IV male genitalia that includes *Catenes*, *Heraeus*, *Myodocha*, *Neopamera*, *Orthaea*, *Pephyssena*, and *Tenuicoris*.

WING POLYMORPHISM: In the tribe My-

odochini wing polymorphism or wing reduction has obviously evolved repeatedly and is not employed in relating genera in this study. At least 15 genera, with members from each of the four phallic types, are known to exhibit brachyptery or submacroptery. Often such wing reduction is accompanied by a globose anterior pronotal lobe.

CORIAL PUNCTATION: Several of the myodochine genera considered "primitive" on the basis of Type I plesiomorphic male genitalia show scattered punctures along the membranal margin of the corium. This hemelytral condition is also found in various udeocorines.

The myodochines show two opposing derived states of this character. In most myodochine genera all evidence of this specific row of corial punctation is lost and the membranal margin is very slightly elevated and smoothly rounded (fig. 20). In *Stigmatonotum* of the Old World and a Nearctic group, including *Carpilis*, *Prytanes*, *Ptochiomera*, and *Sisamnes*, the opposite is true. These genera have a distinctive row of membranal margin punctures on the corium (fig. 21). This extensive development of corial punctation is also viewed as apomorphic.

STERNAL SCALLOPING: In several rhyparochromine tribes, including the Udeocorini, the anterior margin of abdominal sternum II (first visible) is scalloped. In some instances, this pattern is also repeated in the lateral portion of the juncture of sterna III and IV. Most myodochine genera appear to have lost such scalloping. However, certain genera clearly retain it. Traces of such a pattern (fig. 27) can be seen at the anterior edge of the sternum just under the metapleuron in *Fontathanus*, *Henicorthaea*, *Kolenetrus*, *Stigmatonotum*, *Suffenus* and the Nearctic complex of genera related to *Prytanes*.

In the apomorphic state exhibited by *Cholula*, *Paracholula* and *Stridulocoris*, the scalloping is accentuated and quite clearly apparent, being prolonged as a longitudinal cellular division of much of segment II (fig. 26).

SCENT GLAND EVAPORATIVE AREA: The rugose shagreened (see discussion of body

surface texture) area of the metapleuron and a narrow posterior band on the mesopleuron form an evaporative area for the metathoracic scent gland of the adult myodochine. In the plesiomorphic condition this evaporative area is broad, covering a large portion of the metapleuron (fig. 42).

A few myodochine genera, apparently in conjunction with a derived shining body surface, have a narrow or reduced evaporative area (fig. 41). This appears as a repeated trend or series of convergences in myodochine evolution. It occurs in such disparate genera as *Aegyptocoris*, *Afrovertanus*, *Kolenetrus*, *Pseudopamera*, and the Nearctic phallic Type I group of *Prytanes* and its relatives.

ANT MIMICRY: Ant mimicry is common among the Myodochini, presumably as a protection from vertebrate predators. Sweet (1964) discussed the nature of ant mimicry in the Rhyparochrominae in some detail.

In several genera, of which *Xenydrium* (fig. 92) is a striking example, this mimicry is readily apparent in museum specimens. But observation of other living myodochines in the field has revealed that such genera as *Slaterobius* (fig. 69), *Cnemodus* (fig. 98), and many others which may not appear particularly antlike are actually excellent mimics by virtue of their behavior. The interrupted, zig-zag pattern of their rapid running makes them almost indistinguishable from the ants common in the same habitats.

Ant mimicry, obviously a matter of repeated convergence in the tribe Myodochini, cannot be used alone to infer relationship. I have also tried to avoid the use of any morphological features that might be construed to be a consequence of ant mimicry. Instances of ant mimicry are noted in the individual generic diagnoses.

HEAD ELONGATION: The evolutionary significance or environmental pressures that lead to an elongation of the head in the Myodochini is a long-standing puzzle. Blatchley (1926) compared *Myodocha serripes* (fig. 97) to the peculiar carabid beetle *Casnonia pennsylvanica* (Linnaeus) and suggested that the slender necks of both the bug and the

beetle had developed by their reaching into crevices after prey. In such a situation, the mandibles of the beetle would be efficient, but the manipulation of a long labium seems virtually impossible and Sweet (1960, 1964) has conclusively demonstrated the seed-feeding habit of the myodochini.

Myodocha (fig. 97) presents the extreme in head elongation for the tribe, but *Aegyptocoris* (fig. 43), *Afrovertanus* (fig. 88), *Distingphyses* (fig. 89), *Erlacda* (fig. 85), *Heraeus* (fig. 87), *Pepphysena* (fig. 86), *Tenuicoris* (fig. 96), and *Xenydrium* (fig. 92) also show a distinct neck region to the head. Additionally, *Ashlockaria* (fig. 90), *Catenes* (fig. 93), *Cnemodus* (fig. 98), *Horridipamera* (fig. 74), *Megapamera* (fig. 82), *Orthaea* (fig. 91), *Pamerana* (fig. 53), *Pamerarma* (fig. 99), *Paraparomius* (fig. 73), *Pseudocnemodus* (fig. 84), *Pseudopamera* (fig. 94), *Togo* (fig. 76), *Zeropamera* (fig. 95), and some species of *Eucosmetus* (fig. 71) and *Paraeucosmetus* (fig. 100) have elongate heads that vary in length behind the eyes but lack a distinct neck region.

Fifteen of the genera showing the apomorphy of head elongation are of phallic Type IV. But *Aegyptocoris*, *Megapamera*, *Pamerana*, and *Pamerarma* of Type I and *Eucosmetus*, *Horridipamera*, *Paraeucosmetus*, *Paraparomius*, and *Togo* with Type II male genitalia indicate that head elongation is a phenomenon that has been arrived at independently several times in the evolution of the Myodochini. This trend is also repeated outside of the Myodochini in such rhyparochromine tribes as the Cleradini and the Ozophorini.

FORE LEG ARMATURE: The armature of the myodochine fore leg is a complex but very useful character system for cladistic analysis. The details of autapomorphic conditions of single genera are discussed in the individual generic diagnoses.

There are four basic conditions of the fore femur in the tribe. In the plesiomorphic state, evidenced by several udeocorine genera and *Aegyptocoris*, *Cholula*, *Erlacda*, *Paracholula*, and *Stridulocoris* among the Myodochini, the entire ventral surface of the

fore leg is heavily spined. Rows of large spines can be detected along the inner and outer edges and numerous small spines fill the area between these rows, especially toward the distal end of the femur (fig. 13).

In the apomorphic condition shared by *Pamerapa*, *Pamerarma*, and *Remaudiereana* (fig. 14), there is no outer row of spines; the inner row is present; and the small spines, seen between the rows in the plesiomorphic state, are lacking, except for one which is greatly enlarged and typically falls about mid-length on the femur.

Afrovertanus, *Catenes*, *Ereminellus*, *Humilicoris*, *Kolenetrus*, *Ligyrocoris*, *Perigenes*, *Prytanes*, *Ptochiomera*, *Slaterobius*, *Stalaria*, *Stigmatonotum*, *Suffenus*, *Humilicoris*, and *Zeridoneus* species have spines only along the inner edge of the fore femur (fig. 16).

The remaining myodochine genera have double-ranked spines (fig. 15). The minor middle spines of what I consider the plesiomorphic condition have been lost and only the rows on the inner and outer edges of the fore femur are retained.

These various patterns of fore femoral spine reduction have occurred independently. The type, number, and arrangement of spines often are characteristic for individual genera.

In addition to spined femora, males of some myodochine genera possess tibial spines. This appears to be yet another example of repeated independent derivation. A male fore tibial spine is found in the Nearctic group with a Type I phallus in *Carpilis*, *Caenopamera*, and *Prytanes*. The Old World genus *Megapamera* also has a Type I phallus and a spined fore tibia, but, in this instance, there are multiple spines along the length of the tibia in both sexes, which are clearly distinctive and derived independent of the single spine condition in the other three genera of phallic Type I.

Eucosmetus, *Horridipamera*, *Paraparomius*, and *Togo*, all with a Type II phallus, have a spined male fore tibia. None of the genera with Type III male genitalia have tibial spines, but a spined fore tibia is found in

the Type IV genera *Ashlockaria*, *Cnemodus*, *Erlacda*, *Pseudocnemodus*, *Xenydrium*, *Zeropamera*, and in some species of *Pseudopamera*.

TEXTURE OF BODY SURFACE: The plesiomorphic condition of the myodochine body surface, like that of the Udeocorini, is strongly and densely punctate. Punctuation is apparent dorsally on the head and both pronotal lobes. The lateral and ventral thoracic surfaces are also punctured, including the pro-, meso- and metacetabula. An impunctate head, an impunctate anterior pronotal lobe and the impunctate collars of *Pamera-pa*, *Pamerarma*, and *Remaudiereana* are successive derivations or apomorphic conditions reached in the course of myodochine evolution. The extremely accentuated punctuation of the dorsal body surface seen in *Cholula* and its relatives is viewed as another apomorphic state.

In addition to the varying degrees and extent of punctuation discussed above, the myodochine body surface may be either shining or dull in various areas. A dull appearance may be created by a minutely crazed or roughened sharkskinned texture that is referred to as *shagreened* or by the presence of a bloom or *pruinosity* on the surface, which, at least in the Blissinae, the scanning electron microscope has revealed to be created by minute cell hairs not distinguishable under ordinary magnifications (Slatér and Harrington, 1970).

Although small shagreened patches can be found on the dorsal surface of the pronotum

in some Udeocorini and some indication of this texture is seen in several myodochine genera with plesiomorphic Type I male genitalia, it is an extensive shagreening of the entire body surface, such as that presented by *Ashlockaria*, *Caenopamera*, *Cnemodus*, *Fontathanus*, *Megapamera*, *Pseudocnemodus*, and *Zeropamera* that I consider the apomorphic state.

With regard to pruinosity, a shining or non-pruinose body surface, seen in only certain myodochine genera, is considered the apomorphic condition. This derivation occurs in several separate lineages within the tribe. Certain distinctive patterns of pruinosity characterizing single genera are discussed in the individual generic diagnoses.

ANTENNAE: Accompanying a general trend of increased body size in the Myodochini is an increase in the length of the legs and antennae that has not been used in this cladistic analysis. Whether long or short, the antennae are typically slender, all segments being essentially uniform in diameter. However, *Carpilis*, *Ptochiomera*, and *Sisamnes* exhibit markedly thickened antennae that are viewed as apomorphic conditions. In *Carpilis* all the antennal segments are enlarged and barrel-like (fig. 23), whereas *Ptochiomera* and *Sisamnes* share an apomorphic condition in which the terminal two segments are greatly swollen (figs. 24, 25). Field observations of these latter two genera have revealed that these heavy antennae are actually used for righting an insect which has been turned on its back.

PHYLOGENY

The cladogram of figure 103 presents a phylogeny or most probable course of evolutionary events for the Myodochini based on the current level of knowledge arrived at in this study. Each number at a "node," or branching point, represents a hypothetical ancestor. The hatch marks on the "internodes," or lines connecting hypothetical ancestors, represent synapomorphous or

shared derived characters. Empty internodes, where I have been unable to find a shared derived character, are indicated by dotted lines and admittedly represent weak points or at least lack of knowledge for that portion of the evolutionary scheme as do the trifurcations from ancestors 2, 10, 26 and 36 and the quadrifurcation from ancestor 13. The four major male genitalic types are in-

licated along the bottom of the cladogram. The grid of distributional information given at the top of the cladogram is explained in the Distribution and Zoogeography section.

A list of the synapomorphic character states used to construct the myodochine generic cladogram of figure 103 follows:

- 1-*Kolenetrus*: body surface highly shining; evaporative area reduced (fig. 41).
- 1-2: collar indicated medially.
- 2-3: punctation extreme, deep pits giving a pebbly texture; head very broad and flat with eyes appearing to rest on "square-shouldered" pronotum.
- 3-*Megacholula*: head impunctate; sternal scalloping lost.
- 3-4: sternal scalloping accentuated and prolonged as cellular division of sternum II (fig. 26).
- 4-*Paracholula*: scutellar apex elevated, thumblike, pale; bucculae prolonged and exaggerated (fig. 78).
- 4-5: more than three regular rows of claval punctures (fig. 17).
- 5-*Cholula*: EMPTY INTERNODE.
- 5-*Stridulocoris*: diffuse abdominal stridulitrum (fig. 31).
- 2-6: collar apparent laterally.
- 6-*Suffenus*: pale and extremely minute; fore femur strongly incrassate and with characteristic row of fine, closely ranked spines along inner edge.
- 6-7: juncture of bucculae U-shaped, near labial insertion (fig. 80).
- 7-*Aegyptocoris*: head prolonged posteriorly in a stalklike neck (fig. 43); scutellar apex upturned; highly shining dorsally.
- 7-8: ventral surface of head with a broad median groove (fig. 80).
- 8-*Ereminellus*: fore femoral spines reduced.
- 8-9: lateral margins of anterior pronotal lobe rounded.
- 9-*Caenopamera*: antennae, especially segment II, elongate.
- 9-10: lacking dorsal pronotal pruinosity, often highly shining; reduced evaporative area (fig. 41).
- 10-*Valonetus*: juga protruding like tiny tusks; substalked, beadlike eyes and ocelli (fig. 61).
- 10-11: antennae thickened.
- 11-12: hemelytra pale, unpatterned.
- 12-*Ptochiomera*: antennae capitate, segments III and IV markedly swollen (fig. 24).
- 12-*Carpilis*: antennae clavate, all segments uniformly thickened (fig. 23).
- 11-*Sisamnes*: dorsum with scalelike hairs giving a granular appearance.
- 10-*Prytanus*: EMPTY INTERNODE.
- 2-13: juncture of bucculae V-shaped (fig. 81).
- 13-*Fontathanus*: elongate and deeply bilobed pronotum (fig. 46).
- 13-14: collar broad and apparent, contrastingly pale, but not demarked posteriorly.
- 14-*Henicorthaea*: head very small and declivent (fig. 54); fore femoral spines exaggerated, contrastingly pale with dark apices.
- 14-15: fore femoral spines single ranked.
- 15-*Humilocoris*: elongate body hairs.
- 15-*Stigmatonotum*: characteristic row of corial punctures along membranous margin (fig. 21).
- 13-16: collar demarked posteriorly by a linelike groove.
- 16-17: anterior pronotal lobe, save collar, impunctate.
- 17-18: head elongate; mesepimeron emergent (fig. 38).
- 18-*Megapamera*: extremely large; several fore tibial spines in both sexes.
- 18-*Pamerana*: median groove in posterior lip of pygophore (fig. 8).
- 17-19: general reduction in punctation; collar ringlike, largely impunctate (fig. 45).
- 19-*Pachybrachius*: eyes small and head small, somewhat elongate behind eyes (fig. 45); minor autapomorphic variation on phallic Type I (see diagnosis).
- 19-20: ringlike collar entirely impunctate, extremely narrow; fore femoral spines single ranked.
- 20-*Stalaria*: male genitalia with spatulate multi-spined holding sclerites.
- 20-21: male fore tibia spined.
- 21-22: robust, subovoid body form; enlarged fore femur.
- 22-*Pamerapa*: minute spines on conjunctiva.
- 22-*Remaudiereana*: curving male fore tibia with exaggerated spine.
- 21-*Pamerarma*: loss of holding sclerites.
- 16-23: phallic Type II (fig. 10): two large, heavily sclerotized spines at extreme apex of conjunctiva; sawtoothed spiral of minute spines on vesica.
- 23-*Mimobius*: very swollen ant mimetic head; apical conjunctival spines branched, multi-headed.
- 23-24: dorsal lip of pygophore rounded.
- 24-*Paromius*: anterior pronotal lobe markedly lower than posterior lobe; posterior margin of pronotal collar V-shaped medially (fig. 66).

- 24–25: elongation or elaboration of one or both apical conjunctival spines.
- 25–26: broad head, broader than transverse impression.
- 26–27: further elongation of both apical conjunctival spines.
- 27–*Pseudoparomius*: left apical conjunctival spine bifid.
- 27–*Pseudopachybrachius*: reduced body size; largely pale hemelytra.
- 26–28: an extra pair of fleshy or sclerotized lobes proximal to the paired apical conjunctival spines.
- 28–*Paraecosmetus*: EMPTY INTERNODE.
- 28–*Bacacephalus*: beadlike eyes; swollen ant mimetic head; extra conjunctival lobes slender and markedly pigmented or sclerotized.
- 26–29: spined male fore tibia.
- 29–*Eucosmetus*: black and white patterned hemelytra; markedly unequal apical conjunctival spines, the left very elongate, the right short and broad.
- 29–*Togo*: wing reduction; right apical conjunctival spine bifid.
- 25–30: anterior pronotal lobe globose, impunctate, shagreened; transverse impression deeply incised.
- 30–*Horridipamera*: apical conjunctival spines unequal, right with a very broad base.
- 30–*Paraparomius*: EMPTY INTERNODE.
- 13–31: departure from Type I male genitalia by reduction of parenthesis-like holding sclerites.
- 31–32: phallic Type III (fig. 11): elongation and reduction of sperm reservoir; conjunctival spines.
- 32–33: abdominal stridulitrum (fig. 35).
- 33–34: fore femoral spines single ranked.
- 34–*Slaterobius*: shining, globose anterior pronotal lobe.
- 34–*Ligyrocoris*: EMPTY INTERNODE.
- 33–*Froeschneria*: transverse impression deeply incised (fig. 67).
- 32–35: characteristic small cap or crown of associated conjunctival spines; sperm reservoir very reduced and elongate.
- 35–*Perigenes*: clasper reduced, truncate; narrow ringlike collar (fig. 72).
- 35–*Zeridoneus*: dark, stout bristles on all tibiae.
- 31–36: phallic Type IV (fig. 12); large bulblike sperm reservoir; holding sclerites short and broad or lacking.
- 36–37: dorsum shining or subshining, no pruinosity; male fore tibia spined.
- 37–38: dorsum shining.
- 38–39: stridulatory behavior.
- 39–40: abdominal stridulitrum (figs. 33, 28, 35, 31).
- 40–*Pseudopamera*: plectrum a field of spines on hind femur (fig. 36).
- 40–41: head elongate, forming a neck; plectrum two or three chisel-like spines on hind femur (figs. 29, 34).
- 41–*Erlacda*: juga forming a marked shelflike projection above antennal segment I.
- 41–*Afrovertanus*: mesepimeron emergent (fig. 38).
- 39–*Pseudocnemodus*: head and propleural stridulitrum (fig. 39).
- 38–*Xenydrium*: spine on lateral margin of collar; body ant mimetic with abdomen narrowed anteriorly; lateral margin of head expanded as a pseudomandible between eye and antennal insertion (fig. 92).
- 37–42: body shagreened.
- 42–43: multiple male fore tibial spines; long body hairs.
- 43–*Ashlockaria*: abdominal stridulitrum (fig. 35).
- 43–*Zeropamera*: body and hemelytra unmarked, uniformly dark chestnut brown.
- 42–*Cnemodus*: lacking ocelli (fig. 98).
- 36–44: broad head with a flat vertex; preocular portion of head grooved laterally beneath jugal ridge.
- 44–45: head with a neck; eyes oval.
- 45–46: head heavily punctate with a pebbly texture.
- 46–*Distingphyses*: anterior pronotal lobe shining.
- 46–*Pephsena*: neck elongate, quite pronounced (fig. 86).
- 45–*Tenuicoris*: mesepimeron emergent (fig. 38); head impunctate; anterior pronotal lobe glabrous.
- 44–*Neopamera*: EMPTY INTERNODE.
- 36–47: vertex of head rounded; incipient head elongation.
- 47–*Orthaea*: characteristic orange spots along lateral margin of posterior pronotal lobe, medially on posterior pronotal lobe and at corial apex; fore femoral spine reduction.
- 47–48: head distinctly elongate.
- 48–*Catenes*: characteristic parallel-sided head shape (fig. 93); darkly sclerotized spots on pale femora.
- 48–49: neck stalklike.
- 49–*Heraeus*: ventral portion of collar produced anteriorly.
- 49–*Myodocha*: very long neck (fig. 97); head glabrous.

DISTRIBUTION AND ZOOGEOGRAPHY

As stressed by Ball (1975), only once a phylogeny has been proposed can any attempt be made at historical biogeography. The cladogram of figure 103 is a graphic hypothesis, proposing a phylogeny or history of evolutionary events for the tribe Myodochini. Also included at the top of the cladogram is a charting of the distributions of contemporary myodochine genera. The numbers in the grid at the top of figure 103 indicate how many species of a given genus are known from a particular zoogeographic region.

For the sake of simplicity, Madagascar has been lumped with the Ethiopian region, Japan is included in the Palearctic, and Pacific islands not clearly associated with either the Australian or Oriental regions are grouped as "Pacific Oceanic islands." The character system of the male genitalia has proven most useful in trying to draw zoogeographic inferences about the Myodochini. As previously discussed, there are four distinct phallic types identifiable in the tribe (see discussion under character analysis for descriptions and detail). These four phallic types are indicated along the bottom of figure 103. The historical zoogeographic analysis below follows from the phylogeny depicted in the cladogram considered in conjunction with current known distributions.

Species of Myodochini are found on all major land masses from Canada to Chile and Argentina, and from Sweden and Siberia to South Africa, Madagascar, and Australia. Members are also known from many remote oceanic islands. In fact, initial inspection of the currently known myodochine distributions shows the perplexing situation of members of all four phallic types occurring in both the eastern and western hemispheres. Yet a closer examination reveals that the Myodochini are not really so ubiquitous. In fact, the myodochine faunas of the Old World and New World are basically distinct from each other and apparently have evolved separately for a long period of time, as no

"generalized tracks," such as those sought to establish vacariance patterns in the manner of Croizat, Nelson, and Rosen (1974), are apparent. In fact, among the 56 genera in this generic level analysis, there are but three genera (*Paromius*, *Pseudopachybrachius*, and *Ligyrocoris*) with species in both hemispheres and only two generic pairs (from ancestors 28 and 41) involving an exclusively transoceanic sister genus.

The plesiomorphic genitalic Type I includes nearly half of the myodochine genera. Twelve Type I genera are recognized in the New World, whereas 13 different genera with this phallic type are known from the Old World. Thus there is not a single Type I genus common to both hemispheres. The phylogeny proposed here does not present any Type I genera with a transoceanic sister-genus. Such negative evidence strongly suggests a postGondwanaland radiation for the tribe.

In the Western Hemisphere there are three phyletic elements within the plesiomorphic genitalic Type I. Element 1, the *Prytanus* group, is a complex of small, short-bodied species including *Valonetus*, *Sisamnes*, *Ptochiomera*, *Ereminellus*, *Carpilis*, *Caenopamera*, and *Prytanus*. This group is held together by such apomorphic features as a reduced evaporative area (fig. 41), a grooved ventral surface of the head and a U-shaped buccular juncture (fig. 80). It appears to be primarily a Nearctic complex, with only species of *Prytanus* known to occur in the Neotropics through much of South America.

