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A REVISION OF THE GENUS *MACROPES* (Hemiptera: Lygaeidae: Blissinae)[1]

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Abstract: Forty species are considered valid in this genus of the Old World tropics, with 9 newly described and 2 reduced to synonymy. New species are *africanus* (Tanzania, Kenya, Congo), *alternatus* and *brunneus* (India), *burmanus* (Burma), *crassifemur* (Pakistan), *exilis* (China, Viet Nam), *maai* (China), *maculosus* (Malaya), and *umbrosus* (Ceylon). New synonyms are *Rhabdomorphus* Bergroth, 1918, of *Macropes* Motschulsky, 1859; *leucoderma* Breddin, 1907 of *spinimanus* Mots., 1859; and *annamita* Bergroth, 1894 of *varipennis* (Distant), 1872. New distributions are presented for *australis* (Papua New Guinea, Ceylon), *femoralis* (Bangladesh, Laos, Nepal), *lobatus* (India, Burma), *major* (China), *nigrolineatus* (Congo, Senegal, Zambia), *praecerptus* and *spinimanus* (Laos), *privus* (India, Taiwan) and *punctatus* (Pakistan). A comparative study of the internal and external male genitalia of *Macropes* is presented. There is a key to the species and to 5th instars of known species.

The genus *Macropes* Motschulsky is one of the most diverse and complex taxa of Blissinae in the Oriental region. Despite the fact that many of the species are rather large in size and that a few appear to be of some economic importance the genus has never been the subject of a revisional study.

Macropes Motschulsky

1859, *Macropes* Motschulsky, *Etud. Ent.* **8**: 108.
1904, *Macropes* Distant, *Fn. Brit. Ind. Rhynch.* **2**: 22-24.
1964, *Rhabdomorphus* Bergroth, *Phil. J. Sci.* **13** (2-3) D: 68-9. **New synonym.**

Type-species: *Macropes spinimanus* Motschulsky. Fixed by Distant 1904.

The genus may be characterized as follows: head and prothorax shining, completely non-pruinose above and below; fore femora strongly incrassate, armed on ventral surface with numerous large acute spines; propleural area anteriorly concave or excavated to receive fore femora; fore coxal cavities broadly closed; apical corial margin straight; antennae terete or with segments II and III distally enlarged; fore tibiae usually somewhat swollen and armed with terminal or subterminal spines; tarsi short, swollen, with second segment generally relativey narrow and shorter than segments one and three; head small, much narrower than pronotum; scent gland auricle narrow and strap-like or lobate; ovipositor well developed and lanceolate; claspers (fig. 9-17) with outer knob frequently placed far from base of clasper, inner projection often obsolete; sperm reservoir with a generally small, rounded or elliptical cup, wings usually slender and strap-like, sometimes down curved but often projecting forward at nearly right angles to the cup (fig. 23-31).

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One of the most fundamental features characteristic of the subfamily Blissinae is the dorsal position of the spiracles on abdominal segments II-VI. However, in fifth instar nymphs of *M. varipennis* and *yoshimotoi* the spiracles on the second segment are located laterad or, in one specimen, are clearly ventral in position. Also one adult specimen of *M. punctatus* shows an interesting aberration in spiracle position. On the sixth abdominal segment the left spiracle is ventral, whereas the right spiracle is normally placed on the dorsal side of the connexivum. The ventral spiracle appears to be functional and is the same size as the other spiracles, but it is set closer to the lateral margin than is the ventral spiracle of sternum 7.

Very little is known of the biology and host plant relationships of species of *Macropes*. The few records available indicate that there is an association with bamboos. The following species have been taken on species of bamboo: *punctatus, privus, obnubilus, subauratus, spinimanus harringtonae* and *varipennis*. However, other plants are involved as *punctatus* has been collected on *Saccharum* sp., *raja* on "bunch grasses," and *albosignatus* on *Sporobolus robustus* (see Slater & Wilcox 1973). Other records from "sandal" and legumes undoubtedly do not represent true host plants.