Element 2 contains only the monotypic genus *Kolenetrus*. It is morphologically quite isolated and has a broad Nearctic distribution which extends down the mountains at least to Guatemala.

The monophyletic Element 3 includes *Cholula*, *Paracholula*, *Megacholula* and *Stridulocoris*. Although this group is at present Neotropical, there is an Oligocene fossil from Wyoming assigned to *Cholula* by Scudder (1890). I have examined this fossil. It is

poorly preserved but the general appearance is unlike any modern *Cholula* and I question this placement.

Among the Old World Type I genera both *Suffenus* and *Aegyptocoris* are isolated and not closely related to any other living myodochines. *Suffenus* is extremely "primitive," exhibiting plesiomorphic conditions for almost all characters examined. The genus is monotypic and widely distributed through the Old World tropics. *Aegyptocoris*, with two African species, is a minute ant mimic which has many autapomorphic characters associated with mimicry.

The remaining 11 Eastern Hemisphere genera of Type I share a derived V-shaped buccular juncture (fig. 81). *Stigmatonotum* and *Remaudiereana* are widely distributed and have typical Type I genitalia. The other nine genera are more restricted in their distributions. *Fontathanus* and *Stalaria* are found in tropical Africa; *Pachybrachius* is essentially a Palearctic isolate; *Humilocoris* is found in the mountains of India; *Henicorthaea* and *Pamerapa* are confined to the Australian region; *Pamerana* is Oriental; *Pamerarma* occurs on several Oriental islands, in the northern Australian region and on islands throughout the Pacific; and *Megapamera* is known only from the Solomon Islands and New Guinea. *Fontathanus*, *Henicorthaea*, and *Humilocoris* have typical Type I genitalia, but the other restricted genera show minor unique variations in the male genitalia (see individual generic diagnoses for detail).

Of the 56 genera in the tribe only *Paromius*, and *Pseudopachybrachius*, both of phallic Type II, have species occurring naturally in both the Old World and the New World. These two genera are widespread in both hemispheres but with a preponderance of species in the Eastern Hemisphere. A definitive understanding of the distribution of the Type II group requires further species-level cladistic analysis, yet it is evident that the group's evolution has been primarily in the Old World tropics. Species of the two genera named above are a dominant grass-feeding element with strong dispersal ability. They

are known from many remote oceanic islands and have probably reached the New World relatively recently by overwater transport.

Horridipamera and *Paraeucosmetus* also occur extensively throughout the Old World tropics but no species of either genus are known from the Western Hemisphere. One species of *Paraparomius* occurs widely in Europe; the three species of *Togo* are endemic to Japan; and *Eucosmetus* is limited to the Oriental region. *Mimobius* was originally described from Madagascar. Neither the type nor any determined material could be located. But a Ghanaian series of a tiny ant mimic, assumed to be a *Mimobius* from comparison with the original description and figures, was examined.

The presence of two Type II genera, *Bacacephalus* and *Pseudoparomius*, in South America is puzzling. Yet, in light of the distributions presented by the rest of the tribe, especially the genera with plesiomorphic, Type I, male genitalia, it seems more likely that the Neotropical occurrence of these two genera is due to postGondwanaland, overwater introduction of their ancestors than to vicariance. However, only a species-level analysis, especially of all the Pacific Ocean island members of phallic Type II, can hope to answer this question.

Genitalic Type III seems to be clearly a Nearctic component, which arose not later than the Miocene (fossil myodochines recognizable as Type III forms are known from the Miocene fossil shales of Colorado (Scudder, 1890). The concentration of southwestern United States species today suggests that perhaps this group arose on the Mexican plateau coincident with the rise of the Madro-Tertiary Flora, and subsequently spread northeastward and, to a limited extent (*Ligyrocoris*, *Froeschneria*, and a single questionable species of *Perigenes*), into the Neotropics. The occurrence of the single, otherwise Nearctic species *Ligyrocoris sylvestris* in Europe is probably due to a recent introduction (possibly post-Pleistocene).

In Phallic Type IV the entire assemblage of genera arising from hypothetical ancestor

36 form the dominant myodochine group in the Neotropics today. Only a few species of the major genera *Neopamera*, *Heraeus*, and *Myodocha* occur in the eastern Nearctic.

The remaining Type IV myodochines occur largely in Central America and the southwestern United States. Yet, one of their number, the monotypic genus *Afrovertanus* presents the greatest irregularity in the distributional patterns of the Myodochini. The only specimens examined were from eastern Africa and there are no other stridulatory myodochines known from the Old World. *Afrovertanus* exhibits certain autapomorphic conditions (see generic diagnosis) that seem to indicate a relatively long period of evolutionary isolation. It has a superficial habitus very similar to that of *Myodocha* but its sister group among the living myodochines is the New World genus *Erlacda* (South America and West Indies).

Acknowledging that there are many undescribed species and possibly even genera in the Myodochini; that the distributions of some species are very poorly known; and that fossil material is scant, with none known before the Oligocene, the following analysis represents the most probable zoogeographic interpretation for the tribe based on current myodochine distributions and cladistic affinities and the increasing firmness of drift theory.

The diversity of Oligocene and Miocene fossils for the subfamily Rhyparochrominae (Scudder, 1890; Statz and Wagner, 1950) and their frequent similarity to modern forms, strongly suggests that this seed-feeding insect group arose in the Mesozoic and radiated during the Cretaceous coincident with the radiation of the angiosperms. Preliminary but convincing sister group evidence for living forms does suggest Gondwanaland origins for some of the more primitive tribes (Slater and Sweet, 1970; Sweet, unpubl.; Harrington, unpubl.).

The Myodochini, a highly derived tribe within the subfamily, which Sweet (1967) has postulated as arising "from a southern hemisphere Udeocorini ancestry," probably originated in west Gondwanaland in the Late

Cretaceous or at least when Africa and South America were still in close enough proximity to account for the broad distribution of the plesiomorphic (Type I) genitalic condition in both the Old World and the New World. The relative lack of old stocks in the Palearctic and in southern Australia substantiates the notion that the tribe evolved after the break-up of Pangaea and the beginning of the fragmentation of Gondwanaland.

Genitalic Type II evolved subsequently in the Old World tropics and appears to have entered the Western Hemisphere by over-water sweepstakes colonization.

Type III, as discussed above, is a Nearctic element. Type IV has also evolved in the New World after considerable drift of South America from Africa had occurred but when those two plates were still close enough to allow *Afrovertanus* to reach Africa. While the occurrence of *Afrovertanus* in Africa is highly anomalous in the myodochine distributional pattern, similar distributions are known in several flowering plant taxa. The Bromeliaceae, Sapotaceae, and Magacaceae each have great numbers of Neotropical genera and a single genus in Africa (Hutchinson, 1973). Such distributions, in keeping with Darlington's (1957) hypothesis, might be the result of a Gondwanaland development with subsequent extinction in the Old World by more dominant groups. (It should be noted that there has been massive extinction of angiosperms in Africa [Raven & Axelrod, 1974]). But, when *Afrovertanus* is viewed in the complete context of the tribal phylogeny, it seems more likely that its occurrence in Africa is accounted for by the secondary colonization mentioned above.

When only the Western Hemisphere is considered, the distributions of *Kolenetrus*, the Nearctic monophyletic group including *Prytanus*, Type III and the non-pruinose element of Type IV (from hypothetical ancestor 37) all attest to a long period of isolation of North America. Rosen's (1975) vicariance model of Caribbean biogeography, while focusing on the Antillean fauna, does summarize Malfait and Dinkleman's (1972) recent plate tectonic evidence of a Late Jurassic

archipelago connecting the Americas which was subsequently displaced to form the Antilles. This connection, and indeed the early phases of its eastward displacement, would have afforded potential avenues for faunal exchange during a prolonged period in the Early Tertiary. Whatever the avenue or time of entry, the ancestors of each of the four

myodochine stocks mentioned above did reach North America and were able to evolve there in comparative isolation before the Pliocene closure of the Isthmus of Panama, while their South American ancestors in each case were probably supplanted by the radiation of the more dominant Neotropical myodochine lineages extant today.

CLASSIFICATION

Slater's (1964a) catalogue included 40 genera in the tribe Myodochini. From these 40 Sweet (1967) removed *Caridops* to the Rhyparochromini, *Insulicola* to the Udeocorini and *Phaeax* to the Bledionotinae, and he has recently (1977) placed *Neosuris* in the Udeocorini.

Sweet (1967) retained *Altomarus* in the Myodochini, stressing that "... Although having spiracle 2 ventral, ... It lacks inner laterotergites, has a round pronotum, and an abdominal type stridulitrum." To retain *Altomarus* in the Myodochini, however, one must argue a secondary ventralization of spiracle 2. As the dorsal abdominal sclerotization of this genus is very light and apparently reduced, one can easily hypothesize the loss of inner laterotergites (they are often quite faint in other taxa). I prefer this second hypothesis and place *Altomarus* in the tribe Rhyparochromini where it appears to be related to *Caridops* with which it shares a highly shining body surface, an abdominal stridulitrum and peculiarly cleft humeral angles not seen among the Myodochini.

No modern workers have examined *Fon-tejanus wasmanni* Breddin (1904), and I was unable to locate the type specimen. Comparison of Distant's (1910) figure of the type and habitat notes from the original description with the figure and habitat description of the udeocorine genus *Serranegra* Lindberg strongly suggests that they are synonymous. I consider *Fon-tejanus* a udeocorine and excluded it from this analysis.

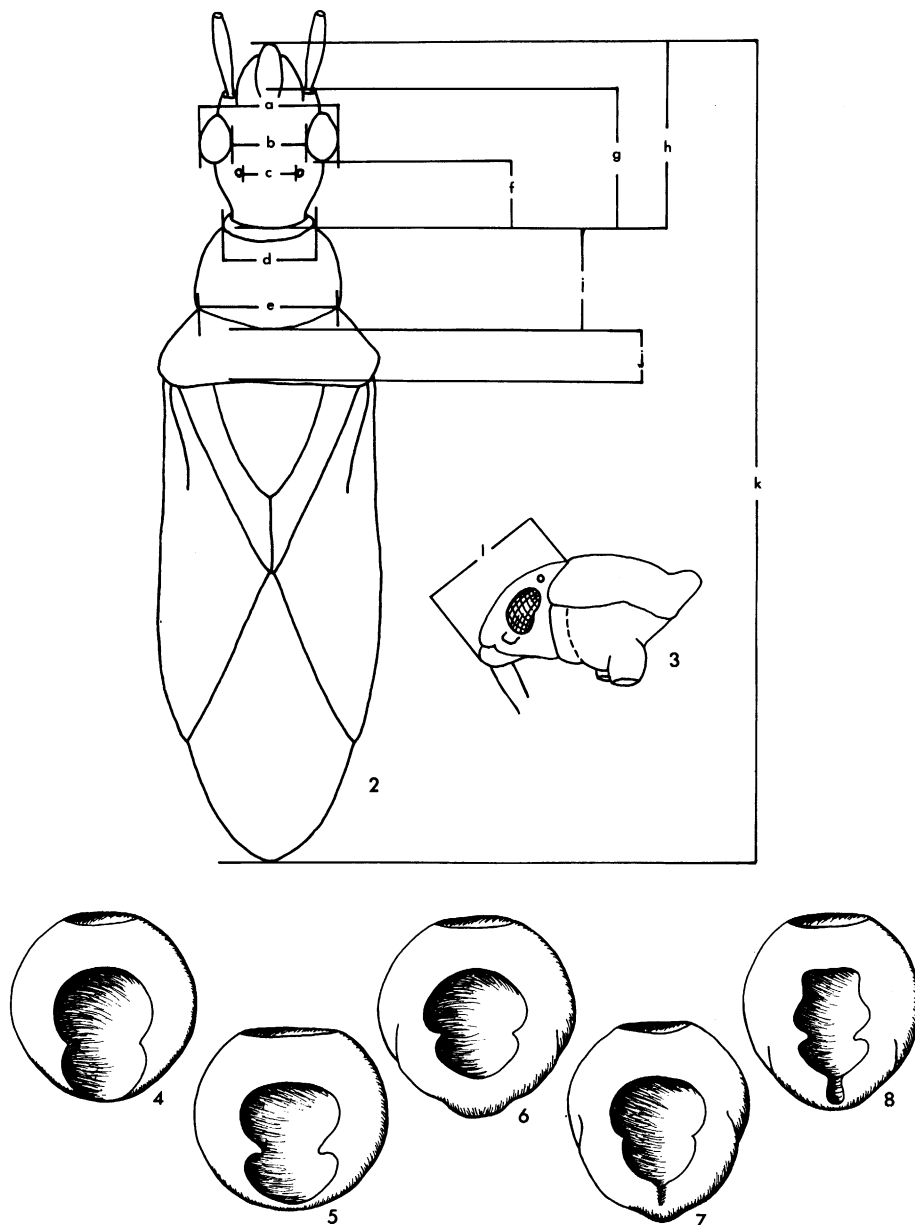
The addenda to Slater's (1964a) catalogue

includes *Afrovertanus* Scudder as a new myodochine genus.

Since Slater (1964a), *Cholula* has been moved into the Myodochini by Sweet (1967) and *Fontathanus* Scudder (1963), *Tenuicoris* Slater and Harrington (1974) and *Megapamera* Scudder (1975) have been described.

Recently, Malipatil (1978) has revised the tribe Myodochini for the Australian region and described the new genera *Henicorthaea*, *Horridipamera*, *Pamerapa*, *Pamerarma*, *Paraecosmetus*, and *Pseudopachybrachius* which are included in this revision and cladistic analysis. In the same paper he also describes three other genera, *Exopamera*, *Myodorthaea*, and *Woodwardocoris* on respectively, only one, two, and four female specimens. In light of the importance of male genitalia in the classification of the Myodochini, I have not included these last three genera, based on such limited material, in my study. Malipatil (1978) has also synonymized *Remaudiereana* as a junior synonym of *Pachybrachius*. I do not believe that this action is at all warranted (see generic diagnoses for discussion) and thus am elevating *Remaudiereana* to generic status once again.

Additionally, in this study *Sphaerobius* is considered to be a junior synonym of *Erlac-da*, *Neocattarus* a junior synonym of *Cholula*, *Exptochiomera* a junior synonym of *Prytanus*, and *Orthaea* is elevated to generic status again. Thirteen new genera are recognized (12 for previously described species). The following key includes 56 myodochine genera.



FIGS. 2-8. 2. *Heraeus plebejus*, dorsal view. How to measure: a. Width across eyes. b. Interocular distance. c. Distance between ocelli. d. Width anterior pronotal collar. e. Width transverse impression. f. Postocular distance. g. Distance from base of head to antennal insertion. h. Length of head (nondeclivent). i. Length anterior pronotal lobe (including collar). j. Length posterior pronotal lobe. k. Total length. 3. *Kolenetrus plenus*, lateral view of head. l. How to measure length of a declivent head. 4. "Sharp" pygophore, schematic. 5. "Subsharp" pygophore, schematic. 6. "Broadly rounded pygophore, schematic. 7. Pygophore "with median depression in posterior lip," schematic. 8. Pygophore "with distinct median groove in posterior lip," schematic.

TRIBE MYODOCHINI STÅL

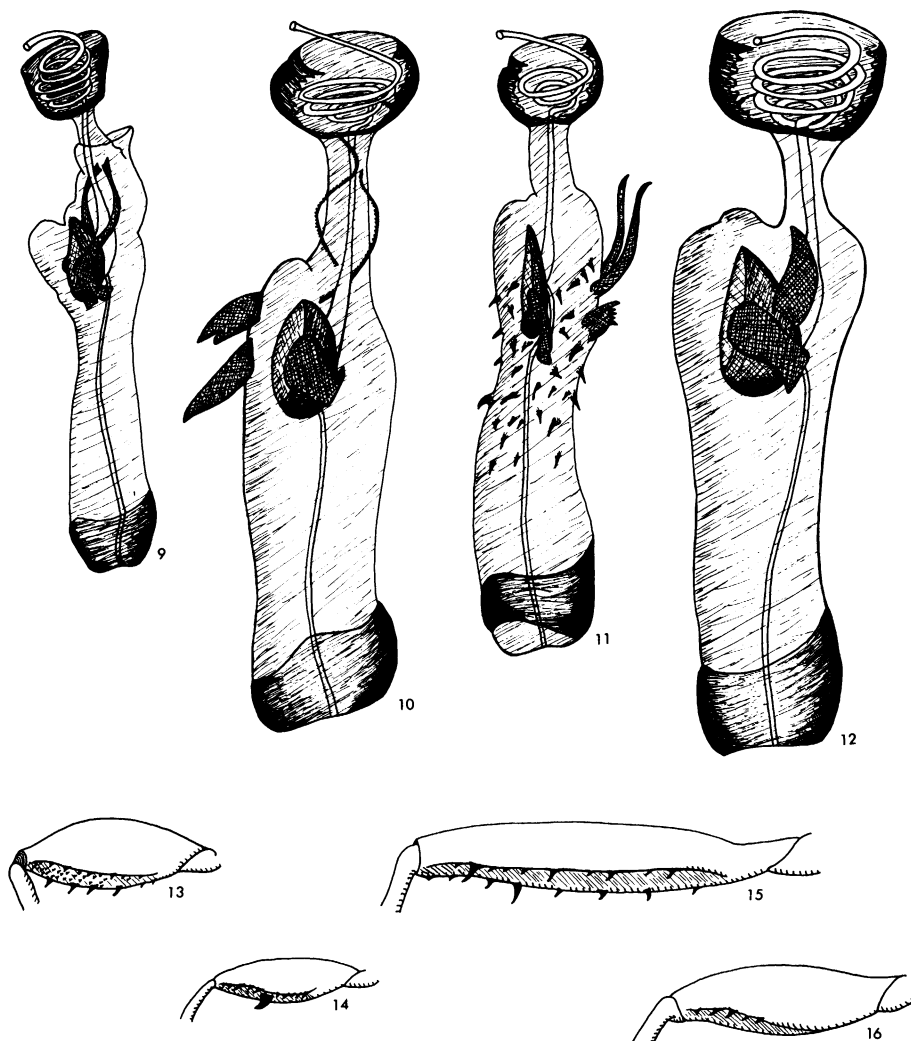
Generally with pronotum rounded laterally and distinctly bilobed; sterna IV and V fused, with the intersegmental suture usually curving cephalad laterally; abdominal spiracles II through IV dorsal, the remainder ventral; inner laterotergites absent (*present* in the Udeocorini, the only other rhyparochromine tribe with spiracles II through IV dorsal); nymphs with three dorsal abdominal scent glands and abdomen not heavily sclerotized; Y-suture well developed in nymphs.

KEY TO THE GENERA OF THE TRIBE MYODOCHINI¹

1. Interocular distance less than postocular distance 2
- Interocular distance equal to or exceeding postocular distance 5
- 2(1). Entire pronotum pruinose in dorsal view; (New World) 3
- At least anterior lobe of pronotum shining in dorsal view; (Old World) 4
- 3(2). Posterior margins of ocelli located anterior to posterior margins of eyes; eyes longitudinally oval *Pephyssena* (fig. 86)
- Posterior margins of ocelli located posterior to posterior margins of eyes; eyes basically round ... *Myodocha* (fig. 97)
- 4(2). Scutellar apex curved upward, bluntly thornlike; claval punctation in three regular rows (fig. 19); lacking a crescent-shaped striated area laterally on abdominal sterna II and III *Aegyptocoris* (fig. 43)
- Scutellum uniformly flat, not elevated apically; more than four rows of claval punctures (fig. 17); a crescent-shaped, dark, striated area present laterally on abdominal sterna II and III (first two visible sterna) (fig. 33) *Afrovertanus* (fig. 88)
- 5(1). A distinctive cross-striated area present on propleuron, curving anteroventrad from pleural suture to midventral anterior margin of collar (fig. 39); often brachypterous with characteristically shaped membrane (fig. 30) *Pseudocnemodus* (fig. 84)
- No curving cross-striated area present on

- propleuron; if brachypterous, membrane not shaped as above 6
- 6(5). Ocelli absent *Cnemodus* (fig. 98)
- Ocelli present 7
- 7(6). A crescent-shaped, striated area present ventrolaterally on anterior portion of abdomen 8
- Striated area lacking on anterior portion of abdomen 14
- 8(7). Head prolonged with a distinct "neck" region; striated area confined to abdominal sterna II and III (fig. 28); plectrum on hind femur consisting of two chisel-like projections (fig. 29) *Erlacda* (fig. 85)
- Head not prolonged into a neck; striated area extending onto sternum IV (fig. 35); plectrum on hind femur a line or scattered field of minute tubercles (fig. 36) 9
- 9(8). Three rows of claval punctures (fig. 19); anterior pronotal lobe shining except collar, collar and posterior lobe pruinose; stridulitrum obscure, difficult to detect, extending only onto anterior portion of sternum IV *Slaterobius* (fig. 69)
- More than three rows of claval punctures (figs. 17, 18); entire pronotum uniformly pruinose, shagreened or shining; stridulitrum either conspicuous or obscure but always extending well onto sternum IV (fig. 35) 10
- 10(9). Length antennal segment I greater than interocular distance; pronotum shining or shagreened, not pruinose and never deeply punctate; male fore tibia typically adorned with a spine or spines 11
- Length antennal segment I less than interocular distance; pronotum typically pruinose, in some cases very deeply punctate; male fore tibia unarmed 12
- 11(10). Body subshining, shagreened; hemelytra often coleopteroid, stridulitrum discerned with difficulty *Ashlockaria* (fig. 90)
- Body highly shining; hemelytra usually macropterous; stridulitrum conspicuous, shining, often slightly raised and darker than rest of abdomen *Pseudopamera* (fig. 94)
- 12(10). Stridulitrum diffuse, not readily apparent; pronotum and head deeply punctate; abdomen with a band of long silvery

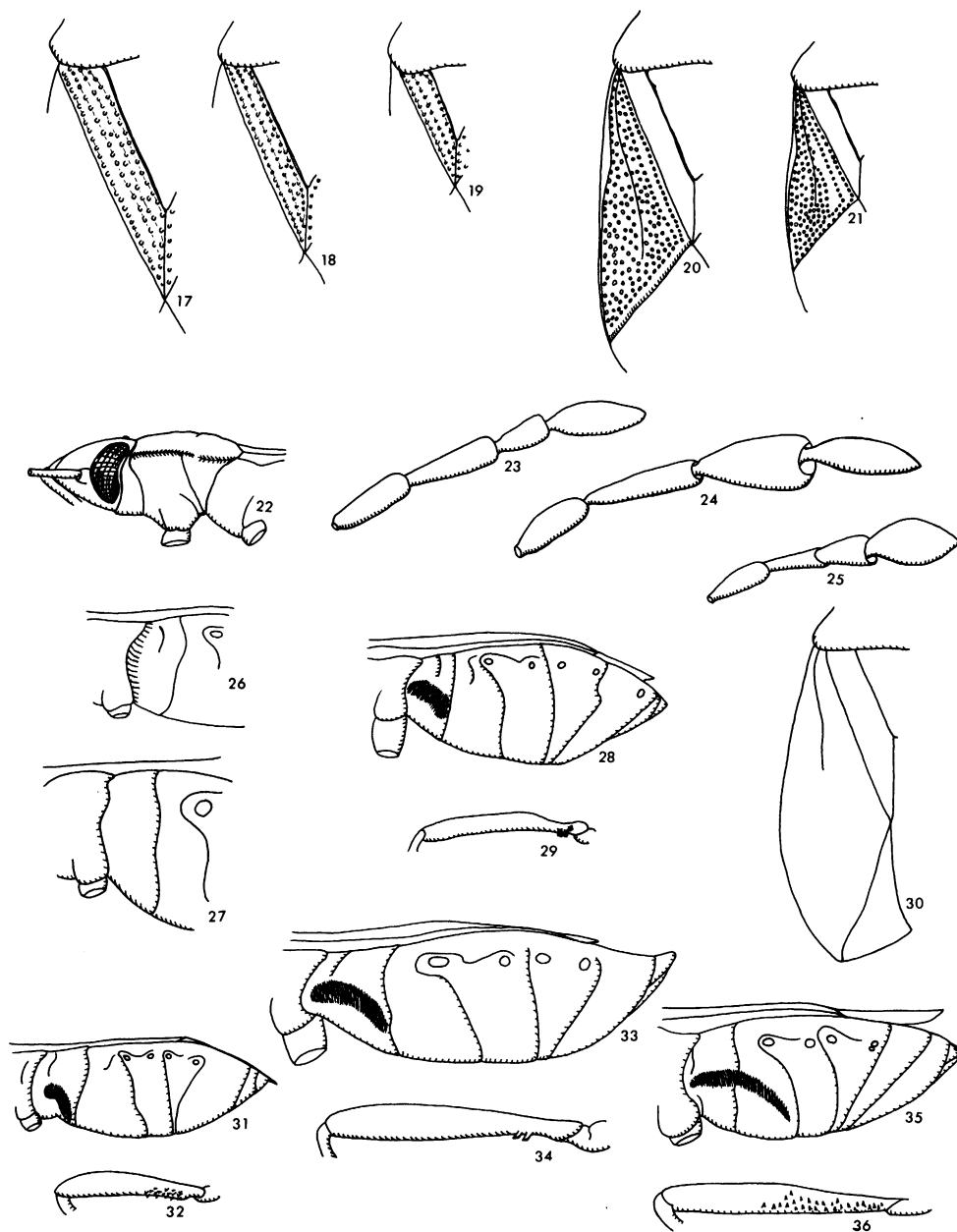
¹Figures 2 and 3 indicate how to make the various measurements indicated in this key.



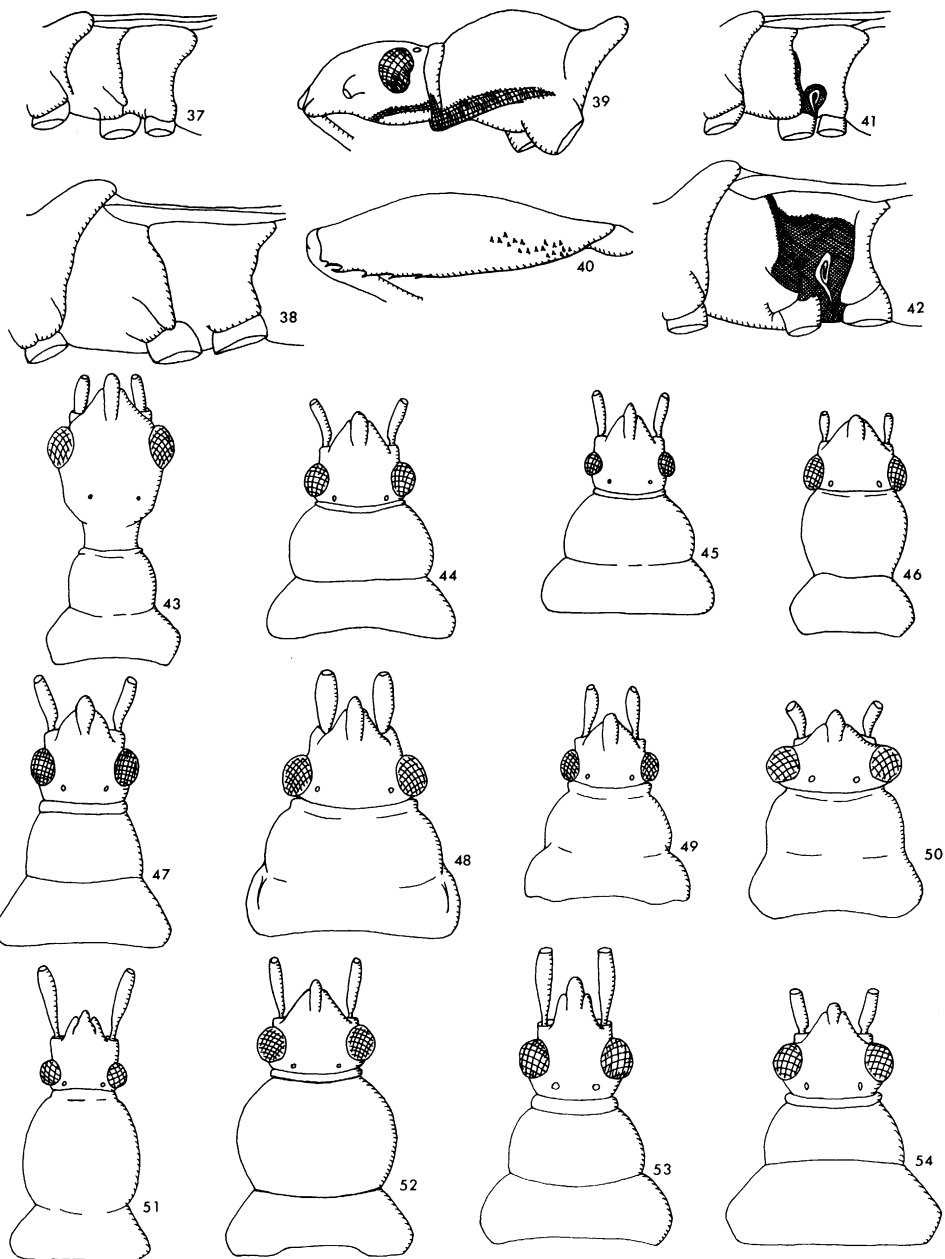
FIGS. 9-16. 9. Type I phallus, schematic. 10. Type II phallus, schematic. 11. Type III phallus, schematic. 12. Type IV phallus, schematic. 13. Fore femur multispined. 14. Fore femur with pronounced median spine. 15. Fore femur with spines double-ranked. 16. Fore femur with spines only along inner edge.

hairs covering much of sternum IV in lateral view *Stridulocoris* (fig. 59)
Stridulitrum fairly readily apparent; pronotum and head not deeply punctate; abdomen of uniform vestiture with no area of long silvery hairs 13
 13(12). Lateral margin of posterior pronotal lobe angled posterolaterad at approximately a 45 degree angle; pronotum markedly bilobed with transverse impression

deeply incised; always macropterous; antennal segment IV with a light proximal band; fore femoral spines clearly double ranked (spines present on both inner and outer edge of ventral surface) (fig. 15) *Froeschneria* (fig. 67)
 Lateral margin of posterior pronotal lobe angled posterolaterad at less than a 45 degree angle; transverse impression not deeply incised; often submacropterous;



FIGS. 17-36. 17. Four or more rows of claval punctures. 18. Three regular rows and a few additional punctures. 19. Three regular rows of claval punctures. 20. Membranal edge of corium impunctate. 21. Membranal edge of corium with a row of punctures. 22. Lateral pronotal carina, *Suffenus fusconervosus*. 23. Clavate antenna, *Carpilis barberi*. 24. Capitate antenna, *Ptochiomera nodosa*. 25. Capitate antenna, *Sisamnes clavigera*. 26. Scalloping prolonged as cellular division of sternum II. 27. Edge of abdominal sternum II finely scalloped. 28. Stridulitrum, *Erlacda arhaphaeoides*. 29. Plectrum, *Erlacda arhaphaeoides*. 30. Membrane shape, *Pseudocnemodus canadensis*. 31. Stridulitrum, *Stridulocoris gracilis*. 32. Plectrum, *Stridulocoris gracilis*. 33. Stridulitrum, *Afrovertanus elongatus*. 34. Plectrum, *Afrovertanus elongatus*. 35. Stridulitrum, *Ligyrocoris sylvestris*. 36. Plectrum, *Ligyrocoris sylvestris*.



FIGS. 37-54. 37. Mesepimeron "enclosed." 38. Mesepimeron "emergent." 39. Stridulitrum, *Pseudocnemodus canadensis*. 40. Plectrum, *Pseudocnemodus canadensis*. 41. Evaporative area "reduced." 42. Evaporative area "extensive." 43. *Aegyptocoris coatoni*, dorsal view. 44. *Pamerapa thoracicus*, dorsal view. 45. *Pachybrachius luridus*, dorsal view. 46. *Fontathanus flavonotus*, dorsal view. 47. *Stalaria ferruginosus*, dorsal view. 48. *Sisamnes clavigera*, dorsal view. 49. *Prytanes minima*, dorsal view. 50. *Cholula bicolor*, dorsal view. 51. *Caenopamera forreri*, dorsal view. 52. *Remaudiereana tibialis*, dorsal view. 53. *Pamerana nigrītula*, dorsal view. 54. *Henicorthaea yeoi*, dorsal view.

- antennal segment IV usually uniformly dark, if light banded, then fore femoral spines single ranked (present only along inner edge of ventral surface of femur) (fig. 16) *Ligyrocoris* (fig. 68)
- 14(7). Evaporative area reduced (fig. 41); claval punctation usually in three rows (fig. 19); pronotum usually shining, never pruinose; in most cases length of antennal segment III less than interocular distance 15
- Evaporative area not reduced as above; claval punctation in more than three rows (figs. 17, 18); pronotum dull, shagreened or pruinose; antennal segment III usually longer than interocular distance 22
- 15(14). No collar apparent on anterior pronotal lobe; ventral surface of head not grooved; buccular juncture U-shaped, but not near labial insertion, occurring at level of eyes (fig. 79) *Kolenetrus* (fig. 58)
- An anterior pronotal collar apparent but not demarked posteriorly; ventral surface of head grooved; buccular juncture U-shaped close to labial insertion (fig. 80) 16
- 16(15). Antennal segment II very elongate, greater in length than segments III and IV combined, also longer than twice interocular distance; only collar of anterior pronotal lobe punctate *Caenopamera* (fig. 51)
- Length antennal segment II less than combined lengths of segments III and IV and less than twice interocular distance; entire anterior pronotal lobe punctate (punctures may be smaller and less apparent than those of posterior pronotal lobe) 17
- 17(16). All antennal segments generally stout, bearing characteristic long hairs perpendicular to long axis of antennae; wings uniformly pale with small evenly distributed punctures darker than but not strongly contrasting with background of clavus and corium *Carpilis* (fig. 57)
- Antennae usually filiform or capitate with segments III and IV swollen, bearing only fine apically directed hairs; wings with dark pigmentation marking specific patterns against lighter background and large dark punctures irregularly arranged with some areas impunctate ... 18
- 18(17). Pronotum dorsoventrally compressed to form a lateral carina, this most apparent in area of transverse impression but clearly extending onto both lobes; antennal segment III slender, longer than interocular distance *Ereminellus* (fig. 65)
- Pronotum typically ecarinate, if subcarinate, only bluntly so on posterior lobe; length antennal segment III usually less than interocular distance, if greater, then also extremely swollen 19
- 19(18). Antennal segment III markedly enlarged and swollen, distally of greater diameter than segment I; lateral margin of posterior pronotal lobe bluntly subcarinate 20
- Antennal segment III generally filiform, if somewhat clavate, of no greater diameter distally and often more slender than segment I; lateral margins of pronotum ecarinate 21
- 20(19). Anterior pronotal lobe globose, strongly convex in lateral view; transverse impression complete and distinct; antennal segments II, III and IV approximately equal in length *Ptochiomera* (fig. 56)
- Anterior pronotal lobe with lateral margins rounded but not globose, nearly flat when viewed laterally; transverse impression obsolete mesally; antennal segment IV distinctly longer than either II or III *Sisamnes* (fig. 48)
- 21(19). Both eyes and ocelli very rounded and beadlike, markedly elevated from head surface; length antennal segment II less than interocular distance *Valonetus* (fig. 61)
- Eyes and ocelli not abnormally elevated from head; length antennal segment II greater than interocular distance *Prytanus* (fig. 49)
- 22(14). Pronotum dorsoventrally compressed with a distinct lateral carina on both lobes ... 23
- Lateral pronotal margins ecarinate ... 24
- 23(22). Extremely small, approximately 2.5 mm. long or less; claval punctures in three regular rows (fig. 19); scutellum uniformly colored and flat; (Old World) ... *Suffenus* (fig. 55)
- Large, considerably more than 2.5 mm. long; more than three regular rows of claval punctures (fig. 17); scutellum with a low median carina, apex pale; (South America) *Megacholula* (fig. 62)

- 24(22). Both lobes of pronotum and head uniformly and coarsely punctate; head broad, appearing almost to rest with eyes touching anterior pronotal angles; sternal scalloping prolonged in a cellular pattern, clearly visible on sternum II (fig. 26); a very narrow anterior pronotal collar vaguely indicated but never demarked posteriorly by a linelike groove 25
Typically with head and anterior pronotal lobe impunctate or only vaguely punctate; head generally with eyes removed from anterior pronotal angles; sternal scalloping usually lacking, if present, largely hidden under metapleuron and not prolonged; in most cases a distinct anterior pronotal collar, demarked posteriorly by a linelike groove present ..
..... 27
- 25(24). Claval punctation in three regular rows (fig. 19); apex of scutellum rounded, elevated and abruptly pale; bucculae with a posterior projection (fig. 78) ...
..... *Paracholula* (fig. 64)
Often with more than three rows of claval punctures; scutellum unicolorous; bucculae not projecting posteriorly (fig. 79) 26
- 26(25). Abdomen with a large glabrous area on lateral portions of sterna II and III (microtexture filelike, this a diffuse stridulitrum); hind femur with a plectrum of scattered spines on basal one-half; abdomen often with a band of long silvery hairs covering much of sternum IV in lateral view; lateral pronotal margins ecarinate *Stridulocoris* (fig. 59)
Abdomen with uniform vestiture, no shining stridulitrum or area of long hairs as above; hind femur devoid of spines; posterior pronotal lobe with a blunt carina, sometimes forked over humeral angles *Cholula* (fig. 50)
- 27(24). A distinctive row of corial punctures along membranar margin (fig. 21); fore leg very slender; fore coxal spine lacking; fore femoral spines present only along inner edge of ventral surface ...
..... *Stigmatonotum* (fig. 63)
Lacking a membranar margin row of corial punctures (fig. 20); usually with a fore coxal spine; spines ranked along both inner and outer edge of ventral surface of fore femur 28
- 28(27). Mesacetabulum with mesepimeron emergent from between meso- and metepisternum (fig. 38) 29
- Mesepimeron enclosed by metepisternum touching mesepisternum (fig. 37) .. 36
- 29(28). Head elongate, often with a distinct "neck" portion; postocular distance equal to or greater than distance between ocelli 30
Head less elongate, never with a distinct "neck" portion; postocular distance less than distance between ocelli .. 34
- 30(29). Very large (ca. 20.0 mm. long); labium reaching well onto abdomen; fore tibia armed with several small spines in both sexes *Megapamera* (fig. 82)
Much smaller (less than 10.0 mm.); labium not attaining abdomen; fore tibia unarmed 31
- 31(30). Eyes longitudinally oval; posterior margin of ocelli located distinctly anterior to posterior margin of eyes 32
Eyes rounded; posterior margin of ocelli clearly located posterior to posterior margin of eyes 33
- 32(31). Head with a clearly defined cylindrical "neck"; vertex of head convex; anterior pronotal lobe pruinose
..... *Pephyssena* (fig. 86)
"Neck" region of head less definitely defined; vertex of head flat, depressed between eyes; anterior pronotal lobe shining *Tenuicoris* (fig. 96)
- 33(31). Ocellus either approximately equidistant from posterior margin of head and eye or closer to posterior margin of head; head essentially flat when viewed laterally, not showing a gradual rounded constriction from eyes to insertion of head; fore coxae unspined; ventral portion of collar not produced anteriorly
..... *Catenes* (fig. 93)
Distance from posterior margin of head to ocellus greater than (often two or three times) distance from ocellus to margin of eye; head when viewed laterally showing gradual rounded constriction from eyes to insertion of head; fore coxae armed with a spine; ventral portion of collar produced anteriorly
..... *Heraeus* (fig. 87)
- 34(29). Jugum rounded; length of head greater than or equal to 2.5 times interocular distance; head elongate with large eyes; (Old World) *Pamerana* (fig. 53)
Jugum forming a fine ridge above antennal segment I; length of head less than 2.5 times interocular distance; head sometimes elongate, but not as in figure 53; (New World) 35
- 35(34). Head and anterior pronotal lobe lower

- than posterior pronotal lobe; fore coxal spine poorly developed or absent; color predominantly blackish brown with characteristic orange areas along the lateral margins of posterior pronotal lobe and paired orange maculae medially on the posterior pronotal lobe adjacent to the transverse impression ... *Orthaea* (fig. 91)
- Dorsal surface of head and both lobes of pronotum in essentially same plane; fore coxal spine(s) well developed; lacking the characteristic orange markings described above ... *Neopamera* (fig. 83)
- 36(28). Head very broad, interocular distance equal to or greater than width of pronotal collar ... 37
- Head not especially broad, interocular distance less than width of pronotal collar ... 38
- 37(36). Strikingly ant mimetic with lateral margin of head between eye and insertion of antenna expanded as a platelike curving ridge; a rounded but distinct spine present on lateral margin of pronotal collar ... *Xenydrium* (fig. 92)
- Lateral margin of head between eye and base of antenna not expanded in a ridge; pronotal collar unspined ... *Distingphyses* (fig. 89)
- 38(36). Head with essentially no postocular region, eyes seeming to touch anterior pronotal angles; no clearly demarked anterior pronotal collar apparent ... *Fontathanus* (fig. 46)
- Head not extremely elongate but with eyes clearly removed from anterior pronotal angles and with a postocular region apparent; anterior pronotal lobe with a very distinct anterior collar demarked posteriorly by a linelike groove ... 39
- 39(38). Large (ca. 9.5 mm. or longer); uniformly dark, even hemelytra unpatterned; entire body surface dull, shagreened, not pruinose ... *Zeropamera* (fig. 95)
- Body and hemelytra usually showing color patterning, sometimes totally pale but never uniformly dark; thorax above and below primarily pruinose, not shagreened ... 40
- 40(39). Head and anterior pronotal lobe including collar impunctate, or collar only with a few faint punctures; pronotal collar narrow and ringlike ... 41
- Anterior pronotal collar usually broad and distinctly punctate; rest of anterior pronotal lobe and head also often punctate, though sometimes with punctures minute and not readily discernible ... 46
- 41(40). Pronotal transverse impression shallow, obsolete medially; (New World) ... *Perigenes* (fig. 72)
- Transverse impression complete, narrow, linelike, deeply incised; (Old World) ... 42
- 42(41). Total length less than 3.5 times width of posterior pronotal lobe ... 43
- Total length greater than 3.5 times width of posterior pronotal lobe ... 44
- 43(42). Pronotum evenly pruinose but devoid of long hairs; fore femur markedly incrassate; a small spine midlength on the male fore tibia; labial segment I attaining base of head ... *Pamerapa* (fig. 44)
- Body with many very evident long hairs in addition to pruinosity; fore femur relatively slender; male fore tibia unarmed; labial segment I clearly not attaining base of head ... *Humilocoris* (fig. 60)
- 44(42). Posterior margin of pronotum straight across base of scutellum; male fore tibia with at most two tiny spines near distal end; collar with at least a few faint punctures; (Palearctic) ... *Pachybrachius* (fig. 45)
- Posterior margin of pronotum concave across base of scutellum; male fore tibia curving with a single spine near middle (often tibia strongly curving and spine large); collar impunctate, ringlike; (Old World tropics) ... 45
- 45(44). Body robust, subovoid with anterior pronotal lobe globose; width of head across eyes less than width of transverse impression; male fore tibia typically curving and with a large spine midlength; male genitalia with holding sclerites ... *Remaudiereana* (fig. 52)
- Body slender, elongate with anterior pronotal lobe less globose; width of head across eyes equal to or often greater than width of transverse impression; male fore tibia relatively straight with a slender spine midlength; male genitalia lacking holding sclerites ... *Pamerarma* (fig. 99)
- 46(40). Fore femoral spines single ranked, present only on inner edge of ventral surface (fig. 16) ... 47
- Fore femoral spines double ranked, present on both inner and outer edges of ventral surface (fig. 15) ... 48
- 47(46). Stout dark bristles present on all tibiae;

- fore coxal spine distinct; first segment of hind tarsus approximately 3 times the combined lengths of segments 2 and 3; (New World) *Zeridoneus* (fig. 70)
- Fore tibia lacking such stout dark bristles; fore coxal spine absent or barely indicated; first segment of hind tarsus approximately 2 times the combined lengths of segments 2 and 3; (Old World) *Stalaria* (fig. 47)
- 48(46). Anterior pronotal lobe, including collar, shorter than posterior lobe; fore femoral spines short, stout and pale with dark apices ... *Henicorthaea* (fig. 54)
- Anterior pronotal lobe, including collar, longer than posterior lobe; fore femoral spines relatively long, slender and unicolorous 49
- 49(48). Head elongate with large eyes (fig. 53); width of head across eyes more than twice interocular distance; pygophore with a deep median longitudinal groove in the posterior lip (fig. 8); phallus of Type I (fig. 9) *Pamerana* (fig. 53)
- Head usually not noticeably elongate; width of head across eyes less than twice interocular distance; posterior edge of pygophore broadly rounded (fig. 6), lacking a median groove; phallus of Type II (fig. 10) 50
- 50(49). Pronotum tapering cephalad with anterior lobe flattened and very little convex, in lateral view anterior lobe distinctly lower than posterior lobe; collar with characteristic median "dip" to posterior margin (fig. 66); abdomen equal to or longer than combined length of head and pronotum *Paromius* (fig. 66)
- Anterior pronotal lobe usually strongly convex, in lateral view not lower than posterior lobe; collar essentially straight across midline, not as in figure 66; abdomen shorter than combined length of head and pronotum 51
- 51(50). Generally brachypterous; length anterior pronotal lobe equal to or greater than 2.5 times length posterior pronotal lobe; male fore tibia curved and bearing one prominent spine and other minor spines on distal one-half *Togo* (fig. 76)
- Generally macropterous; male fore tibia not noticeably curved and often unarmed, if armed, then length anterior pronotal lobe less than 2.5 times length posterior lobe 52
- 52(51). Small (*ca.* 4.0 mm. or less) and ant mimetic; head strongly swollen in lateral view; eyes small, rounded, protruding and beadlike 53
- Typically larger insects 5.0 mm. or greater; if small, then not ant mimetic with a swollen head and beadlike eyes ... 54
- 53(52). Hemelytra predominately dark with light patterning; anterior two thirds of anterior pronotal lobe across calli shining; (Old World) *Mimobius* (fig. 75)
- Hemelytra predominately pale with dark patterning; anterior pronotal lobe pruinose, not shining across calli; (New World) *Bacacephalus* (fig. 102)
- 54(52). Transverse pronotal impression wider than head; head as long as or longer than width across eyes; juga rounded *Paraparomius* (fig. 73)
- Head wider than long and as wide as or wider than transverse impression; a minor jugal ridge usually distinguishable 55
- 55(54). Anterior pronotal lobe globose, impunctate, shagreened; distance base of head to insertion of antenna exceeding interocular distance; transverse impression and posterior demarcation of collar deeply incised *Horridipamera* (fig. 74)
- Anterior pronotal lobe punctate and generally not extremely globose; distance base of head to insertion of antenna generally less than the interocular distance (if more, anterior pronotal lobe always at least faintly punctate); transverse impression and posterior demarcation of collar not very deeply incised 56
- 56(55). Large, usually greater than 6 mm. in length; head broad and jugal ridge above antennal segment I distinct . 57
- Small, generally less than 5 mm. in length; jugal ridge above antennal segment I usually very narrow and poorly developed .. *Pseudopachybrachius* (fig. 77)
- 57(56). Anterior pronotal lobe globose and impunctate; male fore tibia spined *Eucosmetus* (fig. 71)
- Anterior pronotal lobe punctate in dorsal view at least laterally and toward transverse impression; male fore tibia not spined 58
- 58(57). Usually with a broad dark band across hemelytra at level of corial apex and a second more anterior dark area present and reaching the lateral corial margin

at level of claval apex; male genitalia with apical conjunctival spines symmetrical, an additional pair of more proximal pigmented or sclerotized lobes present on conjunctiva; (Old World) ... *Paraeucosmetus* (fig. 100)
A broad dark band extending across hemelytra at level of corial apex but any

second more anterior dark area either lacking or present only medially and not reaching lateral corial margin at level of claval apex; male genitalia with left apical conjunctival spine bifid, no additional spines or lobes on conjunctiva; (New World)
..... *Pseudoparomius* (fig. 101)

GENERIC DIAGNOSES AND DESCRIPTIONS

The following generic diagnoses and brief summary descriptions are presented in the order in which the genera appear in the cladogram. After each name in the species lists my familiarity with that species is indicated by the following system:

- * I saw determined material.
- ** I saw the holotype or lectotype (in a few cases saw only a paratype).
- *** Generally, I saw no material for the species and thus am uncertain of generic placement.