DISTRIBUTION: The genus *Macropes* possesses more Oriental species than does any other genus of Blissinae. These species include a number of very closely related taxa but also several definable complexes. In the Ethiopian and Neotropical regions by contrast *Ischnodemus* contains the most species and has similar definable complexes represented. Of the 40 species of *Macropes* treated in this paper, 34 are restricted to the Oriental region. Five (or less) are African and 1 is Australian and Oriental.

The limits to be placed on the concept of the genus *Macropes* is a difficult problem. There is marked diversity in size and in many morphological details. Species at the various extremes are very different from one another in general habitus. However, when the entire complex is analyzed it does seem to us that we are dealing with a monophyletic group whose various elements are more closely related to one another than to any other taxon. Furthermore characters tend to occur in different combinations even in members of the same as well as different groups. The condition found in the male genitalia is an excellent example of this. While we have not examined all species we have sampled from a number of strongly differentiated species. In *punctatus, raja, dilutus, lobatus* and *obnubilus* the clasper (fig. 9) shows a generalized condition in which the blade is strongly curved, the outer lobe located near the base and with a well developed inner projection present. This type of clasper is considered generalized as it occurs in many different otherwise strongly differentiated genera of Blissinae. The clasper of *nigrolineatus* (fig. 11) is similar but has the outer lobe located more distally along the shaft. A derived condition of the clasper occurs in such species as *rufipes, hoberlandti, burmanus, pseudofemoralis, africanus, harringtonae, australis, spinimanus, privus* and *varipennis*. In these species (fig. 10, 13-17) the blade and shaft of the clasper are relatively slender and little curved, the outer lobe is located relatively far distad from the base and the inner projection is frequently feebly developed (fig. 14, 15) or absent (fig. 13). Use of the clasper alone might seem to strengthen the case for recognition of more than a single generic entity. Species with a generalized type of clasper belong to the *raja* (fig. 9) and *punctatus* groups (with the exception of *obnubilus* which, while placed in the *femoralis* group, is admittedly somewhat anomalous there). By contrast species with a strongly derived clasper all belong to the *rufipes* (fig. 15), *spinimanus* (fig. 13, 14) and *femoralis* (fig. 10, 16) groups, or to species most closely allied to these groups on external features.

However, when one examines the nature of the sperm reservoir one finds that the wings attached to the small bulb are slender and strap-like and project almost at right angles to the bulb (figs. 23, 24) in *rufipes*, *hoberlandti*, *maai*, *harringtonae*, *punctatus*, *obnubilus* and *albosignatus* (the latter somewhat more lobate). In *lobatus* (figs. 25, 26) the wings are rather crescent shaped. In *australis* the condition is similar to that of *rufipes* etc. but the wings project only slightly out from the bulb. In *raja* (figs. 27, 28) and *dilutus* the wings are plate-like or block-like.

Thus it can be seen that the *punctatus* group and *obnubilus*, while possessing a generalized clasper similar to the *raja* group (figs. 27, 28), have sperm reservoir wings that are either intermediate (*lobatus* (figs. 25, 26) and *albosignatus* (fig. 31) or typical (*punctatus*) of the condition found in the *rufipes* (figs. 23, 24), *spinimanus* and *femoralis* groups.

There are also distinct differences in the shape of the pygophore openings (figs. 18–22) in some of these species but we have not studied this character throughout the genus.