The original reference for each species and all subsequent literature, including synonymies, that are cited in Slater's 1964a catalogue are not repeated in this paper. However, new species (most to be described elsewhere), new combinations, new synonymies, general geographic distribution of each genus and any nomenclatural changes subsequent to Slater's 1964a catalogue are all indicated for each genus.

KOLENETRUS BARBER

Figure 58

TYPE SPECIES: *Rhyparochromus plenus* Distant, 1882.**

Monotypic, broadly distributed in Nearctic, south to Guatemala.

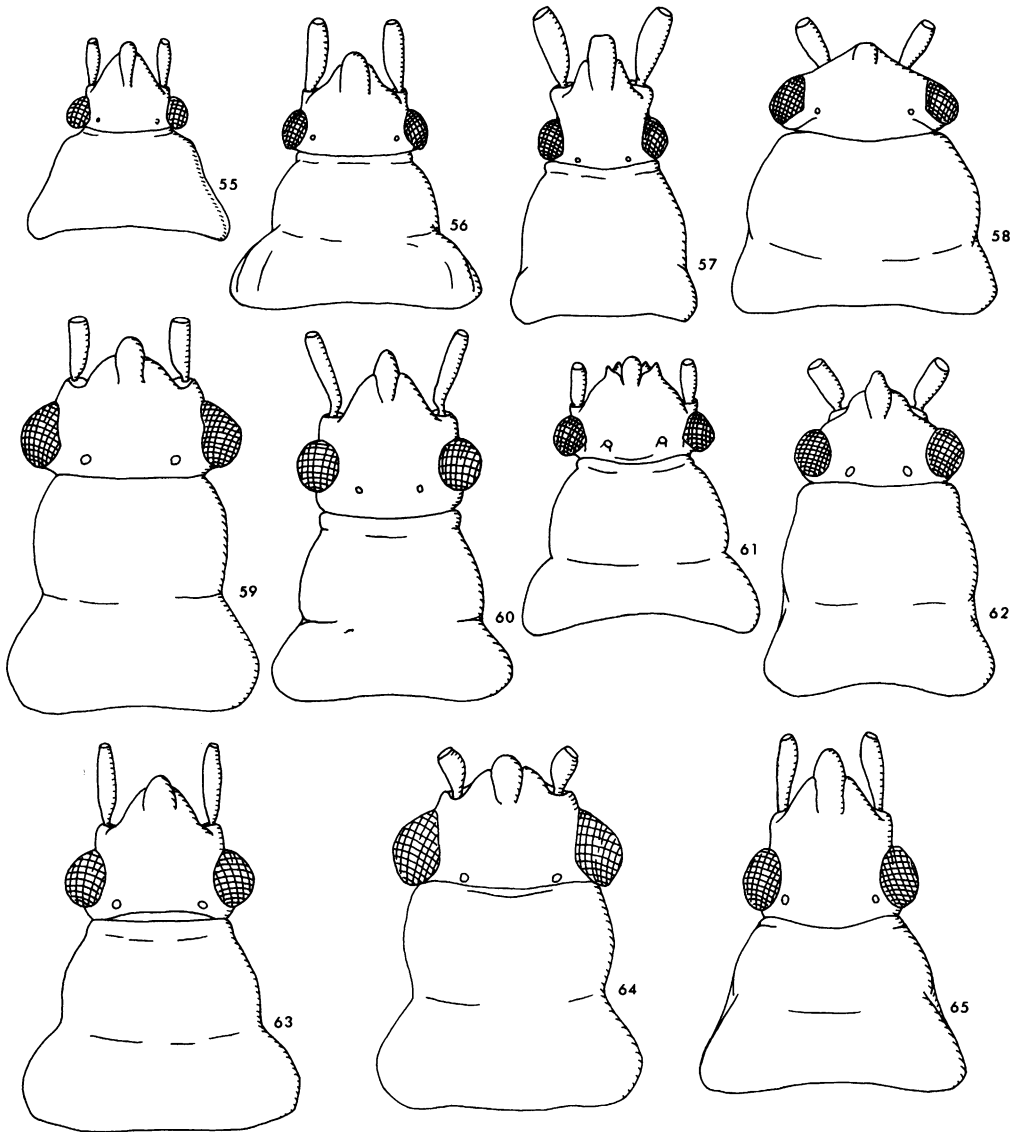
DIAGNOSIS: *Kolenetrus* is the only my-

odochine genus to show no indication of an anterior pronotal collar in dorsal view. It is also plesiomorphic for most other characters considered in this study.

Apomorphic states further characterizing the genus include the highly shining body surface, reduced evaporative area and reduction of the fore femoral spines. Although these apomorphic character states (all of independent derivation) and its general habitus and size might lead one to associate *Kolenetrus* with the monophyletic Nearctic group with a Type I phallus, it is readily distinguished from all those genera by its lack of a collar, buccular condition, and lack of a midventral groove on the head.

DESCRIPTION: Body small, ovoid, heavily punctate and highly shining; pronotum dorsoventrally compressed, lateral margins subcarinate; no anterior collar apparent dorsally.

Phallic Type I (fig. 9); posterior edge of pygophore sharp (fig. 4); claval punctation in three regular rows (fig. 19); ventral surface of head not grooved; buccular juncture broadly U-shaped occurring close to base of head and enclosing a gular area (fig. 79); evaporative area reduced (fig. 41); mesepimeron enclosed (fig. 37); anterior margin of abdominal sternum II (first sternum visible) scalloped (fig. 27); fore femur with spines only along inner edge of ventral surface (fig. 16).



FIGS. 55–65. 55. *Suffenus fusconervosus*, dorsal view. 56. *Ptochiomera nodosa*, dorsal view. 57. *Carpilis barberi*, dorsal view. 58. *Kolenetrus plenus*, dorsal view. 59. *Stridulocoris gracilis*, dorsal view. 60. *Humilocoris cephalotes*, dorsal view. 61. *Valonetus pilosus*, dorsal view. 62. *Megacholula englemani*, dorsal view. 63. *Stigmatonotum sparsum*, dorsal view. 64. *Paracholula vegetus*, dorsal view. 65. *Ereminellus fusicornis*, dorsal view.

MEGACHOLULA, NEW GENUS
Figure 62

TYPE SPECIES: *Megacholula englemani*,
new species.

Monotypic, Neotropical.

DIAGNOSIS: *Megacholula*, *Suffenus*, and *Ereminellus* are the only three myodochine genera that show a distinct continuous carina along the lateral margins of both pronotal lobes. Size immediately distinguishes *Megacholula* (total length greater than 7 mm.)

from the other two carinate genera which are approximately half that length. *Suffenus* and *Eremineilus* also both have the claval punctation in three regular rows (fig. 19), whereas *Megacholula* shows four irregular rows of claval punctures (fig. 17).

DESCRIPTION: Head shining, impunctate and acuminate, broad across eyes, interocular area flattened. Pronotum declivent from posterior margin, dorsoventrally compressed with a distinct carina along the entire lateral margin of both pronotal lobes; shape of pronotum subrectangular, anterior angles nearly right angles, giving a very square-shouldered appearance; lateral margins little sinuate and nearly parallel; transverse impression barely apparent; an anterior pronotal collar detectable only medially; posterior margin slightly convex across base of scutellum; pruinose anterior lobe impunctate, posterior lobe with numerous moderate sized punctures and pruinose. Scutellum with a thin, pale, impunctate median longitudinal stripe and paler swollen apex; remainder of scutellum punctured like posterior pronotal lobe. Hemelytra slightly exceeding abdominal apex; clavus with punctures in four irregular rows (fig. 17); lateral corial margins essentially straight. Legs elongate; fore coxa with two small spines; fore femur incrassate, multispined as in figure 13; fore tibia unarmed in both sexes; mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); buccular juncture broadly U-shaped, occurring at level of posterior margin of eye and enclosing a gular area (fig. 79). Antennae elongate, filiform. Male genitalia of Type I (fig. 9); posterior edge of pygophore sharp (fig. 4).

ETYMOLOGY: From the Greek *mega*, large or great, and *Cholula*, for the appearance of this genus which is superficially like a giant specimen of the genus *Cholula*.

***Megacholula englemanni*, new species**

DIAGNOSIS: This is the only described species in the genus.

DESCRIPTION: Head and anterior pronotal lobe tawny brownish red, impunctate; head shining; anterior pronotal lobe shagreened, darker toward carinate lateral mar-

gin; posterior pronotal lobe, scutellum and hemelytra pruinose, light tawny with chestnut punctures; membrane of hemelytra hyaline; lateral carina on posterior pronotal lobe pale buffy yellow; antennae light buffy brown, gradually darkening to between buffy brown and chestnut on segment IV; legs and labium light yellowish buffy brown, numerous small sepia spots of heavier sclerotization on femora; thorax ventrally and laterally light chestnut.

Length of head .87 mm., width across eyes 1.45 mm., interocular distance .84 mm., length anterior pronotal lobe .95 mm., length posterior pronotal lobe .84 mm., maximum width of anterior pronotal lobe 1.63 mm., width of transverse impression 1.56 mm., width across humeral angles 1.98 mm.; length of scutellum 1.18 mm., width of scutellum 1.14 mm.; length of corium 3.23 mm., distance apex corium to apex membrane 1.22 mm.; labium very long, reaching base of abdominal sternum III, length labial segments: I 1.10 mm., II 1.22 mm., III .84 mm., IV .95 mm.; length antennal segments: I .53 mm., II 1.33 mm., III 1.14 mm., IV 1.22 mm.; total length 7.33 mm.

HOLOTYPE: Ecuador: ♂ Limoncocha, March 1974, (H. Dodge Engleman), in the American Museum of Natural History.

PARATYPES: ♀ Same data as above, in J. A. Slater collection. ♂ Same data as above, in J. Harrington collection.

ETYMOLOGY: This new species is named for Dr. H. Dodge Engleman of the Coco Solo Hospital, Canal Zone. Dr. Engleman has been diligent in collecting and has generously sent me a rich variety of Neotropical myodochines, including this new species which bears his name.

PARACHOLULA, NEW GENUS

Figure 64

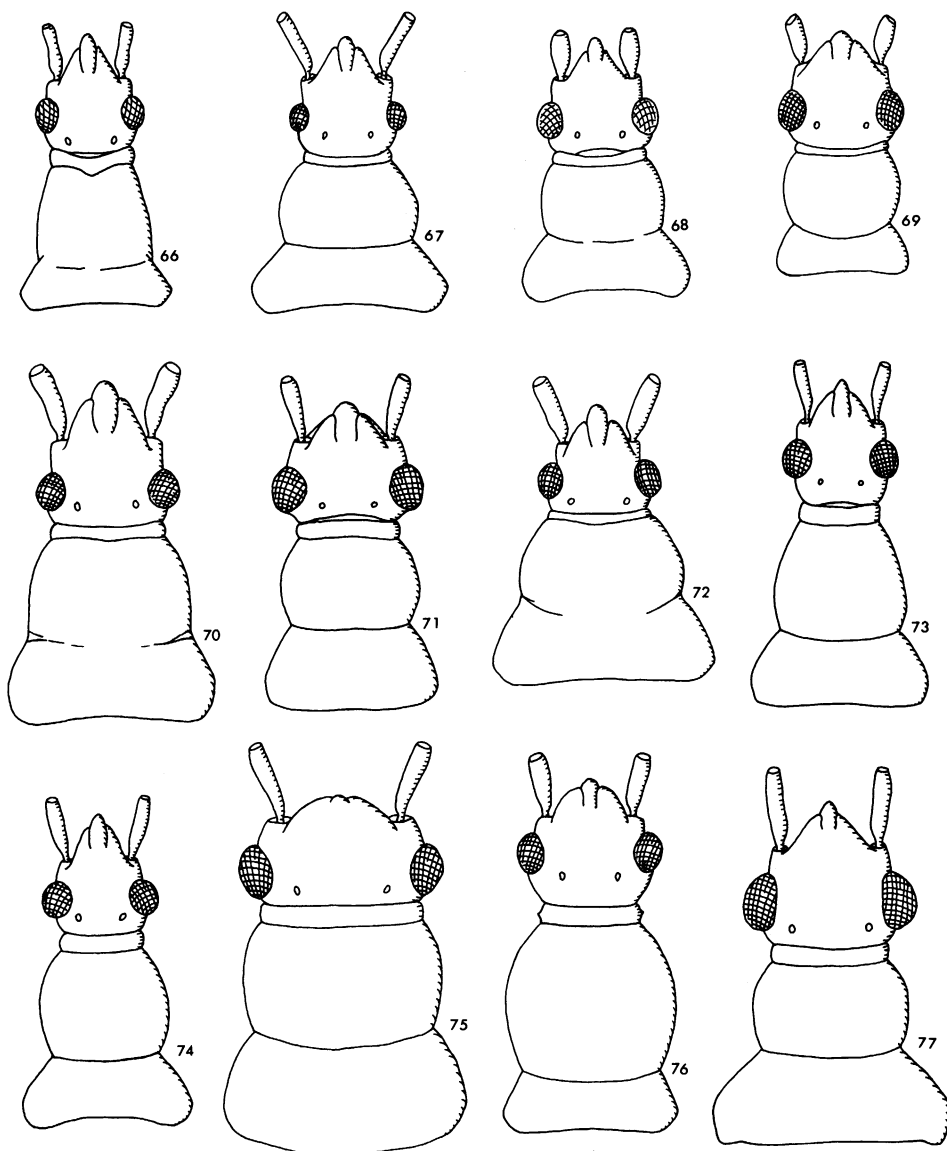
TYPE SPECIES: *Neocattarus thoracicus* Distant, 1882.

Two species, Neotropical.

INCLUDED SPECIES: [Both species are new combinations (from *Neocattarus*).]

thoracicus (*Neocattarus*) Distant, 1882.**

vegetus (*Neocattarus*) Distant, 1882.**



FIGS. 66-77. 66. *Paromius gracilis*, dorsal view. 67. *Froeschneria multispinus*, dorsal view. 68. *Ligyrocoris sylvestris*, dorsal view. 69. *Slaterobius insignis*, dorsal view. 70. *Zeridoneus costalis*, dorsal view. 71. *Eucosmetus incisus*, dorsal view. 72. *Perigenes dispositus*, dorsal view. 73. *Paraparomius leptopoides*, dorsal view. 74. *Horridipamera neitneri*, dorsal view. 75. *Mimobius* sp., dorsal view. 76. *Togo hemipterus*, dorsal view. 77. *Pseudopachybrachius vincta*, dorsal view.

=*pictus* (*Coreus*) Fabricius, 1803. Transferred to *Neocattarus* from *Ptochiomera* and synonymized by Scudder, 1970. p. 101.

DIAGNOSIS: This new genus is erected to include the previously described species *Neocattarus vegetus* and *thoracicus*. It is readily distinguished by the peculiar buccu-

lar condition described below and a pale, upturned, and swollen scutellar apex in conjunction with the plesiomorphic state of three regular rows of claval punctures.

DESCRIPTION: Body elongate, parallel-sided; head and pronotum heavily and deeply punctate; pronotum only slightly compressed dorsoventrally, lateral margin not carinate; a narrow anterior collar present but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore sharp (fig. 4); claval punctation in three regular rows (fig. 19); ventral surface of head not grooved; buccular juncture broadly U-shaped, occurring close to base of head and enclosing a gular area; bucculae distinctive, well developed with a posterior projection (fig. 78); evaporative area extensive (fig. 42); mesepimeron enclosed (fig. 37); scalloping of abdominal sternum II prolonged as a cellular division of that segment (fig. 26); fore femur heavily spined with small spines present between rows of larger spines occurring along both inner and outer edges of ventral surface (fig. 13).

I have not observed these insects in the field, but their general body form and coloring suggests they may be ant or wasp mimics.

ETYMOLOGY: From the Greek *para*, beside or close to, for its close relationship to the genus *Cholula*.

CHOLULA DISTANT

Figure 50

Transferred to the Myodochini by Sweet, 1967, p. 224.

Neocattarus Distant, 1882, NEW SYNONYMY.

TYPE SPECIES: *Cholula bicolor* Distant, 1882.

Eight species, Neotropical.

INCLUDED SPECIES: *bicolor* Distant, 1882.**

discoloria Distant, 1893.**

variegata Distant, 1882.**

[The following five species are new combinations (from *Neocattarus*).]

firmus (*Neocattarus*) Distant, 1882.**

irrorandus (*Neocattarus*) Distant, 1893.**

maculatus (*Neocattarus*) Distant, 1893.**

parvus (*Neocattarus*) Distant, 1882.**

vigens (*Neocattarus*) Distant, 1882.**

DIAGNOSIS: Although the type species of the genera *Cholula* and its junior synonym *Neocattarus* are clearly congeneric, I have been unable to discover a firm synapomorphic character, other than general habitus, relating all the species included in this genus, and the group may ultimately prove not to be holophyletic. For the present, species of *Cholula* and its junior synonym *Neocattarus* can be recognized by the peculiar cellular division of sternum II that they have in common with *Paracholula* and *Stridulocoris* but their lack of the distinctive bucculae and scutellar apex of *Paracholula* and the stridulatory mechanism found in *Stridulocoris*.

DESCRIPTION: Body subovoid; head and pronotum strongly punctate; pronotum dorsoventrally compressed, posterior lobe subcarinate; anterior pronotal collar discernible only medially and not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore sharp (fig. 4); claval punctation in more than three regular rows (fig. 17); ventral surface of head not grooved; buccular juncture broadly U-shaped, occurring close to base of head and enclosing a gular area (fig. 79); evaporative area extensive (fig. 42) rugose; mesepimeron enclosed (fig. 37); scalloping of abdominal sternum II prolonged as a cellular division of that segment (fig. 26); fore femur heavily spined as in figure 13.

STRIDULOCORIS, NEW GENUS

Figure 59

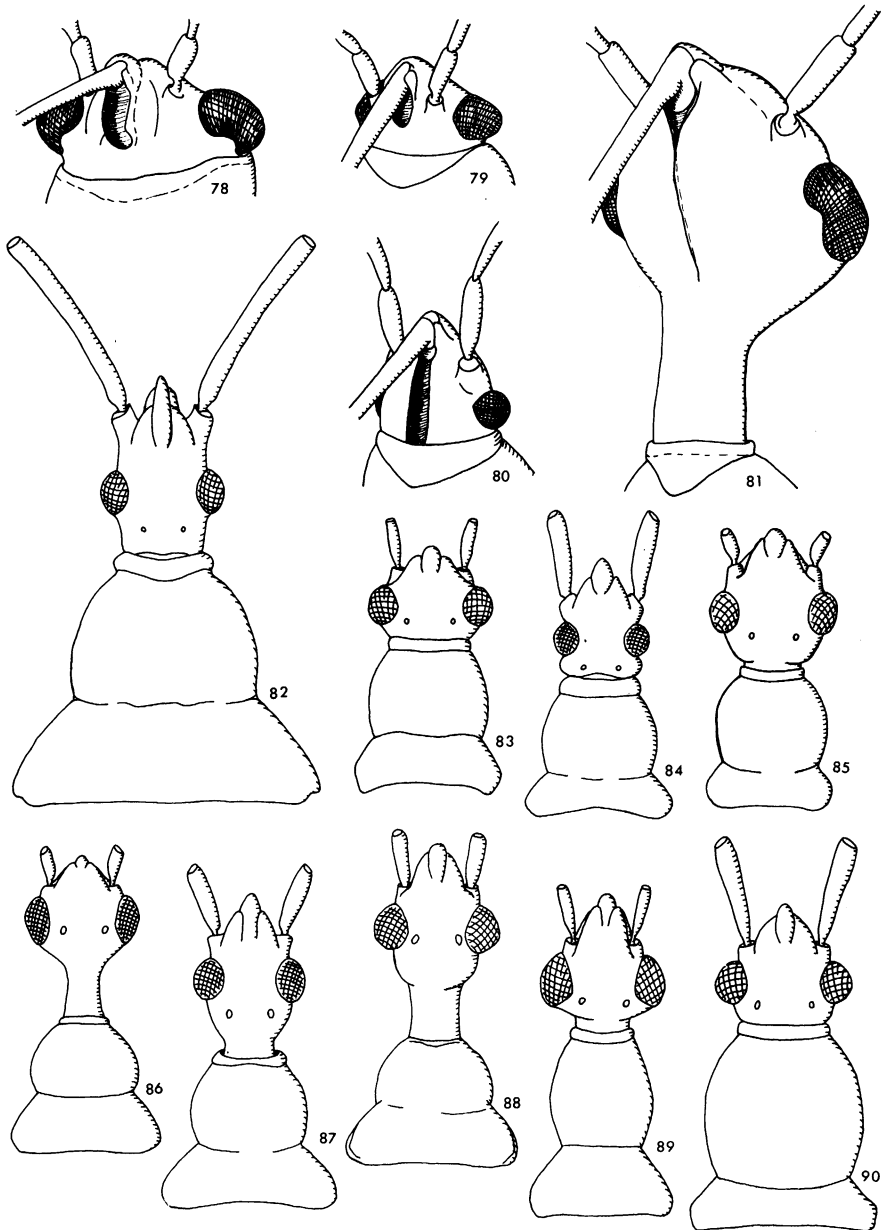
TYPE SPECIES: *Neocattarus gracilis* Distant, 1882.