The genitalia again indicate the isolated condition of the *raja* group. If one were to consider the reservoir wings in this group as representing a generalized condition then this, with the generalized clasper and distinctive external features, might justify segregation of this group as a distinct genus. However, most of the distinctive external features of the *raja* group we consider to be highly derived conditions. The slender sperm reservoir wings of the *rufipes*, *spinimanus* and *femoralis* groups are similar to the condition found in many blissine genera, whereas flattened plate-like wings occur only in the majority of *Ischnodemus* species and some allied neotropical genera as will be discussed in a later paper on blissine phylogeny. It seems unlikely that the *raja* group is derivable directly from *Ischnodemus* and we feel that these reservoir wings, to the limited extent that they do resemble the condition found in *Ischnodemus*, represent a convergence rather than an indication of direct relationship. That the *punctatus* group relates closely to the *raja* group on the one hand and the *rufipes*, *femoralis* and *spinimanus* groups on the other hand (both on genitalia and external characters) strengthens the justification for the retention of the *raja* group within the genus *Macropes*. Therefore we feel that despite the diversity present *Macropes* as defined above should be retained as a single genus.

Slater, *et al* (1969) recognized four complexes in the Thailand and Indo-China fauna. These four complexes will encompases most but not all of the species discussed below. The most distinctive complex is the "raja-complex", the species of which form a closely related group with a distinctive habitus and with claspers (fig. 9) and sperm reservoirs (figs. 27, 28) that are also unusual within the genus.

There are several places in the text where our treatment of species is somewhat unsatisfactory. Unfortunately many of the species are known from very few specimens. In difficult areas such as the African *albosignatus* group this means that our treatment must remain tentative. In a few cases such as that of *australis* we may indeed well be "lumping" two or more discrete taxa but only further collecting will determine if this is indeed the case. We have tried to indicate in the text those situations that require further material for adequate interpretation.

Since Slater, *et al* (1969) have treated the fauna of Indo-China and Thailand in detail

with figures, keys and descriptions such information is not repeated here other than in very summary fashion and their paper should be consulted for details.

We have included a key to the nymphs of the known species. Characters of the nymphs will certainly ultimately prove to be important in blissine classification. It should be realized in using the key to nymphs that many species are not included and that the key serves more as a segregation device than as an identification mechanism.

Several of the characters used in the key to species (adults) are difficult to use on some specimens. When the fore wing is greasy or adherent to the abdomen it is impossible or very difficult to determine the shining or dull nature of areas of the membrane without cleaning the specimen. Also in using the above membrane character it is often necessary to try several different orientations of the specimen and different angles from the light source. Such manipulation may also be needed when using the scutellar pruinosity character and when examining the condition of the pronotal longitudinal groove. Spines on the hind femora are often small and difficult to observe and careful orientation is essential.

It is also essential to use care in the orientation of the specimen when studying the nature of the radial vein and the condition of the corium laterad of the vein. Greasy specimens or specimens incorrectly oriented will not reveal the shining or pruinose conditions of the wing in this area.

The presence or absence of a median longitudinal groove as used in the following key may cause difficulty unless our definition of a true groove is completely understood. In *raja* and its allies a deep distinct median furrow is present on the meson of the anterior pronotal lobe. We restrict the term median groove to this condition. In some other species a row of impressed punctures may be present along the midline and in still others a curious condition occurs where the meson is slightly convex but with a fine impressed line present on either side. In the key we do not treat either of these latter conditions as representing a species with a median longitudinal pronotal groove.

Abbreviations used for sclerotized areas in the key to nymphs and in the nymphal descriptions follow the system developed in Slater and Wilcox (1973).

In the following adult key we have treated several species in more than one place. We have done this (1) because some species are quite variable ; (2) some are known from so few specimens that it is possible that certain key characters used will prove to vary ; (3) a few species present conditions that are difficult to interpret in some otherwise useful characters. In this way we hope to have made the key more useful and to have reduced the possibility of an erroneous decision at a given couplet leading to a misidentification.

Nevertheless in fairness to the user it must be reiterated that *Macropes* is a complex and difficult taxon and some comparative material is desirable when attempting critical identification.

All measurements in the text are in millimeters.