Two species, Neotropical.

INCLUDED SPECIES: An undescribed species from Mexico.

gracilis (*Neocattarus*) Distant, 1882.**
new combination (from *Neocattarus*).

DIAGNOSIS: The stridulatory mechanism described below has evolved independently



FIGS. 78–90. 78. Buccular condition *Paracholula vegetus*, lateroventral view of head. 79. Buccular condition *Kolenetrus plenus*, lateroventral view of head. 80. Buccular condition *Carpilis ferruginea*, lateroventral view of head. 81. Buccular condition *Pephysena levis*, lateroventral view of head. 82. *Megapamera ashlockia*, dorsal view. 83. *Neopamera bilobata*, dorsal view. 84. *Pseudocnemodus canadensis*, dorsal view. 85. *Erlacda arhaphaeoides*, dorsal view. 86. *Pephysena levis*, dorsal view. 87. *Heraeus triguttatus*, dorsal view. 88. *Afrovertanus elongatus*, dorsal view. 89. *Distingphyses insignis*, dorsal view. 90. *Ashlockaria sobria*, dorsal view.

as the two species of *Stridulocoris* are the only stridulatory myodochines with a Type I phallus. On this basis I have given these species generic status. *Stridulocoris* can also be recognized by a characteristic band of long, dense, recumbent, silvery hairs covering much of abdominal sternum IV.

DESCRIPTION: Body elongate, parallel-sided; head and pronotum strongly punctate; lateral pronotal margins rounded; a very narrow anterior pronotal collar indicated but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore sharp (fig. 4); claval punctation in more than three regular rows (fig. 17); ventral surface of head not grooved; buccular juncture broadly U-shaped, occurring close to base of head and enclosing a gular area (fig. 79); evaporative area extensive (fig. 42); mesepimeron enclosed (fig. 37); scalloping of abdominal sternum II prolonged as a cellular division of that segment (fig. 26); fore femur heavily spined as in figure 13; a diffuse abdominal stridulitrum present (fig. 31); plectrum a field of minute spines on the hind femur (fig. 32).

ETYMOLOGY: From the Latin, *stridulus*, creaking or grating for this bug's sound producing capacity, and the Greek *cori*, bug.

SUFFENUS DISTANT

Figure 55

TYPE SPECIES: *Rhyparochromus fuscovenosus* Motschulsky, 1863.**

=*Dakhla stripennis* Linnavouri, 1964. p. 316. Synonymized by Scudder, 1970. p. 103.

Monotypic, broadly throughout Old World tropics.

DIAGNOSIS: This tiny pale monotypic genus is the smallest known myodochine. In addition to its minute size it is also distinguished by the peculiar comblike row of spines on the strongly incrassate fore femur.

DESCRIPTION: Minute (ca. 2.5 mm.); body ovoid; pronotum dorsoventrally compressed, lateral margins with a slight carina on both lobes; an anterior collar indicated but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore sharp (fig. 4); claval punctation in three regular rows (fig. 19); ventral surface of head not grooved; buccular juncture broadly U-shaped, occurring close to base of head and enclosing a gular area (fig. 79); evaporative area extensive (fig. 42); mesepimeron enclosed (fig. 37); anterior margin of abdominal sternum II scalloped (fig. 27); fore femur with spines only along inner edge of ventral surface (fig. 16), these spines characteristically fine and sharp, closely arranged in a comblike row.

AEGYPTOCORIS CHINA

Figure 43

TYPE SPECIES: *Aegyptocoris myrmecoides* China, 1936.

Two species, Ethiopian.

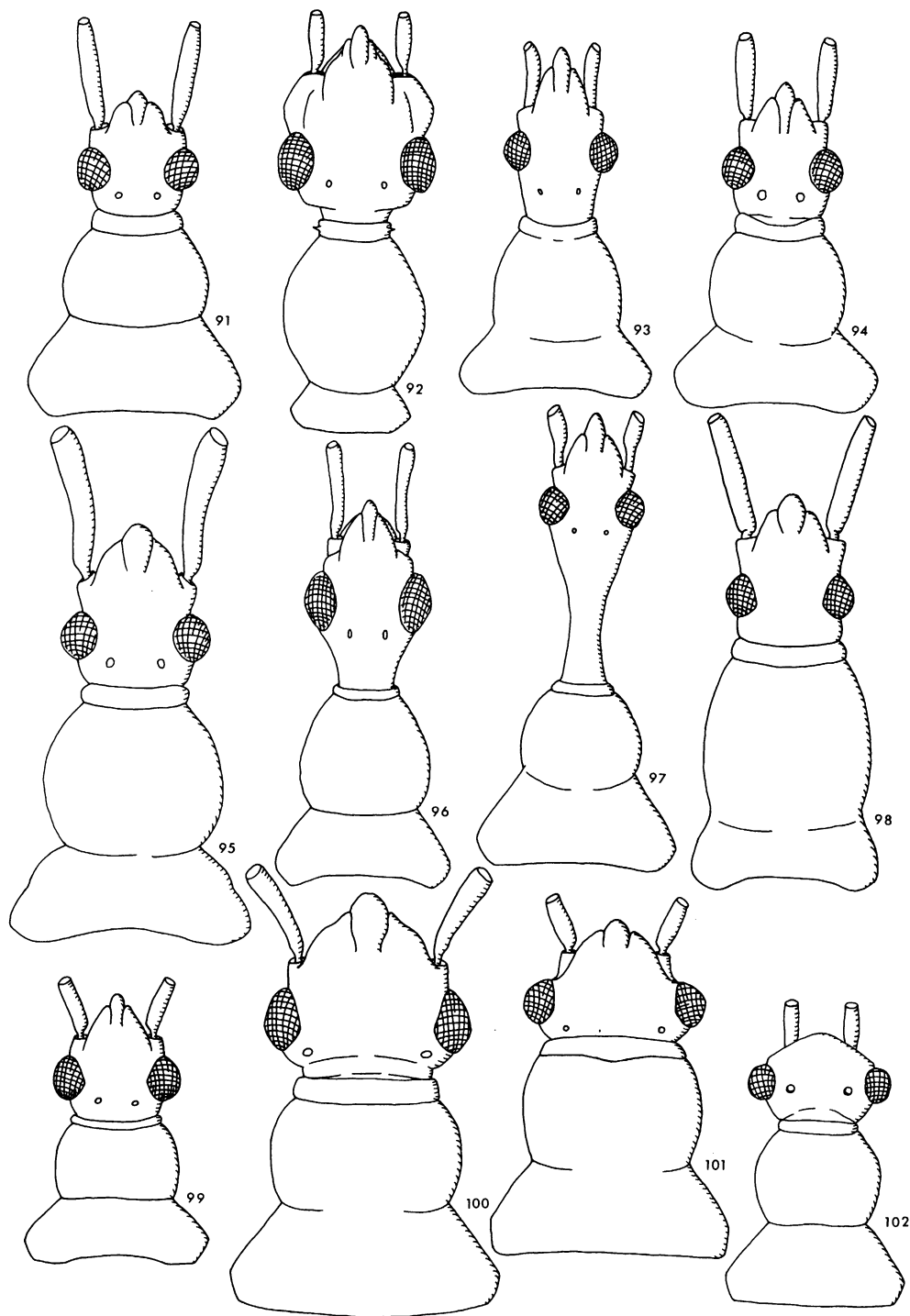
INCLUDED SPECIES: *coatoni* Slater and Sweet, 1970. p. 221.**

myrmecoides China, 1936.**

DIAGNOSIS: *Aegyptocoris* is the only myodochine with a Type I phallus to show head elongation, which must surely be of independent derivation. The highly shining body and reduced evaporative area are also derived independently in this lineage. The various characters associated with ant mimicry and the peculiar upturned scutellar apex serve to further distinguish this genus.

DESCRIPTION: Body elongate, highly shining and strikingly antlike; head elongate, prolonged behind eyes in a stalklike neck; ocelli vestigial; lateral pronotal margins rounded; a very narrow collar area apparent on anterior pronotal lobe but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore sharp (fig. 4); claval punctation in three regular rows (fig. 19); ventral surface of head not grooved; buccular juncture U-shaped and occurring very close to labial insertion; evaporative area reduced (fig. 41); mesepimeron enclosed (fig. 37); hemelytra sometimes brachypterous; scutellum distinctive with apex curving upwards as a large blunt spine; fore coxa unspined; entire ventral surface of fore femur heavily spined as



FIGS. 91-102. 91. *Orthaea consuta*, dorsal view. 92. *Xenydrium formiciforme*, dorsal view. 93. *Catenes porrectus*, dorsal view. 94. *Pseudopamera aurivilliana*, dorsal view. 95. *Zeropamera nigra*,

in figure 13; fore tibia of male straight with many small regular teeth.

EREMINELLUS, NEW GENUS

Figure 65

TYPE SPECIES: *Exptochiomeria arizonensis* Barber, 1932.

Two species, Nearctic.

INCLUDED SPECIES: An undescribed species from Nevada.

arizonensus Barber, 1932.** New Combination (from *Exptochiomeria*).

DIAGNOSIS: This genus shares a midventral head groove and U-shaped buccular juncture with the Nearctic complex involving *Prytanus* and its relatives. Yet, *Eremynellus* is readily distinguished from members of that group by its retention of a plesiomorphic compressed, carinate pronotum. On that basis, the former *Exptochiomeria arizonensis* is recognized as a distinct genus including an additional undescribed species from the southwestern United States.

DESCRIPTION: Body ovoid, shining; pronotum dorsoventrally compressed, a slight lateral carina present on both lobes; an anterior pronotal collar region clearly apparent but not demarked posteriorly by a line-like groove.

Phallic Type I (fig. 9); posterior edge of pygophore subsharp (fig. 5); claval punctation with a few punctures in addition to three regular rows (fig. 18); ventral surface of head grooved; buccular juncture U-shaped, occurring within groove close to labial insertion (fig. 80); evaporative area reduced (fig. 41); mesepimeron enclosed (fig. 37); anterior edge of sternum II finely scalloped (fig. 27); fore femur with spines present only along inner edge of ventral surface (fig. 16).

ETYMOLOGY: From the Greek, *eremi*, a desert, and the Latin, *-ellus*, small, for the xeric habitat of this small, desert-dwelling bug.

CAENOPAMERA BARBER

Figure 51

TYPE SPECIES: *Pseudopamera forreri* Distant, 1893.**

Monotypic, Nearctic.

DIAGNOSIS: This genus is readily recognized among those genera of the Nearctic complex with a U-shaped buccular juncture in a midventral head groove by its elongate antennae which also bear characteristic long hairs perpendicular to the long axis of the antennae. *Caenopamera* is also larger with a more elongate body form than the other members of that monophyletic group.

DESCRIPTION: Body elongate, parallel-sided, shagreened; lateral margins of pronotum rounded; an anterior collar apparent but not demarked posteriorly by a line-like groove.

Phallic Type I (fig. 9); posterior edge of pygophore subsharp (fig. 5); claval punctation with a few punctures in addition to three regular rows (fig. 18); ventral surface of head grooved; buccular juncture U-shaped, occurring within groove at level of antennal insertion (fig. 80); mesepimeron enclosed (fig. 37); evaporative area reduced (fig. 41); fore femur with spines present only along inner edge of ventral surface (fig. 16); fore tibia of male straight with two small spines on distal one-third; antennae extremely elongate, especially segment II which is longer than the combined lengths of segments III and IV.

VALONETUS BARBER

Figure 61

TYPE SPECIES: *Valonetus pilosus* Barber, 1918.** = *Plociomeria puberula* Stål, 1874.

Monotypic, Nearctic.

DIAGNOSIS: The eyes and ocelli are the most striking feature of this monotypic genus of phallic Type I. They are beadlike and pro-

←

dorsal view. 96. *Tenuicoris myrmeforme*, dorsal view. 97. *Myodocha serripes*, dorsal view. 98. *Cnemodius mavortius*, dorsal view. 99. *Pamerarma ventralis*, dorsal view. 100. *Paraucosmetus pallicornis*, dorsal view. 101. *Pseudoparomius linearis*, dorsal view. 102. *Bacacephalus globiceps*, dorsal view.

trude from the surface of the head, being almost substalked. The juga, which protrude like tiny tusks, are also distinctive.

DESCRIPTION: Body ovoid, heavily pilose; lateral pronotal margins rounded; an anterior collar apparent but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore subsharp (fig. 5); claval punctation in three regular rows (fig. 19); ventral surface of head with a shallow midventral groove; buccular juncture U-shaped occurring within groove close to labial insertion (fig. 80); bucculae relatively large, rounded and leaflike; evaporative area reduced (fig. 41); mesepimeron enclosed (fig. 37); anterior edge of abdominal sternum II finely scalloped (fig. 27); hemelytra sometimes brachypterous; fore femur with but a few spines present only along inner edge of ventral surface (fig. 16).

PTOCHIOMERA SAY

Figure 56

TYPE SPECIES: *Ptochiomera nodosa* Say, 1831.

One species, Nearctic; one species(?), Neotropical.

INCLUDED SPECIES: *chilensis* (*Pachymerus*) Spinola, 1852.***
nodosa Say, 1831.*

DIAGNOSIS: *Ptochiomera* and *Sisamnes* both have the antennae highly swollen, but in *Ptochiomera* it is the third segment which has the greatest diameter (terminal segment most swollen in *Sisamnes*). The highly shining body surface of *Ptochiomera* also serves to distinguish it from *Sisamnes* which has a peculiar granular vestiture.

DESCRIPTION: Body ovoid, highly shining; anterior pronotal lobe with lateral margins rounded; posterior lobe subcarinate in lateral margins; a broad anterior collar clearly apparent but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore subsharp (fig. 5); claval punctation in three regular rows (fig. 19); ventral surface of head with a median groove; buccular juncture U-shaped, occurring in groove

close to labial insertion (fig. 80); mesepimeron enclosed (fig. 37); evaporative area reduced (fig. 41); anterior edge of sternum II finely scalloped (fig. 27); hemelytra often brachypterous; fore femur sparsely armed with spines only along inner edge of ventral surface (fig. 16); male fore tibia straight and unarmed.

CARPILIS STÅL

Figure 57

TYPE SPECIES: *Carpilis ferruginea* Stål, 1874.

Three species, Nearctic.

INCLUDED SPECIES: *barberi* (*Ptochiomera*) Blatchley, 1924.*

consimilis Barber, 1949.**

ferruginea Stål, 1874.*

DIAGNOSIS: *Carpilis* is readily recognized by its clavate antennae with all segments thickened (fig. 23). Additionally, antennal segments II through IV have very elongate hairs oriented at right angles to the long axis of the antenna. The uniformly pale, often brachypterous hemelytra, with only the punctures slightly darker than their background, are also characteristic of this genus.

DESCRIPTION: Body ovoid, shining; lateral pronotal margins rounded on both lobes; a distinct anterior collar present but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore subsharp (fig. 5); claval punctation with a few punctures in addition to three regular rows (fig. 18); ventral surface of head with a median groove; buccular juncture U-shaped, occurring in groove close to labial insertion (fig. 80); mesepimeron enclosed (fig. 37); evaporative area reduced (fig. 41); anterior edge of sternum II finely scalloped (fig. 27); fore femur with spines double-ranked, present on both inner and outer edge of ventral surface (fig. 15); male fore tibia curving with a well-developed spine on distal one half; hemelytra often brachypterous.

SISAMNES DISTANT

Figure 48

TYPE SPECIES: *Sisamnes contractus* Distant, 1893.

Two species, Nearctic; one species(?), Neotropical.

INCLUDED SPECIES: *annulicolis* (*Plociomer*a) Berg, 1894.***

clavigerus (*Ptochiomera*) Uhler, 1895.**

contractus Distant, 1893.**

DIAGNOSIS: *Sisamnes* is best characterized by its enlarged terminal antennal segments. It can be distinguished from *Ptochiomera* (which also has antennal segments III and IV enlarged) by its scalelike hairs that give a granular appearance to the dorsum, subcarinate posterior pronotal lobe, double-ranked fore femoral spines and by antennal segment IV being the segment of greatest diameter.

DESCRIPTION: Body ovoid, dorsum shining but given a granular appearance by many flattened, scalelike hairs; lateral margins of anterior pronotal lobe rounded; lateral margins of posterior lobe subcarinate; a distinct anterior collar present but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore subsharp (fig. 5); claval punctuation in three regular rows (fig. 19); ventral surface of head with a median groove; buccular juncture U-shaped, occurring in groove close to labial insertion (fig. 80); mesepimeron enclosed (fig. 37); evaporative area reduced (fig. 41); hemelytra often brachypterous; anterior edge of sternum II finely scalloped (fig. 27); fore femur with spines double-ranked (fig. 15); male fore tibia not spined; antenna capitate, the terminal two segments strikingly enlarged with segment IV being the greatest in diameter (fig. 25).

PRYTANES DISTANT

Figure 49

*Exptochiomer*a Barber, 1928, NEW SYNONYMY.

TYPE SPECIES: *Prytan*es *globosus* Distant, 1893.

Fourteen species, Nearctic and Neotropical.

INCLUDED SPECIES: [All species but *cubensis* and *globosus* are new combinations (from *Exptochiomer*a).]

albomaculata (*Plociomer*a) Distant, 1893.**

caeca (*Plociomer*a) Distant, 1882.**

confusa (*Exptochiomer*a) Barber, 1953.**

cubensis Barber, 1954b.**

dissimilis (*Exptochiomer*a) Barber, 1953.**

foeda (*Rhyparochromus* (*Plociomer*us)) Stål, 1858.***

formosa (*Plociomer*a) Distant, 1882.**

fusicornis (*Plociomer*a) Stål, 1874.*

globosus Distant, 1893.**

intercisa (*Exptochiomer*a) Barber, 1932.**

minima (*Lygaeus* (*Beosus*)) Guerin, 1857.*

oblonga (*Plociomer*a) Stål, 1862.*

plebeius (*Pachymer*us) Spinola, 1852.

Transferred to *Exptochiomer*a from *Aphanus* by Scudder, 1970. p. 100.***

tumens (*Plociomer*a) Stål, 1874.**

DIAGNOSIS: As indicated by the dotted line in the cladogram (paraphyly), *Prytan*es is a poorly understood complex that can only be resolved by further species-level revisionary work. I have been unable to find a satisfactory synapomorphic condition to relate the various species of the current genus *Exptochiomer*a which is here recognized as a junior synonym of *Prytan*es. *Prytan*es *globosus* has a very globose anterior pronotal lobe (a trait commonly correlated with wing reduction in the myodochines) but is otherwise little different from the various species of Barber's genus *Exptochiomer*a.

Clearly, all the species of *Prytan*es belong to the phyletic line of phallic Type I in which the ventral surface of the head is grooved and the U-shaped buccular juncture is close to the labial insertion. *Exptochiomer*a = *Prytan*es can only be distinguished from other genera in that assemblage on the basis of negative evidence such as the lack of antennal adaptations characteristic of *Carpilis*, *Ptochiomer*a, and *Sisamnes*; the lack of jugal tusks and stalked eyes and ocelli seen in *Valonet*us; lack of a shagreened body surface and peculiarly haired antennae of *Caenopamer*a and lack of the pronotal carina exhibited by *Ereminell*us.

DESCRIPTION: Body ovoid or subovoid, shining; lateral margins of both pronotal lobes rounded; an anterior pronotal collar

apparent but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore subsharp (fig. 5); claval punctation in three regular rows (fig. 19); ventral surface of head with a median groove; buccular juncture U-shaped, occurring in groove close to labial insertion (fig. 80); mesepimeron enclosed (fig. 37); anterior edge of sternum II finely scalloped (fig. 27); evaporative area reduced (fig. 41); fore femur with spines variable; male fore tibia with a spine on distal one-half; hemelytra often brachypterous; antenna filiform.

FONTATHANUS SCUDDER

Figure 46

TYPE SPECIES: *Fontathanus elatus* Scudder, 1963.

Four species, Ethiopian.

INCLUDED SPECIES: *elatus* Scudder, 1963. p. 1234.*

flavonotus Scudder, 1963. p. 1234.*

nigronotus Scudder, 1963. p. 1235.**

punctatus Scudder, 1963. p. 1235.*

DIAGNOSIS: Among the Old World Myodochini, *Suffenus*, *Aegyptocoris*, *Henicorthaea*, *Humilocoris*, *Stigmatonotum*, and *Fontathanus* (all of phallic Type I) have the anterior pronotal collar not demarked posteriorly by a linelike groove. In *Suffenus* the collar area is indicated only medially. *Suffenus* is also readily distinguished by its carinate lateral pronotal margins. *Aegyptocoris* is unmistakable with its head prolonged behind the eyes in a stalklike neck.

Of the other four genera mentioned above, only *Fontathanus* has such a narrow, negligible collar area and the characteristic deeply bilobed pronotum the anterior angles of which seem almost to touch the eyes (fig. 46). In *Henicorthaea*, *Humilocoris*, and *Stigmatonotum* a fairly broad, pale collar region is readily apparent, contrasting with the rest of the dark anterior pronotal lobe.

DESCRIPTION: Body elongate, shagreened; pronotum elongate, especially anterior lobe; transverse impression very deep-

ly incised; lateral margins of both pronotal lobes rounded; a very narrow anterior collar barely apparent, not clearly demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore subsharp (fig. 5); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15).

HENICORTHAEA MALIPATIL

Figure 54

TYPE SPECIES: *Henicorthaea yeoi* Malipatil, 1978. p. 16.

Three species, Australian.

INCLUDED SPECIES: An undescribed species from New Guinea.

An undescribed species from the Solomon Islands.

yeoi Malipatil, 1978.***

DIAGNOSIS: *Henicorthaea* is readily distinguished from other myodochines by the characteristic fore femoral spines described below. The peculiar relation of the head and anterior pronotal lobe to the markedly higher posterior lobe also serves to distinguish this genus.

DESCRIPTION: Body elongate, robust; head small with large, protruding eyes; head and anterior lobe of pronotum in a markedly lower plane than that of posterior pronotal lobe; lateral margins of both pronotal lobes rounded; a distinct anterior collar area present but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore sharp (fig. 4); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81), close to labial insertion; mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); anterior edge of abdominal sternum II scalloped (fig. 27); fore femur with spines double-ranked (fig. 15), spines very stout and striking, white or pale in contrast to rest of fore femur and with apices of spines dark.

HUMILOCORIS, NEW GENUS

Figure 60

TYPE SPECIES: *Rhyparochromus cephalotes* Dallas, 1852.** New Combination (from *Stigmatonotum*).

Monotypic, Oriental.

DIAGNOSIS: The Old World genera *Humilocoris*, *Henicorthaea* and *Stigmatonotum* (all of phallic Type I) have a distinct, broad, bandlike collar clearly indicated on the anterior pronotal lobe but not demarked posteriorly by a linelike groove. In all three of the above genera, the collar is usually lighter in color than the rest of the anterior pronotal lobe.

Humilocoris and *Stigmatonotum* lack the elaborate foreleg armature described for *Henicorthaea*, both having slender fore femora armed with only a few spines on the inner edge of the ventral surface. *Humilocoris* is slightly larger than its sister genus, *Stigmatonotum*, and is distinguished from the latter by the presence of numerous long, curving, semierect body hairs. *Humilocoris* also lacks the precise row of corial punctures along the membranal margin (fig. 21) that characterizes *Stigmatonotum*.

DESCRIPTION: Body subovoid; lateral margins of both pronotal lobes rounded; a distinct anterior pronotal collar present but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81), close to labial insertion; mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines only along inner edge of ventral surface (fig. 16).

ETYMOLOGY: From the Latin *humil*, low or insignificant, and the Greek *cori*, bug, for the undistinguished appearance of this small brown bug.

STIGMATONOTUM LINDBERG

Figure 63

TYPE SPECIES: *Stigmatonotum sparsum* Lindberg, 1927.

Six species: Palearctic, Ethiopian, Oriental, and Australian.

INCLUDED SPECIES: *afrus* (*Plociomera*) Stål, 1865.* New Combination (from *Pachybrachius*).

capucinum (*Plociomera*) Stål, 1865.*

geniculatus (*Plociomera*) Motschulsky, 1863.* New Combination (from *Pachybrachius*).

minutum Malipatil, 1978. p. 23.***

rufipes (*Plociomera*) Motschulsky, 1866. Transferred here by Scudder, 1970. p. 103. = *japonicum* (*Plociomera*) Distant, 1883.** Synonymized by Scudder, 1970. p. 103.

sparsum Lindberg, 1927.*

DIAGNOSIS: As discussed in the diagnosis for *Humilocoris*, *Stigmatonotum* can be distinguished from all other Eastern Hemisphere myodochines by the characteristic row of corial punctures along the membranal margin (fig. 21). Only *Prytanes*, *Sisamnes*, *Carpilis*, and *Ptochiomera*, all Nearctic genera of a similar habitus to that of *Stigmatonotum*, have similar punctation. These four Nearctic genera have the pronotum shining dorsally, a reduced evaporative area, claval punctation in three regular rows and a U-shaped buccular juncture lying close to the labial insertion in the grooved ventral surface of the head. In *Stigmatonotum*, the pronotum is pruinose dorsally, the evaporative area extensive, claval punctation in four or more rows, the head not grooved midventrally and the buccular juncture V-shaped, though close to the labial insertion.

DESCRIPTION: Body elongate; lateral margins of both pronotal lobes rounded; a distinct, pale anterior pronotal collar present but not demarked posteriorly by a linelike groove.

Phallic Type I (fig. 9); posterior edge of pygophore subsharp (fig. 5); claval punctation in four or more rows (fig. 17); corium with a characteristic row of punctures present along membranal margin (fig. 21); buccular juncture V-shaped (fig. 81), close to labial insertion; mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur slender with only one or a few spines

present on inner edge of ventral surface (fig. 16).

MEGAPAMERA SCUDDER

Figure 82

TYPE SPECIES: *Megapamera ashlockia* Scudder, 1975.

Two species, Australian region.

INCLUDED SPECIES: *ashlockia* Scudder, 1975. p. 939.**

tenua Scudder, 1975. p. 941.***

DIAGNOSIS: *Megapamera* is distinguished by its extremely large size (ca. 40 mm.), being much bigger than any other myodochine genus. The several fore tibial spines found in both sexes is another distinguishing characteristic. In other myodochine genera with spined tibiae, the spines are found only on male specimens and are usually single or few in number.

DESCRIPTION: Body shagreened, extremely large and elongate for this tribe of insects (ca. 40 mm.); head elongate with eyes protruding; anterior pronotal collar demarked posteriorly by a linelike groove; lateral margins of both pronotal lobes rounded.

Phallic Type I (fig. 9); conjunctiva and vesica both with areas of greater sclerotization than that typical of phallic Type I but bearing no spines; long, parenthesis-like holding sclerites typical of Type I present; posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); occurring at level of antennal insertion; mesepimeron emergent (fig. 38); evaporative area extensive (fig. 42) and very rugose; fore femur with spines double-ranked (fig. 15); fore tibia of both sexes with numerous small stout spines.

PAMERANA DISTANT

Figure 53

TYPE SPECIES: *Pamerana cuneata* Distant, 1909 = *Rhyparochromus nigrutilus* Walker, 1872.

Ten species, Oriental and Palearctic.

INCLUDED SPECIES: *fulvomaculata* Malipatil, 1978. p. 40.***

nigrutilus (*Rhyparochromus*) Walker, 1872.**

notatipes (*Nesopamera*) Barber, 1958.**

procera Bergroth, 1918.*

punctulatus (*Plociomerus*) Motschulsky, 1863.* New Combination (from *Pachybrachius*).

scotti (*Pamera*) Distant, 1901.* New Combination (from *Pachybrachius*).

sinae (*Rhyparochromus*) Stål, 1859.* New Combination (from *Pachybrachius*).

subgenerica Bergroth, 1918.***

subinermis Bergroth, 1918.***

vicina (*Nesopamera*) Barber, 1958.**

DIAGNOSIS: *Pamerana*, *Megapamera*, and *Afrovertanus* are the only myodochine genera in the Old World with the mesepimeron emergent. *Afrovertanus*, of phallic Type IV with a stalklike neck and stridulatory apparatus, is readily separated from *Megapamera* and *Pamerana* of phallic Type I which both have some head elongation but lack a neck and are nonstridulatory. *Pamerana* is only about one-half the size of its amazingly large sister genus *Megapamera* and is further distinguished by the characteristic median groove in the posterior lip of its pygophore.

DESCRIPTION: Body elongate; head prolonged behind large, protruding eyes; anterior pronotal collar demarked posteriorly by a deep, linelike groove; transverse impression also marked and linelike; lateral margins of both pronotal lobes rounded.

Phallic Type I (fig. 9); an area of light sclerotization with an irregular edge present on basal portion of vesica, but vesica and conjunctiva both devoid of any actual spines; long, parenthesis-like holding sclerites typical of phallic Type I present; posterior edge of pygophore with a marked deep median groove (fig. 8); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron emergent (fig. 38); evaporative area extensive (fig. 42); fore femoral spines double-ranked (fig. 15).

PACHYBRACHIUS HAHN

Figure 45

TYPE SPECIES: *Pachybrachius luridus* Hahn, 1826.

Ten species, Palearctic.

INCLUDED SPECIES: *biguttatus* Curtis, 1831.***

capitatus (*Diplonotus*) Horvath, 1882.*

fasciatus (*Plociomerus*) Fieber, 1861.***

festivus (*Pamera*) Distant, 1883.**

fracticollis (*Pachymerus*) Schilling, 1829.*

fracticollis collaris (*Plociomerus*) Baerensprung, 1859.

fracticollis tridens Roubal, 1959.

luridus Hahn, 1826.**

pictus (*Pamera*) Scott, 1880.***

pusillus (*Rhyarochromus*) Dallas, 1852,

patria ignota.***

reduviformis Curtis, 1837.***

vaccaro Mancini, 1954.***

DIAGNOSIS: *Pachybrachius*, to date, has been an extremely large (ca. 80 species) polyphyletic genus. In this study it has been recognized that the type species, *P. luridus*, is unlike most of the other myodochines included in the genus *Pachybrachius*. *Pachybrachius luridus* belongs to phallic Type I. Most of the other species formerly placed in *Pachybrachius* belong to phallic Types II and IV, where they are now recognized as the new genera *Bacacephalus*, *Horridipamera*, *Paraeucosmetus*, *Pseudopachybrachius*, *Pseudoparomius*, and *Neopamera*.

Pachybrachius, characterized by its minor autapomorphic variation on phallic Type I, small head slightly elongate behind large eyes and two tiny spines of the male fore tibia, is a small Palearctic complex, including only 10 species.

The genus belongs to that group of phallic Type I with very narrow characteristically ringlike collars (*Pachybrachius*, *Stalaria*, *Pamerapa*, *Pamerarma*, and *Remaudiereana*). *Pachybrachius* still has a few minor punctures on its collar and the posterior margin of the pronotum straight across the base of the scutellum, whereas the other four genera of this group have impunctate collars and sinuate posterior margins of the pronotum.

DESCRIPTION: Body robust, subovoid; anterior pronotal collar narrow and ringlike, very sparsely punctate, demarked posteriorly by a deep linelike groove; lateral margins of both pronotal lobes rounded.

Phallic Type I (fig. 9); an area of light sclerotization present on conjunctiva and forming

a sort of casing close to vesical juncture, but no spines present on either conjunctiva or vesica; long, parenthesis-like holding sclerites typical of phallic Type I present; posterior edge of pygophore subsharp (fig. 5); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femoral spines double-ranked (fig. 15); male fore tibia with two tiny spines near distal end.

STALARIA, NEW GENUS

Figure 47

TYPE SPECIES: *Pamera ferruginosus* Stål, 1874.

Three species, Ethiopian.

INCLUDED SPECIES: [All species new combinations (from *Pachybrachius*).]

ferruginosus (*Pamera*) Stål, 1874.*

kisseis (*Pachybrachius*) Linnavouri, 1978. p. 88.*

nysias (*Pachybrachius*) Linnavouri, 1978. p. 89.*

DIAGNOSIS: *Stalaria* is one of five Old World genera (all of phallic Type I) that have a very narrow ringlike collar demarked posteriorly by an extremely deep linelike groove. The collars of *Stalaria*, *Pamerarapa*, *Pamerarma*, and *Remaudiereana* are impunctate and the punctures are so few on the collar of *Pachybrachius* that they may go unnoticed.

Stalaria, *Pamerapa*, and *Pamerarma* have more elongate bodies than the robust genera *Pachybrachius* and *Remaudiereana*. In those three former genera, the total length is greater than 3.5 times the basal width of the pronotum, whereas *Pachybrachius* and *Remaudiereana* have total lengths less than 3.5 times the width of the posterior pronotal lobe.

Stalaria has numerous long body hairs and a slender fore femur with single-ranked spines which serve to distinguish it from *Pamerapa* and *Pamerarma* that lack such long body hairs and have fore femora with a heavy outer median spine in addition to the single row ranked along the inner edge of the ventral surface. The striking, autapomorphic, multibranched holding sclerites of the

male genitalia of *Stalaria* also characterize this new genus. And, unlike the other four genera with ringlike collars, *Stalaria* has no spines on the male fore tibia.

DESCRIPTION: Body elongate; impunctate anterior pronotal collar very narrow and ringlike, demarked posteriorly by a deep linelike groove; lateral margins of both pronotal lobes rounded.

Phallic Type I (fig. 9), but holding sclerites not slender and parenthesis-like, instead heavier and multibranched; posterior edge of pygophore with a shallow median groove in lip (fig. 7); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femoral spines present only along inner edge of ventral surface (fig. 16); male fore tibia unspined.

ETYMOLOGY: I am naming this new genus for the late C. Stål who described the type species and whose seminal work with the subfamily Rhyparochrominae laid a groundwork basic to understanding the tribe Myodochini.

PAMERAPA MALIPATIL

Figure 44

TYPE SPECIES: *Pamera thoracica* Distant, 1901.

Three species, Australian.

INCLUDED SPECIES: *murrhea* (*Pamera*) Distant, 1901.**

pilosa Malipatil, 1978. p. 30.***

thoracica Distant, 1901.**

DIAGNOSIS: *Pamerapa* is a member of the Old World group of phallic Type I with narrow, ringlike, impunctate collars. It is closely and evenly pruinose over the entire pronotum and the anterior pronotal lobe is very enlarged and globose. The male fore tibial spine of this genus is also minor in comparison to the very large spine on the curving fore tibia of *Remaudiereana* males.

The few tiny conjunctival spines are considered of independent derivation from the heavily spined conjunctiva of phallic Type III, as this new genus clearly presents the bulblike, unreduced sperm reservoir and

long, slender, parenthesis-like holding sclerites typical of phallic Type I (these holding sclerites are lacking in *Pamerarma*).

DESCRIPTION: Body elongate; impunctate anterior pronotal collar very narrow and ringlike, demarked posteriorly by a deep linelike groove; pronotal transverse impression marked by a similar line; lateral margins of both pronotal lobes rounded.

Phallic Type I (fig. 9); a few tiny, hairlike spines present on conjunctiva; long parenthesis-like holding sclerites typical of phallic Type I present; posterior edge of pygophore with a shallow median groove or depression (fig. 7); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur incrassate with a row of spines along inner edge of ventral surface and one well-developed median spine (fig. 14); a single spine on the curving male fore tibia.

REMAUDIEREANA HOBERLANDT

Figure 52

Synonymized with *Pachybrachius* by Malipatil, 1978, p. 42. Here raised from synonymy (see diagnosis for discussion).

TYPE SPECIES: *Remaudiereana tibialis* Hoberlandt, 1954.

Eighteen species, throughout Old World.

INCLUDED SPECIES: [All species new combinations (from *Pachybrachius*).]

africana Hoberlandt, 1954.*

andrewsi (*Pamera*) Distant, 1901.**

annulipes (*Plociomerus*) Baerensprung, 1859.**

boniniensis (*Aphanus*) Uhler, 1860.*

castanea (*Ptochiomera*) Van Duzee, 1932.* Transferred to *Pachybrachius* by Scudder, 1970. p. 102.

flavipes (*Plociomerus*) Motschulsky, 1863.*

horvathi (*Diplonotus*) Reuter, 1882.* Transferred to *Remaudiereana* by Slater and Wilcox, 1972. p. 957.

inornatus (*Rhyparochromus*) Walker, 1872.* Raised from synonym of *Rhyparochromus nigriceps* by Scudder,

1967. p. 269 = *palauensis* (*Pachybrachius*) Barber, 1958. Synonymized by Malipatil, 1978. p. 50.
kydippe (*Ptochiomera*) Kirkaldy, 1905.*
nigra Scudder, 1963. p. 1236.*
nigriceps (*Rhyparochromus*) Dallas, 1852.**
noctuabundus (*Pamera*) Bergroth, 1907.***
octonotata (*Pamera*) Bergroth, 1914.***
puberulus (*Orthaea*) China, 1930.**
robustus Malipatil, 1978. p. 55.***
sidnicus (*Orthaea*) Kirkaldy, 1908.*
sobrina (*Pamera*) Distant, 1901.**
tibialis (*Remaudiereana*) Hoberlandt, 1954.**

DIAGNOSIS: *Remaudiereana* is here resurrected from synonymy with *Pachybrachius*. *Pachybrachius* is a Palearctic genus distinguished by two small spines apically on the straight male fore tibia, a small head slightly elongate behind the eyes, faint punctures on the anterior pronotal collar, the posterior margin of the pronotum straight across the base of the scutellum and a sclerotized conjunctival casing in the male genitalia. *Remaudiereana*, in contrast, is a widespread genus with many species in the Old World tropics that have a large spine midlength on the curving male fore tibia, an impunctate ringlike collar on the anterior pronotal lobe and the posterior margin of the pronotum curving or concave across the base of the scutellum and lack the conjunctival casing of *Pachybrachius*.

Remaudiereana is one of four Old World, phallic Type I genera (from ancestor 20) with narrow, ringlike, completely impunctate collars. Within this group *Remaudiereana* is distinguished by its male genitalia having holding sclerites (these are lacking in *Pamerarma*) and by the lack of conjunctival spines seen in *Pamerapa* and the lack of elaborate, spatulate, multispined holding sclerites typical of *Stalaria*. A robust, subovoid body form and a large spine midlength on the curving male fore tibia serve to further identify members of the genus *Remaudiereana*.

DESCRIPTION: Body robust, subovoid, with many long curving semierect hairs; im-

punctate anterior pronotal collar very narrow and ringlike, demarked posteriorly by a deep, linelike groove; transverse impression also deeply incised; lateral margins of both pronotal lobes rounded.

Phallic Type I (fig. 9); posterior edge of pygophore with a shallow median groove in lip (fig. 7); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with a single row of spines along inner edge of ventral surface and one well-developed heavy median spine on outer edge (fig. 14); male fore tibia curving with a single, large, well-developed spine in the middle.

PAMERARMA MALIPATIL

Figure 99

TYPE SPECIES: *Orthaea ventralis* China, 1930.

Two species: Oriental, Australian, Pacific Oceanic islands.

INCLUDED SPECIES: *necventralis* Malipatil, 1978. p. 87.***

ventralis (*Orthaea*) China, 1930.**

= *chinai* (*Pachybrachius*) Usinger, 1946.** Synonymized by Malipatil, 1978. p. 85.

DIAGNOSIS: *Pamerarma* is one of four Old World myodochine genera with Type I male genitalia and a characteristic narrow, ringlike, completely impunctate collar on the anterior pronotal lobe. Within this group it is distinguished from *Stalaria*, *Pamerapa*, and *Remaudiereana* by its small slender body form with the head width across the eyes greater than the width of the transverse impression and by the surprising absence of holding sclerites in the male genitalia.

DESCRIPTION: Body slender, elongate, parallel-sided; impunctate anterior pronotal collar very narrow and ringlike, demarked posteriorly by a deep, linelike groove; transverse impression also deeply incised; lateral margins of both pronotal lobes rounded.

Phallic Type I but with holding sclerites lacking, conjunctiva and vesica also unspined and otherwise unadorned; posterior edge of pygophore rounded (fig. 6); claval

punctuation with a few punctures in addition to three regular rows (fig. 18); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur slender with a single short row of spines along inner edge of ventral surface and one moderate spine on outer edge (fig. 14); male fore tibia relatively straight with a single small spine midlength.

MIMOBIOUS BERGROTH

Figure 75

TYPE SPECIES: *Mimobius capito* Bergroth, 1921.

Two species, Ethiopian.

INCLUDED SPECIES: An undescribed species from Ghana.

capito Bergroth, 1921. No material available!

I have not been able to locate the type specimen (described from Madagascar) or any determined material for this genus. Fortunately, a full dorsal view drawing and a lateral view of the head were included with the original description. The appearance of the insect in those figures is distinctive enough for me to believe that a series of a small ant mimic I examined from Mt. Atewa, Ghana represents a new species of *Mimobius* which I describe fully elsewhere. The following diagnosis and description are based on those Ghanaian specimens.

DIAGNOSIS: *Mimobius* is a small ant mimic (ca. 3.5 mm.). It is distinguished by its general antlike habitus, broad strongly declivent head, anterior pronotal lobe shining across the calli and distinctive, multiheaded apical conjunctival spines.

DESCRIPTION: Body elongate, highly ant mimetic; head very broad, swollen and declivent anteriorly; an anterior collar present and demarked posteriorly by a linelike groove; pronotum strongly bilobed, anterior lobe globose; lateral margins of both pronotal lobes rounded.

Phallic Type II (fig. 10) with the apical conjunctival spines branched and multiheaded; sawtoothed spiral of minute spines on vesica typical of phallic Type II present; posterior

edge of pygophore broadly rounded (fig. 6); claval punctuation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia unspined.

PAROMIUS FIEBER

Figure 66

TYPE SPECIES: *Stenocoris gracilis* Rambur, 1839.

Fourteen species, throughout both hemispheres.

INCLUDED SPECIES: *apicatus* (*Rhyparochromus*) Stål, 1855.*

australis Malipatil, 1978. p. 60.***

attenuatus (*Rhyparochromus*) Dallas, 1852.**

dohrnii (*Lygaeus* (*Plociomerus*)) Guérin, 1857.**

excelsus Bergroth, 1924.***

exiguus (*Pamera*) Distant, 1883.**

gracilis (*Stenocoris*) Rambur, 1839.*

gracilis djoufensis Lindberg, 1938.

jejunus (*Pamera*) Distant, 1883.**

limbatus (*Pamera*) Stål, 1874.* New

Combination (from *Pachybrachius*).
longulus (*Rhyparochromus*) Dallas, 1852.**

pallidus (*Plociomerus*) Montrouzier, 1865.**

paraclypeatus Scudder, 1969. p. 174.*

piratoides (*Plociomerus*) Costa, 1864.**

trivialis (*Pamera* (*Paromius*)) Stål, 1874.*

DIAGNOSIS: Species of *Paromius* are very elongate with long slender legs and antennae and an abdomen longer than the combined head and pronotal lengths (most myodochines have the abdomen shorter than the combined lengths of head and pronotum). A pronotum with the anterior lobe distinctly lower than the posterior lobe and a characteristic V-shaped collar distinguish this genus. The hemelytra are also characteristic, being uniformly pale and unmarked save for dark punctures and a very minor dark area at the corial apex in some species.

DESCRIPTION: Body elongate and parallel-sided; pronotum tapering cephalad, anterior lobe in a lower plane than posterior lobe (best observed in lateral view); lateral margins of both pronotal lobes rounded; an anterior collar present and demarked posteriorly by a linelike groove with a characteristic median "dip" giving a V-necked appearance to the collar.

Phallic Type II (fig. 10); apical conjunctival spines slender; posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia unspined.

PSEUDOPAROMIUS, NEW GENUS

Figure 101

TYPE SPECIES: *Pamera linearis* Stål, 1874.

Two species, Neotropical.

INCLUDED SPECIES: *linearis* (*Pamera*) Stål, 1874.* New Combination (from *Pachybrachius*).

An undescribed species from Brazil and Peru.

DIAGNOSIS: *Pseudoparomius* is one of only four New World genera with Type II male genitalia. Members of this genus can be distinguished from species of *Pseudopachybrachius* and *Bacacephalus* simply on the basis of size. The latter two genera typically have a total body length less than 4.5 mm., whereas members of *Pseudoparomius* are ca. 5.0 mm. or more in length. *Pseudoparomius linearis* exhibits a very slight median dip in the posterior margin of the anterior pronotal collar which could lead to this species being confused with members of the genus *Paromius* in which a V-necked appearance of the anterior pronotal collar is quite characteristic. Yet *Paromius* has a narrow head elongate behind the eyes and not as wide across the eyes as the width of the pronotal transverse impression, and the described Western Hemisphere species of *Paromius* both have entirely pale hemelytra.

Pseudoparomius, on the other hand, has a broad dark transverse band across the hemelytra and a head width exceeding the width of the transverse impression.