Checklist of species of *Macropes*

africanus n. sp.
albosignatus Distant
alternatus n. sp.
australis (Distant)
  longurio (Bergroth)
bacillus (Gerstaecker)
brunneus n. sp.
burmanus n. sp.
comosus Slater, Ashlock & Wilcox
consimilis Distant
crassifemur n. sp.
dilutus Distant
exilis n. sp.
femoralis Distant
hoberlandti Slater & Ahmad
harringtonae Slater, Ashlock & Wilcox
lacertosus Bergroth
lobatus Slater, Ashlock & Wilcox
maai n. sp.
maculosus n. sp.
major Matsumura
  fossor Matsumura
minor Slater, Ashlock & Wilcox
nigrolineatus Distant
obnubilus (Distant)
  hedini Lindberg
philippinensis Distant
pilosus Slater, Ashlock & Wilcox
praecerptus Distant
privus Distant
  abbreviatus Distant
pronotalis Distant
pseudofemoralis Slater, Ashlock & Wilcox
punctatus (Walker)
raja Distant
rufipes Distant
simoni Distant
spinimanus Motschulsky
  singularis Distant
  dentipes Motschulsky (?)
  centralis (Walker)
  leucodermus Breddin, **New synonym**
  sinhalanus Kirkaldy (?)
subauratus Distant
sultanus Distant
umbrosus n. sp.
uniformis Distant
varipennis (Walker)
  annamita Bergroth, **New synonym**
yoshimotoi Slater, Ashlock & Wilcox

Key to the World species of *Macropes**

1. Membrane either completely shining and somewhat translucent, or dull anteriorly and contrastingly shining distally 2
   Membrane in large part opaque and dull textured (at most somewhat shining at extreme apex and sometimes in light areas of species with a large central dark membranal macula) 20
2. Membrane shining (often translucent) throughout (sometimes extreme anterior area dull) 3
   Membrane with anterior dull area extending posteriorly at least 1/2 way along apical corial margins, posteriorly shining 13
3. Membrane nearly uniformly smoky gray-brown with a strongly contrasting white, usually dull semi-opaque, area at extreme anterior end between inner angles of apical corial margins ..... **privus**
   Membrane with exception of veins uniformly pale or translucent throughout, or if slightly darkened then lacking a contrasting white opaque anterior area 4
4. Distal 1/4 of corium brown; membrane of fore wing milky white, not markedly trans-

* *bacillus* and *sultanus* not included - see text.

lucent; antennal segments 2, 3 and 4 black or dark chocolate brown; ♂ with a prominent "button-like" median protrusion on abdominal sternum 4; calli strongly pubescent ..... **obnubilus**

Distal 1/4 of corium usually testaceous, unicolorous with remainder of corium, if appearing somewhat infuscated (African) then antennal segments 2, 3 and 4 brown, not black; calli shining, nearly glabrous (except in *pilosus*); no sternal protrusion on abdominal sternum 4; membrane strongly translucent 5

5. Pronotum relatively short and broad, ratio of pronotal length to width less than 0.85; total length less than 4.0 ..... **pilosus**

Pronotum relatively more slender and elongate, ratio of pronotal length to width more than 0.88 (in some specimens the ratio is less than 0.88, but these are relatively elongate); total length over 5.0 (range 5.08–7.20) 6

6. Pronotum with posterior lobe light yellowish brown, the light coloration extending anteriorly midway across transverse impression, usually to anterior margin of impression ..... **pronotalis**

Pronotum red-brown or yellowish brown across humeri, lighter coloration at most reaching posterior margin of transverse impression 7

7. Scutellum with a broad, shining area covering greater part of surface, pruinose areas confined to basal strip and narrow sub-basal areas (fig. 32) 8

Scutellum with shining non-pruinose area confined to a narrow, elevated mesal strip sometimes broadened basally (fig. 33) 10

8. Median length of pronotum considerably greater than width across humeri ..... **australis**

Median length of pronotum subequal to or less than width across humeri 9

9. Pronotum wider across calli than across humeri; interocular space more than 1-1/2 times as great as length of 2nd antennal segment; evaporative area of metapleuron coarsely punctate; corium uniformly testaceous (Asia) ..... **uniformis**

Pronotal width across calli subequal to width across humeri; interocular space less than 1-1/4 times as great as length of 2nd antennal segment; evaporative area of metapleuron impunctate or nearly so; apical area of corium with brown infuscations (Africa) ..... **africanus**

10. Body very elongate, total length of body always more than 7 times length hind tibia; legs generally uniformly bright yellow ..... **subauratus**

Body somewhat less elongate, total length of body less than 7 times length hind tibia; femora generally fuscous to very dark brown 11

11. Pronotum with humeral width greater than median length, lateral pronotal margins usually slightly but evenly and distinctly tapering from humeral angles to anterior margin (fig. 36); ratio of head width to pronotal width less than 0.55 ..... **pseudofemoralis**

Pronotum with mesal length as great as or greater than humeral width; lateral pronotal margins nearly parallel-sided from humeral angles to area of calli (figs. 34, 35); ratio of head width to pronotal width 0.55 or greater 12

12. Antennal segment 4 twice or more than twice length of antennal segment 2; pronotum appearing to taper gradually from humeral angles to area of calli (fig. 34) ..... **femoralis**

Antennal segment 4 less than twice length of antennal segment 2; pronotum appearing nearly parallel-sided from humeral angles to area of calli (fig. 35) ..... **harringtonae**

13. Opaque area of membrane confined to extreme anterior portion, not extending more than midway along apical corial margin ..... **privus**

Opaque area of membrane extending posteriorly adjacent to apical corial margin at least to slightly beyond distal end of corium 14

14. Smaller species, less than 4.72 long; radial vein of corium shining but area laterad (to margin) contrastingly dull ..... **maculosus**

Large elongate species, over 6.5; lateral area of at least anterior 3/8 of corium includ-

ing radial vein completely shining to margin 15

15. Entire lateral area of corium including radial vein completely dark brown ..... **alternatus**
Lateral area of corium at least in part white or pale testaceous, or if appearing dark then middle and hind femora multispinose 16

16. Membrane with anterior dark area and large median dark macula dull, lunate transverse pale vitta present just beyond apices of coria and distal pale area contrastingly shining 17
Membrane with dull area confined to anterior area and along apical corial margin, median dark macula shining as are lunate pale vitta and apical pale area 18

17. Eyes relatively sessile, not strongly produced above head surface (fig. 3); inner (median) vein of corium usually pale anterior to posterior end of claval commissure; anterior end of membrane between coria usually dark; lunate transverse white vitta across membrane often obsolete and reduced to lateral spots; male genitalia as in figs. 12, 31 ..... **albosignatus**
Eyes prominently elevated above head surface (fig. 4); inner vein of corium usually darkened for some distance anterior to posterior end of claval commissure; anterior portion of membrane usually pale or at least with a pale spot; pale lunate vitta on membrane complete; genitalia as in figs. 11, 29, 30 ..... **nigrolineatus**

18. Scutellum completely pruinose ..... **lobatus**
Scutellum shining on median carina and adjacent areas on distal 1/4 19

19. Dark macula on hemelytral membrane not attaining lateral margins, latter broadly pale (Asia) ..... **punctatus**
Dark membranal macula broadly attaining lateral margins (Africa) ..... **nigrolineatus**

20. Hemelytra predominately light brown or yellow, at most with veins of membrane and distal 1/3 of corium darkened, never with a variegated contrasting black or brown and white pattern on hemelytra (occasional specimens of *burmanus* and *exilis* show an obscure darkening on the membrane mesally but not a sharply contrasting macula and the veins in the area in such cases are always much darker and strongly contrasting) 21
Hemelytra dark brown or with a variegated black or brown and white pattern usually including a large central dark membranal macula 30

21. Radial vein dark brown, shining throughout and coalescing distally with shining apical corial margin; membrane including veins uniformly dull brown throughout ..... **brunneus**
Radial vein generally nearly unicolorous with adjacent areas of corium and shining only on anterior 2/3 or if appearing shining throughout then membrane including veins not unicolorous dull brown 22