Pseudoparomius is unique among members of phallic Type II in its possession of a bifid left apical conjunctival spine.

DESCRIPTION: Body elongate, head broad, little prolonged behind eyes; an anterior collar present and demarked posteriorly by a linelike groove; anterior pronotal lobe not lower than posterior lobe, lateral margins convex; pronotum not dorsoventrally compressed, lateral margins of both lobes rounded, not carinate.

Phallic Type II (fig. 10) but with left apical conjunctival spine longer than right and bifid; posterior edge of pygophore subsharp (fig. 5); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81), close to labial insertion; mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia essentially straight, unspined.

ETYMOLOGY: From the Greek *pseudo*, false, for possible confusion of the type species with members of the genus *Paromius*.

PSEUDOPACHYBRACHIUS MALIPATIL

Figure 77

TYPE SPECIES: *Rhyparochromus gutta* Dallas, 1852.

Eight species, throughout both hemispheres.

INCLUDED SPECIES: [All species but *guttus* are new combinations (from *Pachybrachius*).]

basalis (*Rhyparochromus* Dallas, 1852.**

capicolus (*Pamera*) Stål, 1874.*

=*dubia* (*Pamera*) Reuter, 1882.* Synonymized by Slater, 1964b. p. 213.

guttus (*Rhyparochromus*) Dallas, 1852.*

nesovinctus (*Pachybrachius*) Ashlock, 1972. p. 98.**

pacificus (*Pamera*) Stål, 1874.* =*izzardi*

(*Pachybrachius*) Hidaka, 1958. Synonymized by Scudder, 1970. p. 102.
reductus (*Plociomerus*) Walker, 1872.*
undulatus (*Plociomerus*) Dohrn, 1860.*
vinctus (*Pamera*) Say, 1831.*

DIAGNOSIS: This genus is worldwide in distribution and includes several small myodochines previously of the genus *Pachybrachius*. *Pseudopachybrachius*, which includes such species as *P. basalis* and the ubiquitous species *vincta*, *guttus*, and *capiculus*, is best recognized by its small size. With the exception of the ant mimetic genera *Bacacephalus* and *Mimobius*, all other myodochines of phallic Type II are considerably larger than the members of *Pseudopachybrachius*. The species of *Pseudopachybrachius* are rather nondescript or undistinguished and are readily separated from *Bacacephalus* and *Mimobius*, as both of the last two genera are ant mimics with swollen heads and bead-like eyes and each has its own unique variation from the typical Type II male genitalia characteristic of *Pseudopachybrachius*.

DESCRIPTION: Body small (less than 4.5 mm.); lateral margins of both pronotal lobes rounded; an anterior collar present and demarcated posteriorly by a linelike groove; hemelytra, in general, largely pale.

Phallic Type II (fig. 10); apical conjunctival spines slender and dark; posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia unspined.

PARAEUCOSMETUS MALIPATIL

Figure 100

TYPE SPECIES: *Rhyparochromus pallicornis* Dallas, 1852.

Eighteen species: Oriental, Ethiopian, Australian, and Pacific Oceanic islands.

INCLUDED SPECIES: *albofasciatus* (*Pachybrachius*) Barber, 1958.*** New Combination (from *Pachybrachius*).

cincticornis (*Rhyparochromus*) Walker, 1872.***

crassiceps (*Pamera*) Stål, 1874.* New Combination (from *Pachybrachius*).
gemmatus (*Pamera*) Distant, 1918.** New Combination (from *Pachybrachius*).

harimaensis (*Pamera*) Matsumura, 1913.*** New Combination (from *Pachybrachius*).

insignis (*Pamera*) Distant, 1901.**

leaorum Malipatil, 1978. p. 83.***

malayus (*Rhyparochromus*) Stål, 1859.* New Combination (from *Pachybrachius*).

mimulus (*Pamera*) Breddin, 1907.* New Combination (from *Pachybrachius*).

nervosus (*Pamera* (*Gyndes*)) Horvath, 1919.* New Combination (from *Pachybrachius*).

novaeguineae Malipatil, 1978. p. 72.***

pacificus Malipatil, 1978. p. 73.***

pallicornis (*Rhyparochromus*) Dallas, 1852.**

papuaguineae Malipatil, 1978, p. 82.***

perkinsi Malipatil, 1978. p. 75.***

sladeni (*Pamera*) Distant, 1913.** New Combination (from *Pachybrachius*).

vitalisi (*Pamera*) Distant, 1918.** New Combination (from *Pachybrachius*).

woodwardi Malipatil, 1978. p. 80.***

DIAGNOSIS: As discussed by Malipatil (1978), the genus *Paraecusmetus* is recognized by a characteristic additional pair of lobes on the conjunctiva which are not present in the typical Type II male genitalia. *Paraecusmetus*, with 18 species, is the largest genus in a complex of 10 genera with Type II genitalia. Unfortunately, I have been unable to find a good external or female synapomorphy to distinguish this genus from the other nine. However, by the following process of elimination, species of *Paraecusmetus* can be identified.

Among the myodochine genera with Type II male genitalia, *Togo*, *Eucosmetus*, *Horridipamera*, and *Paraparomius* have spined male fore tibia, whereas *Paraecusmetus* does not. Additionally, *Paraecusmetus* females can be distinguished by wing length from *Togo* which is brachypterous, from *Horridipamera* and *Paraparomius* both of which have narrow heads elongate in the

postocular region, and from *Eucosmetus* the species of which have broad heads with pronounced supra-antennal jugal ridges like *Paraecusmetus* but have globose, totally impunctate anterior pronotal lobes (*Paraecusmetus* species have anterior pronotal lobe punctures at least laterally). Larger size serves to distinguish *Paraecusmetus* species from members of *Pseudopachybrachius* and the two small ant mimetic genera *Mimobius* and *Bacacephalus*, all of which generally do not exceed 4.5 mm. in total length. *Paraecusmetus* species do not exhibit the V-necked appearance of the anterior pronotal collar or the very elongate body form characteristic of *Paromius*.

Of the 10 genera with Type II male genitalia, *Pseudoparomius* is hardest to distinguish from *Paraecusmetus* and one must resort to the male genitalia. *Pseudoparomius*, a small Neotropical genus of only two species, lacks the extra pair of conjunctival lobes which characterizes the Old World genus *Paraecusmetus* but has the apical conjunctival spines elongate with the left bifid, whereas these spines are shorter and simple or not bifid in *Paraecusmetus*.

DESCRIPTION: Body elongate, parallel-sided; head broad with vertex flat and a well-developed jugal ridge above antennal segment I; an anterior pronotal collar present and demarked posteriorly by a linelike groove; lateral margins of both pronotal lobes rounded; anterior lobe moderately globose.

Phallic Type II (fig. 10); apical conjunctival spines symmetrical; an extra pair of lobes midlength on conjunctiva; posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia straight, unspined.

BACACEPHALUS, NEW GENUS

Figure 102

TYPE SPECIES: *Pamera globiceps* Stål, 1874.

Two species, Neotropical.

INCLUDED SPECIES: An undescribed species from Brazil.

globiceps (*Pamera*) Stål, 1874.* New Combination (from *Pachybrachius*).

DIAGNOSIS: This new genus is being recognized for the Neotropical species *Pachybrachius globiceps* (Stål). Among the nine other genera of phallic Type II, only the Old World genus *Mimobius* has a swollen ant mimetic head like that of *Bacacephalus*. Yet, the head of *Bacacephalus* is even more rounded than that of *Mimobius* and has tiny, raised or beadlike eyes. For further identification, *Bacacephalus* has basically pale hemelytra with dark patterning, whereas *Mimobius*, in contrast, has dark hemelytra with pale patterning, and *Bacacephalus* lacks the spatulate, multispined holding sclerites of *Mimobius*.

In this cladistic analysis, *Bacacephalus* has been related to *Paraecusmetus* since they both have an extra pair of conjunctival lobes. However, it should be pointed out that these lobes are so distinctive in *Bacacephalus*, looking almost like a lightly sclerotized second pair of conjunctival spines, that it is highly possible they represent a convergence or parallelism rather than a synapomorphy.

DESCRIPTION: Body elongate, slender, parallel-sided; head extremely globose, especially marked in lateral view; eyes small, elevated from head surface, beadlike; an anterior pronotal collar present and demarked posteriorly by a linelike groove; transverse impression deeply incised and anterior pronotal lobe globose; lateral margins of both pronotal lobes rounded, not dorsoventrally compressed.

Phallic Type II (fig. 10) with an additional pair of spinelike lobes midlength on the conjunctiva; apical conjunctival spines slender and simple, typical of phallic Type II; posterior edge of pygophore rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia straight, unspined.

ETYMOLOGY: From the Latin *baca*,

bead, and *cephala*, head, for the rounded, beadlike, ant mimetic head of this bug.

EUCOSMETUS BERGROTH

Figure 71

TYPE SPECIES: *Eucosmetus formosus* Bergroth, 1894.

Five species, Oriental.

INCLUDED SPECIES: *annulicornis* Kiritshenko, 1931.**

formicarius Breddin, 1907.**

formosus Bergroth, 1894.*

gessleri Fernando, 1960.***

incisus (*Rhyparochromus*) Walker, 1872.**

DIAGNOSIS: *Eucosmetus* can be characterized by its ant mimetic appearance, broad head with a flattened vertex and prominent supra-antennal jugal ridge, extremely globose impunctate anterior pronotal lobe, spined male fore tibia and characteristic male genitalia of phallic Type II with asymmetrical apical conjunctival spines, the right being short and the left strikingly long and slender. None of the nine other genera of phallic Type II have apical conjunctival spines like those of *Eucosmetus*. *Eucosmetus*, *Horridipamera*, *Paraparomius*, and *Togo* are the only Type II genera with a spined male fore tibia. *Paraparomius* and *Horridipamera* have narrow heads and *Togo* is brachypterous, whereas *Eucosmetus* has a broad head and is macropterous. The females of *Paraecusmetus* might be confused with *Eucosmetus*, but, on close examination, the entirely impunctate, globose anterior pronotal lobe of *Eucosmetus* will serve to identify the genus.

DESCRIPTION: Body elongate, parallel-sided; head large and broad with flattened vertex and marked supra-antennal jugal ridge; an anterior pronotal collar present and demarked posteriorly by a linelike groove; anterior pronotal lobe globose and impunctate; transverse impression deeply incised; lateral margins of both pronotal lobes rounded, not compressed dorsoventrally.

Phallic Type II (fig. 10); apical conjunctival spines asymmetrical, the right short and the left very long and slender; posterior edge of pygophore broadly rounded (fig. 6); claval

punctuation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia essentially straight with three or four small spines along its distal one-half.

TOGO BERGROTH

Figure 76

TYPE SPECIES: *Togo victor* Bergroth, 1906.

Three species, endemic, Japan.

INCLUDED SPECIES: *hemipterus* (*Diplo-notus*) Scott, 1874.**

praetor Bergroth, 1919.***

victor Bergroth, 1906.***

DIAGNOSIS: Three species are recognized for *Togo*, a genus endemic to the islands of Japan. All are brachypterous with an extremely elongate anterior pronotal lobe (2.5 or more times the length of the posterior lobe) and curving, spined male fore tibiae. Some specimens have a small blunt spine in the lateral margin of the anterior pronotal collar. These collar spines are not so well developed as those of the Neotropical genus *Xenydrium* and are certainly of independent derivation. The bifid right apical conjunctival spine of this genus is unique among the genera of phallic Type II.

DESCRIPTION: Body elongate; head large, broad, slightly prolonged behind eyes; an anterior pronotal collar present and demarked posteriorly by a linelike groove; pronotum strongly bilobed with transverse impression deeply incised; anterior lobe elongate and convex; lateral margins of both pronotal lobes rounded.

Phallic Type II (fig. 10); apical conjunctival spines asymmetrical, the right larger and bifid; posterior edge of pygophore broadly rounded (fig. 6); hemelytra typically brachypterous; claval punctuation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia strongly curving with a

large spine midlength and additional minor spines on distal one-half.

HORRIDIPAMERA MALIPATIL

Figure 74

TYPE SPECIES: *Plociomerus nietneri* Dohrn, 1860.

Eleven species, throughout Old World.

INCLUDED SPECIES: *bergrothi* (Pamera) Horvath, 1892.* New Combination (from *Pachybrachius*).

cantrelli Malipatil, 1978. p. 94.***

ebenau (Pamera) Reuter, 1887.* New Combination (from *Pachybrachius*).

inconspicuus (*Rhyparochromus*) Dallas, 1852.* New Combination (from *Pachybrachius*).

nietneri (*Plociomerus*) Dohrn, 1860.*

perlongus (*Pachybrachius*) Scudder, 1971. p. 727.*** New Combination (from *Pachybrachius*).

pullatus (Pamera) Hesse, 1925.* New Combination (from *Pachybrachius*).

robusta Malipatil, 1978. p. 93.***

rusticus (*Diplonotus*) Scott, 1874.** New Combination (from *Pachybrachius*).

spinicrus (Pamera) Reuter, 1882.* New Combination (from *Pachybrachius*).

subsericeus (Pamera) (*Entisberus*) Breddin, 1907.*** New Combination (from *Pachybrachius*).

DIAGNOSIS: *Horridipamera* includes several "black and white" ant mimetic species of phallic Type II that were formerly included in *Pachybrachius*. Members of this genus have a very globose, impunctate anterior pronotal lobe with the lines demarking the collar and transverse impression both deeply incised. *Eucosmetus*, also with a globose, impunctate anterior pronotal lobe, has a broad head with a flattened vertex. *Horridipamera*, in contrast, has a narrow head slightly prolonged behind the eyes and with the vertex very domelike and convex (fig. 74). The males of *Horridipamera*, like those of *Togo*, *Paraparomius* and *Eucosmetus* have the fore tibia spined, but *Horridipamera* may be distinguished from each of these genera on the basis of its male genitalia

with the very broad base to the right apical conjunctival spine (*Togo* and *Eucosmetus* also have broad heads).

DESCRIPTION: Body elongate, ant mimetic; head slightly prolonged behind eyes, vertex rounded; an anterior pronotal collar present and demarked posteriorly by a sharp, linelike groove; pronotum strongly bilobed with transverse impression deeply incised; lateral margins of both pronotal lobes rounded.

Phallic Type II (fig. 10); the pair of large apical conjunctival spines simple, the right with a very broad base; posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia spined, essentially straight.

PARAPAROMIUS, NEW GENUS

Figure 73

TYPE SPECIES: *Plociomerus leptopoides* Baerensprung, 1859.

Two species, Palearctic.

INCLUDED SPECIES: *lateralis* (*Diplonotus*) Scott, 1874.** New Combination (from *Pachybrachius*).

leptopoides (*Plociomerus*) Baerensprung, 1859.* New Combination (from *Paromius*).

DIAGNOSIS: This new genus is being recognized for two Palearctic species, one heretofore included in the genus *Paromius* and one from the genus *Pachybrachius*. While *Paromius* lacks the spined male fore tibia of *Paraparomius*, *Paraparomius* has the dorsal surface of both pronotal lobes in essentially the same plane and lacks the V-shaped collar and extremely prolonged abdomen of *Paromius*. *Paraparomius*, like *Horridipamera*, has a narrow head with a rounded vertex. Both of these genera, as well as *Togo* and *Eucosmetus*, have the male fore tibia spined. Yet, *Paraparomius* is distinguished by its male genitalia with simple, symmetrical apical conjunctival spines unlike the asymmetrical variations on phallic Type II found in

species of *Togo*, *Eucosmetus*, and *Horridipamera*.

DESCRIPTION: Body elongate, head slender, slightly prolonged behind eyes; an anterior pronotal collar present and demarked posteriorly by a linelike groove; anterior pronotal lobe elongate, not lower than posterior pronotal lobe, lateral margins strongly convex; lateral margins of both pronotal lobes rounded, not dorsoventrally compressed.

Phallic Type II (fig. 10); conjunctival spines short, dark, pointed, and essentially symmetrical; posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia curving with a large spine midlength and two or three minor spines on distal one-half.

ETYMOLOGY: From the Greek *para*, beside or near, for the former placement of the type species in the genus *Paromius*.

SLATEROBIUS, NEW GENUS

Figure 69

TYPE SPECIES: *Heraeus insignis* Uhler, 1872.

Two species, Nearctic.

INCLUDED SPECIES: [Both species are new combinations (from *Sphaerobius*).]

insignis (*Heraeus*) Uhler, 1872.*

quadristriatus (*Sphaerobius*) Barber, 1911.**

DIAGNOSIS: *Slaterobius* is easily recognized as the only genus of phallic Type III with a shining, globose anterior pronotal lobe contrasting with a pruinose collar and posterior lobe. The only other myodochine with this characteristic pattern of pronotal pruinosity is *Tenuicoris* of phallic Type IV. *Tenuicoris*, however, has an elongate head and lacks the stridulatory mechanism exhibited by *Slaterobius*. *Slaterobius* is often brachypterous and many specimens with reduced hemelytra also show a peculiar distended metapleuron which is very bulbous when viewed from above.

DESCRIPTION: Body elongate, ant mi-

metic (field behavior highly ant mimetic); lateral margins of both pronotal lobes rounded, anterior lobe highly globose and glabrous save collar; a narrow pruinose anterior collar present and demarked posteriorly by a line-like groove.

Phallic Type III (fig. 11); posterior edge of pygophore broadly rounded (fig. 6); hemelytra often brachypterous; claval punctation in three regular rows (fig. 19); buccular juncture V-shaped (fig. 81); mesepimeron emergent (fig. 38); evaporative area extensive (fig. 42); fore femur with spines only along inner edge of ventral surface (fig. 16); a lunate, file-like abdominal stridulitrum present laterally, extending over sterna II through IV (fig. 35); plectrum a field of tiny spines or tubercles on basal one half of hind femur (fig. 36).

ETYMOLOGY: I am pleased to name this new genus for my major dissertation advisor, Dr. James A. Slater, in gratitude for his unfailing interest, advice, and support of this study.

LIGYROCORIS STÅL

Figure 68

TYPE SPECIES: *Cimex sylvestris* Linnaeus, 1758.

Eleven species, Nearctic and Neotropical.

INCLUDED SPECIES: *balteatus* Stål, 1874.*

caricis Sweet, 1963.**

delitus Distant, 1882.**

depictus Barber, 1921.**

diffusus (*Plociomerus*) Uhler, 1871.*

latimarginatus Barber, 1921.**

litigiosus (*Plociomerus*) Stål, 1862.*

obscurus Barber, 1921.*

occultus (*Pachybrachius*) Barber, 1953.** New Combination (from *Pachybrachius*).

slossoni Barber, 1914.**

sylvestris (*Cimex*) Linnaeus, 1758.*

DIAGNOSIS: *Ligyrocoris*, *Slaterobius*, and *Froeschneria* of phallic Type III and *Pseudopamera* and *Ashlockaria* of Type IV have abdominal stridulitrum extending over the first three visible sterna and a scattered field of tiny spines or tubercles basally on the hind femur as a plectrum. Of these five Nearctic

genera, only *Ligyrocoris* and *Froeschneria* have the entire dorsal surface of the pronotum pruinose (the pronotum is shining in *Pseudopamera*; shagreened in *Ashlockaria* and shining on the anterior lobe of *Slaterobius*).

Ligyrocoris has spines only on the inner edge of the ventral surface of the fore femur (fig. 16) and the transverse impression dividing the two pronotal lobes is shallow, almost obsolete medially (fig. 68). In *Froeschneria* the fore femoral spines are double-ranked (fig. 15) and the transverse impression is deeply incised (fig. 67).

DESCRIPTION: Body elongate; lateral margins of both pronotal lobes rounded; an anterior collar present and demarked posteriorly by a linelike groove; transverse pronotal impression shallow.

Phallic Type III (fig. 11); posterior edge of pygophore broadly rounded (fig. 6); hemelytra often brachypterous; claval punctation three regular rows plus a few scattered additional punctures (fig. 18); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines only along inner edge of ventral surface (fig. 16); a lunate, filelike abdominal stridulitrum present laterally, extending over sterna II through IV (fig. 35); plectrum a field of small spines on basal one-half of hind femur (fig. 36).

FROESCHNERIA, NEW GENUS

Figure 67

TYPE SPECIES: *Ligyrocoris multispinus* Stål, 1874.

Five species, Neotropical (one species into Nearctic).

INCLUDED SPECIES: *infumatus* (*Ligyrocoris*) Distant, 1882.** New Combination (from *Ligyrocoris*).

multispinus Stål, 1874.* New Combination (from *Ligyrocoris*).

oblitus (*Ligyrocoris*) Distant, 1882.** New Combination (from *Ligyrocoris*).

piligerus (*Plociomera*) Stål, 1862.* New Combination (from *Ligyrocoris*).

vicinalis (*Pamera*) Distant, 1882.** New Combination (from *Pachybrachius*).

DIAGNOSIS: Only *Froeschneria* and *Ligyrocoris* have the entire dorsal surface of the pronotum pruinose in combination with a stridulatory apparatus like that described above. *Froeschneria* is distinguished from *Ligyrocoris* by its deeply incised pronotal transverse impression, annulate fourth antennal segment and double-ranked fore femoral spines. *Ligyrocoris* has a shallow or obsolete transverse impression, unicolorous fourth antennal segment and spines ranked only along the inner edge of the ventral surface of the fore femur.

DESCRIPTION: Body elongate; lateral margins of both pronotal lobes rounded; pronotum markedly bilobed with transverse impression deeply incised; an anterior collar present and demarked posteriorly by a line-like groove.

Phallic Type III (fig. 11); conjunctival spines large and numerous; posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); antennal segment IV with a pale band basally; a lunate, filelike abdominal stridulitrum extending over sterna II through IV laterally (fig. 35); plectrum a field of spines on basal one-half of hind femur (fig. 36).

ETYMOLOGY: I am pleased to name this new genus for Dr. Richard C. Froeschner of the United States National Museum of Natural History. Early in my work with the Myodochini, Dr. Froeschner helped to convince me that a generic level revision of the tribe was the essential first approach.

PERIGENES DISTANT

Figure 72

TYPE SPECIES: *Perigenes dispositus* Distant, 1893.

Two species, Nearctic; one species, Neotropical.

INCLUDED SPECIES: *constrictus* (*Pamera*) Say, 1831.*

dispositus Distant, 1893.**

similis Barber, 1906.**

DIAGNOSIS: *Perigenes* and *Zeridoneus* are the only nonstridulatory myodochines of phallic Type III. In both of these genera the sperm reservoir is extremely reduced and there are numerous conjunctival spines, including a group of characteristic very long curving spines and a cap or crownlike assemblage of spines with a common base.

The male genitalia of *Perigenes* show further modification in reduced, truncate claspers (the claspers of *Zeridoneus* have a more typical curving blade). *Perigenes* also has a very narrow ringlike nearly impunctate collar (fig. 72) unlike the broader punctate collar of *Zeridoneus* (fig. 70).