22. Labium short, not extending posteriorly to fore coxae ..... **rufipes**
Labium more elongate, always extending between fore coxae and usually attaining posterior margin of mesosternum 23

23. Pronotum strongly produced laterally anterior to transverse impression, conspicuously wider across calli than across humeri; or if only slightly wider across calli in macropters, then large species, over 8.1 24
Pronotum nearly parallel sided from humeri to area of calli with width across calli subequal to that across humeri; or if somewhat wider across calli then small species, under 7.6 25

24. Broad rather flattened species; pronotal calli smooth and glabrous with 3 foveate depressions present; apex of tylus exceeding apex of 1st antennal segment ..... **hoberlandti**
Elongate, more linear, not conspicuously flattened; pronotal calli without foveate depressions, shallowly punctate, often conspicuously pubescent; apex of tylus at most attaining apex of 1st antennal segment ..... **maai**

25. Veins of membrane light to dark brown, contrasting with yellowish to testaceous ground color of membrane, or if membrane with brown macula then veins nearly unicolorous

brown 26

Veins of membrane transparent or testaceous, unicolorous or nearly so with ground color of membrane 28

26. Legs dark chocolate brown to nearly black; distal 1/3 of corium nearly uniformly chocolate brown ..... **exilis**

Legs nearly uniformly pale yellow to light brown; distal 1/3 of corium testaceous at least on lateral 1/2 (some specimens of *burmanus* have the distal 1/3 of the corium darkened but in such cases the pronotum is wider than long) 27

27. Stout, robust species, body length less than 5 times humeral width; labium reaching onto anterior margin of mesosternum, 2nd segment nearly reaching anterior margin of fore coxae; ♂ with "button-like" protrusion mesally on sternum 4 (3rd visible) ... . **burmanus**

Elongate, slender species, body length at least 5.4 times humeral width (usually 6 or more times); labium shorter, not exceeding fore coxae, 2nd segment barely surpassing base of head; ♂ lacking protrusion on 4th sternum..... **australis**

28. Distal 1/4 of corium dark fuscous, strongly contrasting with pale testaceous proximal area; ♂ with a prominent "button- like" protrusion mesally on abdominal sternum 3..... **obnubilis**

Entire corium uniformly light testaceous, lacking dark fuscous coloration apically; ♂ lacking a median sternal protrusion 29

29. Body relatively short and stout, only 4 times as long as wide..... **consimilis**

Body relatively elongate and slender, at least 5 times as long as wide..... **pronotalis**

30. Pronotum with a deep non-punctate median groove running longitudinally on midline between calli; hind femora generally conspicuously armed with small spines (except in *dilutus*) (*raja* complex) 31

Pronotum lacking a deep median non-punctate longitudinal furrow between calli, sometimes with 1 or 2 rows of indented punctures in the area forming a shallow groove or with a fine impressed line on either side of meson, or if appearing grooved, then ♂ hind femora with a swollen protrusion midway along ventral margin (see *spinimanus*); with or without spines on posterior femora (*spinimanus* complex)..... 37

31. Middle and hind femora mutic ..... **dilutus**

Middle and hind femora spinose..... 32

32. Middle and hind tibiae light yellow to testaceous, strongly contrasting with dark femora..... **raja**

All tibiae dark brown to black, unicolorous or nearly so with dark femora (posterior tibiae sometimes lighter brown on distal 1/2) 33

33. Clavus and at least anterior 1/3 of corium nearly uniformly opaque white..... **crassifemur**

Clavus and/or anterior 1/3 of corium with at least veins contrastingly dark brown.....34

34. Membrane with a large, round, dark median macula not attaining lateral margins and separated from basal dark area by a broad, transverse, pale, lunate vitta adjacent to apex of corium (the vitta sometimes interrupted with diffuse narrow brown areas) ... . **philippinensis**

Membrane dark coloration not a distinct, black, round spot, entire basal 2/3 of membrane black, or with at most a small light area at extreme base adjacent to distal end of corium and a small diffuse light area in center of disc; dark membranal area broadly in contact with lateral margins 35