DESCRIPTION: Body elongate robust; lateral margins of both pronotal lobes rounded; a very narrow, sparsely punctate anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type III (fig. 11); sperm reservoir very reduced and elongate; conjunctival spines numerous, elongate and in characteristic clumps or groups; posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with a few spines only along inner edge of ventral surface (fig. 16); no stridulatory apparatus present.

ZERIDONEUS BARBER

Figure 70

TYPE SPECIES: *Perigenes costalis* Van Duzee, 1909.

Three species, Nearctic.

INCLUDED SPECIES: *costalis* Van Duzee, 1909.*

knalli Barber, 1948.*

petersoni Reichart, 1966. p. 347.***

DIAGNOSIS: As indicated in the preceding diagnosis for *Perigenes*, *Zeridoneus* and *Perigenes* lack a stridulatory apparatus and have phallic Type III with greater sperm reservoir reduction and conjunctival spine elaboration than the three stridulatory members of this phallic type.

Zeridoneus is distinguished from *Peri-*

genes by stout dark bristles on the tibiae of all legs (*Perigenes* has no such bristles on the fore leg) and a broad, punctate collar unlike the very narrow, ringlike, almost impunctate collar of *Perigenes*.

DESCRIPTION: Body elongate; lateral margins of both pronotal lobes rounded; transverse pronotal impression very shallow; an anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type III (fig. 11); sperm reservoir very reduced and elongate; conjunctival spines numerous, elongate and in characteristic clumps or groups; posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines only along inner edge of ventral surface (fig. 16); no stridulatory apparatus present.

PSEUDOPAMERA DISTANT

Figure 94

TYPE SPECIES: *Pseudopamera aurivilliana* Distant, 1882.

Eight species, Nearctic and Neotropical.

INCLUDED SPECIES: *ater* (*Prytanes*) Distant, 1893.** New Combination (from *Prytanes*).

aurivilliana Distant, 1882.*

coloradensis (*Ligyrocoris* (*Neoligyrocoris*)) Barber, 1921.**

insititius (*Erlacda*) Distant, 1893.**

New Combination (from *Ligyrocoris*).

nitidicollis (*Pamera*) Stål, 1874.*

nitidula (*Pamera*) Uhler, 1893.**

rubricata (*Ligyrocoris* (*Neoligyrocoris*)) Barber, 1921.**

setosa (*Pamera*) Stål, 1874.** New Combination (from *Ligyrocoris*).

DIAGNOSIS: *Pseudopamera* is one of eight myodochine genera with an abdominal stridulitrum. This type of stridulatory mechanism is found in *Stridulocoris* with Type I male genitalia, *Slaterobius*, *Ligyrocoris*, and *Froeschneria* of Type III and *Erlacda*, *Afrovertanus*, *Ashlockaria*, and *Pseudopamera* which are "Type IV bugs."

Pseudopamera may readily be distinguished from *Erlacda* and *Afrovertanus* by its plectrum. In the latter two genera the plectrum consists of two or three chisel-like projections at the base of the hind femur, whereas in *Pseudopamera* it is a fairly extensive field of small spines on the hind femur. *Ashlockaria* (also of Type IV) has a plectrum similar to that of *Pseudopamera*, but *Ashlockaria* has a shagreened body surface texture and multiple male fore tibial spines while *Pseudopamera* is shining with a single spine on the male fore tibia.

Pseudopamera may also be distinguished from *Stridulocoris*, *Slaterobius*, *Ligyrocoris*, and *Froeschneria* by its shining dorsum. The dorsal surface of the pronotum is pruinose in *Ligyrocoris*, *Froeschneria*, and *Stridulocoris* (although the pruinosity is made less apparent by heavy punctation in *Stridulocoris*). In *Slaterobius* the anterior pronotal lobe is shining but the collar and posterior pronotal lobe are characteristically pruinose.

DESCRIPTION: Body elongate, parallel-sided, shining; head slightly elongate behind eyes; pronotal lobes rounded; an anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); ventral surface of head not grooved; buccular juncture V-shaped (fig. 81), mesepimeron here enclosed (fig. 37); evaporative area reduced (fig. 41); fore femur with spines double-ranked (fig. 15); male fore tibia with a spine on distal one-half; a lunate, filelike abdominal stridulitrum present, extending laterally over sterna II through IV (fig. 35); plectrum a field of small spines on base of hind femur (fig. 36).

ERLACDA SIGNORET

Figure 85

TYPE SPECIES: *Erlacda arhaphaeoides* Signoret, 1863.*

=*Sphaerobius gracilis* Uhler, 1893.**

NEW SYNONYMY.

Two species, Neotropical.

INCLUDED SPECIES: *arhaphaeoides* Signoret, 1863.*

signoreti Porter, 1929.*

DIAGNOSIS: This tiny ant mimetic genus is distinguished by its relatively short abdominal stridulitrum and chisel-like plectrum. Only the Old World genus *Afrovertanus*, with a longer neck and the mesepimeron emergent, has a plectrum like that of *Erlacda*. Some male *Erlacda* specimens additionally show a distinctive pair of small tubercles or horns on the head behind the ocelli.

DESCRIPTION: Body elongate, shining, very ant mimetic; head prolonged behind eyes in a short but distinct neck; lateral margins of both pronotal lobes rounded; an anterior pronotal collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); hemelytra often brachypterous; claval punctation in three regular rows (fig. 19); buccular juncture V-shaped (fig. 81) and extended posteriorly in a slight midventral carina; mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur multispined as in figure 13; male fore tibia with a small spine on distal one-half; a short, broadly V-shaped, filelike abdominal stridulitrum extending over the lateral surface of sterna II and III (fig. 28); plectrum three chisel-like projections at base of hind femur (fig. 29).

AFROVERTANUS SCUDDER

Figure 88

TYPE SPECIES: *Afrovertanus elongatus* Scudder, 1962.*

Monotypic, Ethiopian.

DIAGNOSIS: *Afrovertanus* is the only myodochine with phallic Type IV occurring in the Old World. Only *Afrovertanus* and *Aegyptocoris* among the Eastern Hemisphere genera have the head prolonged posteriorly in a stalklike neck and the dorsal body surface highly shining. *Afrovertanus* may be distinguished from *Aegyptocoris* by its emergent mesepimeron, abdominal stridulitrum, and by the lack of an apically upturned scutellum which is characteristic of *Aegyptocoris*.

DESCRIPTION. Body elongate, shining; head prolonged behind eyes in a stalklike neck; lateral margins of both pronotal lobes rounded; an anterior pronotal collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore sharp (fig. 4); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron emergent (fig. 38); evaporative area reduced (fig. 41); fore femur with spines single-ranked, present only along inner edge of ventral surface (fig. 16); a distinctive lunate, filelike abdominal stridulitrum present laterally on sterna II through IV (fig. 33); plectrum two chisel-like projections at base of hind femur (fig. 34).

PSEUDOCNEMODUS BARBER

Figure 84

TYPE SPECIES: *Pseudocnemodus bruneri* Barber, 1911.**

=*Pterotmetus canadensis* Provancher, 1886.

Monotypic, Nearctic.

DIAGNOSIS: *Pseudocnemodus* can be recognized readily by its unique stridulatory mechanism. The stridulitrum consists of arc-like, cross-striated areas on the propleuron and lateral surface of the head (fig. 39), whereas the plectrum is a row of tubercles on the proximal one third of the fore femur (fig. 40).

DESCRIPTION: Body elongate, shagreened; head elongate behind eyes but lacking a distinct neck region; lateral margins of both pronotal lobes rounded; an anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore subsharp (fig. 5); hemelytra often brachypterous; claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area reduced (fig. 41); fore femur with spines double-ranked (fig. 15); male fore tibia with a well-developed spine.

XENYDRUM POPPIUS AND BERGROTH

Figure 92

TYPE SPECIES: *Xenydrum formiciforme* Bergroth, 1921.*

Monotypic, Neotropical.

DIAGNOSIS: *Xenydrum* is readily recognized by its strikingly ant mimetic habitus with the antenniferous tubercles broadly expanded in shelflike plates that are very mandibular in appearance. The extreme anterior narrowing of the abdomen also enhances this mimicry. The small but distinctive spines on the lateral margins of the collar are characteristic for the genus.

DESCRIPTION: Body elongate, shining, and strikingly ant mimetic; head especially antlike with a very short neck region behind eyes; lateral margins of both pronotal lobes rounded; an anterior collar present and demarked posteriorly by a linelike groove; a small spine present on the lateral margin of the collar.

Phallic Type IV (fig. 12) posterior edge of pygophore subsharp (fig. 5); hemelytra often brachypterous; claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia with a well-developed spine.

ASHLOCKARIA, NEW GENUS

Figure 90

TYPE SPECIES: *Cnemodus sobrius* Uhler, 1894.

Two species, Nearctic.

INCLUDED SPECIES: An undescribed species from California.

sobrius (*Cnemodus*) Uhler, 1894.* New Combination (from *Pseudopamera*).

DIAGNOSIS: *Ashlockaria* is one of three genera of phallic Type IV with an extensively shagreened body surface. With *Zero-pamera* it also shares a multispined male fore tibia and peculiar elongate curving body hairs on the legs as well as the head and pronotum. *Cnemodus*, the third shagreened myodochine with a Type IV phallus, lacks

such hairs and multiple male fore tibial spines and also lacks ocelli. Both *Ashlockaria* and *Zeropamera* are large and rather coleopteroid in appearance (presumably ant mimetic in behavior), but only *Ashlockaria* has an abdominal stridulitrum. Thus, it is distinct as the only stridulatory myodochine with a shagreened body surface. On the basis of its independently derived stridulatory mechanism, the former *Pseudopamera sobrius* has been given generic status.

DESCRIPTION: Body elongate, shagreened, with numerous long curving hairs; lateral margins of both pronotal lobes rounded; an anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); hemelytra sometimes brachypterous; claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia multispined; a filelike abdominal stridulitrum present laterally on sterna II through IV, though sometimes difficult to discern; plectrum a field of spines on base of hind femur.

ETYMOLOGY: I am pleased to name *Ashlockaria* for Dr. Peter Ashlock of the University of Kansas whose preliminary work and continuing interest in the Myodochini, as well as the loan of many specimens, have enhanced this study.

ZEROPAMERA BARBER

Figure 95

TYPE SPECIES: *Zeropamera nigra* Barber, 1948.**

Monotypic, Nearctic.

DIAGNOSIS: *Zeropamera* has a shagreened body surface like that of *Ashlockaria* and *Cnemodus* and additionally has the long body hairs and multispined male fore tibiae of *Ashlockaria*. It lacks the abdominal stridulitrum of *Ashlockaria* and is best distinguished by its large size and dark coloration. *Zeropamera* is uniformly an extremely dark chestnut brown verging on black with

no light areas patterning the body or hemelytra. *Cnemodus* also has a largely dark body, but in *Cnemodus* the legs and antennae are pale, and *Cnemodus* is also readily recognized by its lack of ocelli.

DESCRIPTION: Body elongate, shagreened, with numerous long curving hairs; lateral margins of both pronotal lobes rounded; an anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia multispined.

CNEMODUS HERRICH-SCHAEFFER

Figure 98

TYPE SPECIES: *Cnemodus brevipennis* Herrich-Schaeffer, 1850.

=*Astemma mavortia* Say, 1831.

Three species, Nearctic; two species (?), Neotropical.

INCLUDED SPECIES: *albimaculus* Berg, 1879.***

brevipennis Herrich-Schaeffer, 1850.*

hirtipes Blatchley, 1924.*

inflatus Van Duzee, 1915.*

multifarius Berg, 1894.***

DIAGNOSIS: Many specimens of *Cnemodus* are coleopteroid. In the field these insects are quite ant mimetic by virtue of their behavior. The genus has a shagreened body surface like that of its near relatives, *Ashlockaria* and *Zeropamera*, but is easily distinguished from those two genera and from all other myodochine genera by its lack of ocelli.

DESCRIPTION: Body elongate, shagreened; lateral margins of both pronotal lobes rounded; an anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); hemelytra sometimes brachypterous or submacropterous; claval punctation in four or more

rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia with a single spine.

DISTINGPHYSES SCUDDER

Figure 89

TYPE SPECIES: *Pephysema insignis* Distant, 1882.**

Monotypic, Neotropical.

DIAGNOSIS: This monotypic genus has a heavily punctate ant mimetic head (fig. 89) and oval eyes (like *Pephysema*). However, the neck of *Distingphyse*s is much less apparent than that of *Pephysema* and *Distingphyse*s is further distinguished by a shining anterior pronotal lobe, including the collar.

DESCRIPTION: Body elongate, ant mimetic; head very antlike, elongate behind eyes with a short barely discernible neck; eyes elongate, oval; lateral margins of both pronotal lobes rounded; transverse impression deeply incised; an anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81), continuing posteriorly as a strong midventral carina; mesepimeron enclosed (fig. 37); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia unspined.

PEPHYSEMA DISTANT

Figure 86

TYPE SPECIES: *Pephysema levis* Distant, 1882.

Five species, Neotropical.

INCLUDED SPECIES: *fuscosa* Barber, 1954.*

levis Distant, 1882.**

picta Barber, 1954.**

An undescribed species from Brazil.

An undescribed species from Surinam.

DIAGNOSIS: *Pephysema* has a heavily punctate, ant mimetic head with elongate

oval eyes and a midventral carina prolonged from the buccular juncture as does *Distingphyse*s. Yet *Pephysema* is distinguished by a longer neck and an emergent mesepimeron not seen in *Distingphyse*s.

DESCRIPTION: Body elongate, ant mimetic; head elongate with a distinct stalklike neck; eyes elongate, oval; lateral margins of both pronotal lobes rounded; an anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81), continuing posteriorly as a strong midventral carina; mesepimeron emergent (fig. 38); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia unspined.

TENUICORIS SLATER AND HARRINGTON

Figure 96

TYPE SPECIES: *Tenuicoris myrmeforme* Slater and Harrington, 1974. p. 174.**

Monotypic, Neotropical.

DIAGNOSIS: *Tenuicoris* is readily distinguished by its globose, highly shining, impunctate anterior pronotal lobe which contrasts with a punctate, pruinose anterior collar and posterior lobe. The only other myodochine genus with such a pruinosity pattern is *Slaterobius* which is stridulatory and of a different phallic type.

The head of *Tenuicoris* is also quite distinctive with a flattened vertex and the juga forming expanded ridges above the first antennal segments (fig. 96).

DESCRIPTION: Body very elongate, slender, and ant mimetic; legs and antennae also extremely long and slender; head prolonged behind eyes, forming a neck region; vertex of head very flat, depressed between eyes; eyes elongate, oval; lateral margins of both pronotal lobes rounded; a narrow anterior collar present and demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval

punctuation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81), continuing posteriorly as a strong midventral carina; mesepimeron emergent (fig. 38); evaporative area extensive (fig. 42); fore femur very slender with only a few spines present on both inner and outer edges of ventral surface.

NEOPAMERA, NEW GENUS

Figure 83

TYPE SPECIES: *Pamera bilobata* Say, 1831.

Twenty species: predominantly Neotropical, five Nearctic.

INCLUDED SPECIES: [All 20 species are new combinations (from *Pachybrachius*).]

albocinctus (*Pachybrachius*) Barber, 1953.**

bilobata (*Pamera*) Say, 1831.*

brachialis (*Rhyparochromus* (*Plociom-
erus*) Stål, 1858.**

costalis (*Pamera*) Stål, 1874.*

crassicornis (*Pamera*) Stål, 1874.***

honduranus (*Pamera*) Bergroth, 1914.*

insularis (*Orthaea*) Barber, 1925.**

intermedius (*Orthaea*) Barber, 1924.*

mumfordi (*Ptochiomera*) Van Duzee, 1935.*** Transferred to *Pachybrachius* by Scudder, 1970. p. 102.

neotropicalis (*Orthaea*) Kirkaldy, 1909.*

paganus (*Pamera*) White, 1879.***

platanus (*Pamera*) Bergroth, 1894.***

procerulus (*Pamera*) Berg, 1892.***

recinctus (*Pamera*) Breddin, 1901.**

serripes (*Rhyparochromus*) Walker, 1872.* Transferred to *Pachybrachius* by Scudder, 1970. p. 102.

sororculus (*Pamera*) Berg, 1892.***

tineodes (*Pachymerus*) Burmeister, 1835.***

tuberculatus (*Pamera*) Osborn, 1904.***

vicarius (*Pachybrachius*) Barber, 1954.**

vividus (*Pamera*) Distant, 1882.**

DIAGNOSIS: This large new genus is being erected to include all the species of a New World, essentially Neotropical complex, heretofore included in the genus *Pachybrachius*. Unfortunately, I have found

no satisfactory synapomorphic character state to distinguish the group, which may prove on closer species level examination not to be holophyletic.

Neopamera belongs to the Neotropical element of phallic Type IV in which the members have a pruinose body surface and unspined male fore tibia (from common ancestor 44 in the cladogram). Within this group, there are various degrees of head elongation, but all the species of *Neopamera* show little if any elongation of the head behind the eyes and certainly no neck region such as that exhibited by most other members of the group. This Neotropical element, in addition to exhibiting head elongation, is characterized by long legs and antennae. These insects are rapidly running forms. In *Neopamera*, and, in fact, in all but *Distingphyses*, the mesepimeron is emergent. The emergent mesepimeron may be used to distinguish all Western Hemisphere species currently included in *Pachybrachius* that are here being recognized as constituting the new genus *Neopamera* (note exception of the following monotypic genus *Orthaea* which is being resurrected to generic status).

Among New World myodochines with a pruinose body surface, unspined fore tibia, and phallic Type IV, *Neopamera* can be distinguished from the complex from ancestor 47 (*Orthaea*, *Catenes*, *Heraeus*, *Myodocha*) by virtue of its head with a flattened vertex and not prolonged behind the eyes. The near relatives *Distingphyses*, *Pephsena*, and *Tenuicoris* have flattened heads like *Neopamera*, but all three of the former genera have some degree of head elongation and elongate oval eyes, while *Neopamera* has round eyes and the head not prolonged.

DESCRIPTION: Body elongate; head not elongate, vertex flat; lateral margins of both pronotal lobes rounded; an anterior collar present and demarked posteriorly by a line-like groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval punctuation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron emergent (fig. 38); evaporative

area extensive (fig. 42); fore femur with spines double-ranked (fig. 15); male fore tibia unspined.

ETYMOLOGY: From the Greek *neo-*, new, *Pamera*, for an old generic (subgeneric) name by which many of the species of *Neopamera* were formerly known.

ORTHAEA DALLAS

Figure 91

Here raised from synonymy with *Pachybrachius*.

TYPE SPECIES: *Orthaea consuta* Dallas, 1852.

Two species, Neotropical.

INCLUDED SPECIES: [Both species are new combinations (from *Pachybrachius*).] *consuta* Dallas, 1852.**

procinctus (*Pamera*) Breddin, 1901.*

DIAGNOSIS: *Orthaea consuta* is resurrected to generic status and *Pachybrachius procinctus* (Breddin) is transferred to *Orthaea*. The habitus of these two species is unlike that of the other New World "*Pachybrachius*" species with which they have been associated. The small slightly elongate head placed in a noticeably lower plane than the posterior pronotal lobe is very characteristic. The fore leg armature of *Orthaea* is very reduced and some specimens examined even lack a fore coxal spine (*Neopamera* species have generally one and sometimes two well-developed fore coxal spines and numerous double-ranked fore femoral spines).

Orthaea is also readily distinguished by a uniformly blackish brown body with distinctive bright orange markings medially and on the lateral margins of the posterior pronotal lobe and subapically on the corium. No other described myodochines are similarly pigmented.

DESCRIPTION: Body elongate; head with a rounded vertex, slightly prolonged behind eyes but not constricted in a neck; lateral margins of both pronotal lobes rounded; an anterior collar present and faintly demarked by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval

punctuation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron emergent (fig. 38); evaporative area extensive (fig. 42), extremely rugose; fore femur slender with few spines but those present ranked along both inner and outer edges of ventral surface; male fore tibia unspined.

CATENES DISTANT

Figure 93

TYPE SPECIES: *Catenes porrectus* Distant, 1893.**

Monotypic, Neotropical.

DIAGNOSIS: This monotypic genus has a distinctive elongate flattened head (fig. 93). The reduction of fore leg armature accompanied by dark spots of seemingly heavy sclerotization which give a "freckled" appearance to otherwise pale slender fore femora is also characteristic of *C. porrectus*.

DESCRIPTION: Body elongate; head prolonged behind eyes but with lateral margins nearly parallel, not constricted to a stalklike neck; lateral margins of both pronotal lobes rounded; an anterior collar present and barely demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval punctuation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron emergent (fig. 38); evaporative area extensive (fig. 42); fore femur with spines only along inner edge of ventral surface (fig. 16).

HERAEUS STÅL

Figure 87

TYPE SPECIES: *Lygaeus (Plociomerus) triguttatus* Guérin, 1857.

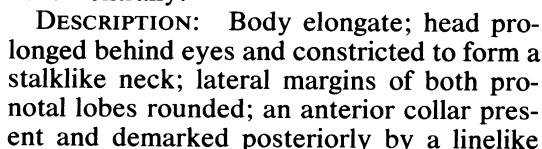
Twelve species, Neotropical and Nearctic.

INCLUDED SPECIES: *cincticornis* Stål, 1874.*

cinnamomeus Barber, 1948.**

coquilletti Barber, 1914.*

elegans (*Nabis*) Walker, 1873.*** Raised from synonymy with *Heraeus guttatus* Dallas, 1852 by Scudder, 1967. p. 264.



groove, ventrally extending forward beneath the head.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron emergent (fig. 38); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15).

MYODOCHA LATREILLE

Figure 97

TYPE SPECIES: *Myodocha serripes* Olivier, 1811, by action of International Commission Zoological Nomenclature, Opinion 669.

Eight species, Neotropical and Nearctic.

INCLUDED SPECIES: *annulicornis* Blatchley, 1926.*

fulvosa Barber, 1954.**

giraffa Stål, 1862.*

inermiba Distant, 1882.**

intermedia Distant, 1882.**

longicollis Stål, 1874.*

serripes Olivier, 1811.*

unispinosa Stål, 1874.*

DIAGNOSIS: *Myodocha* is distinguished by the greatest degree of head elongation in the tribe Myodochini. The head of *Myodocha* is characteristically highly shining, in contrast with a heavily pruinose pronotum, and very slender in the ocular and preocular areas as well as in the stalklike neck region (fig. 97).

DESCRIPTION: Body legs and antennae very elongate; head also long and slender, strikingly prolonged behind eyes as a stalklike neck, anterior portion of head visually of little greater diameter than neck region; lateral margins of both pronotal lobes rounded; a narrow anterior collar present and faintly demarked posteriorly by a linelike groove.

Phallic Type IV (fig. 12); posterior edge of pygophore broadly rounded (fig. 6); claval punctation in four or more rows (fig. 17); buccular juncture V-shaped (fig. 81); mesepimeron emergent (fig. 38); evaporative area extensive (fig. 42); fore femur with spines double-ranked (fig. 15).

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