35. Antennae relatively short, length of segment 2 equal to or barely greater than interocular distance..... **comosus**

Antennae relatively long, length of segment 2 at least 1.33 times interocular distance 36

36. Large, robust species (8.28–10.92); pronotum noticeably wider across area of calli than across humeral angles; length of pronotum subequal to basal width; metathoracic scent gland auricle short, broad, very slightly curving anteriorly ..... **major**
Smaller, less robust species (7.56); distance across pronotal calli subequal to width across humeral angles; length of pronotum greater than basal width; scent gland auricle narrow, linear, strongly curving anteriorly..... **minor**
37. Labium very short, remote from fore coxae; ♂ with extremely elongate, curving spines distally below on hind femora..... **varipennis**
Labium extending caudad to or beyond fore coxae; hind femoral spines, if present, very short and stout..... 38
38. At least anterior 1/4 of corium uniformly dark brown ..... **umbrosus**
Anterior 1/4 of corium with some pale markings or areas present..... 39
39. Membrane chiefly black from base to apex, dark coloration extending to apical and lateral margins along entire membrane except in area of ovoid white spot at distal end of corium 40
Large dark macula on membrane, for the most part remote from apical and lateral margins (sometimes attaining lateral margin across subapical 1/3) 41
40. Length of body greater than 7.0 ..... **praecerptus**
Length of body less than 6.5..... **lacertosus**
41. Scutellum with antero-lateral angles produced into upward-tipped, shining tubercles (sometimes very inconspicuous); antennae with at least segments 1 and 2 pale yellow 42
Scutellum lacking lateral tubercles; all antennal segments red-brown to black 43
42. Small species, under 6.25 (range 4.23–6.24); ♂ with a swollen protrusion midway along ventral margin of hind femur; legs usually chocolate to yellowish brown ..... **spinimanus**
Larger species, over 6.5 (range 6.48–6.90); ♂ lacking swollen protrusion on hind femur; legs usually bright yellow ..... **yoshimotoi**
43. Labium exceeding fore coxae; ♂ with hind femora mutic; clavus nearly uniformly light brown ..... **simoni**
Labium not extending caudad of fore coxae; ♂ with a series of spines on hind femur; clavus with distal 1/2 pale between veins..... **lacertosus**

Key to known species of Macropes fifth instar nymphs

1. TM5 present and well developed; TM6 (and TM5 in *raja* and *major*) fused with posterior spot of TML row.....2
TM5 absent; TM6 well separated from posterior spot of TML row.....4
2. Spines on fore femora simple, no bifid spine present below on distal 1/4; TPC spots absent on tergum 5, and represented by a very minute dash on 6 3
Fore femora armed below with a bifid spine on distal 1/4; TPC row present as distinct longitudinal dashes on both terga 5 and 6 ..... **major**
3. TL7 widely distinctly separated from TM7; TM5 widely separated from posterior TML spot; TPC present only as a small narrow longitudinal dash on tergum 6..... **crassifemur**
TL7 completely fused with TM7 to form a single large plate covering nearly entire tergum; TM5 and posterior TML spot fused into a rectangular to ovoid spot; TPC row with distinct longitudinal dashes on terga 5 and 6, sometimes a tiny dash on tergum 4 ..... **raja**
4. TL6 present (if large but indistinct, then abdominal terga 8 and 9 produced posteriorly into sharp points) 5
TL6 absent or reduced to small spots; abdominal terga 8 and 9 never produced posteriorly into sharp points.....7
5. Anterior 2/3 of wing pads white (except at extreme base), strongly contrasting with

dark brown posterior area; abdomen with strongly contrasting white, red and black pattern; fore femora with bifid spine below on distal 1/4 ..... **albosignatus**

Wing pads unicolorous brown; abdomen lacking strongly contrasting white, red and black markings; fore femora without bifid spine below 6

6. TPC row absent; TML7 absent; abdominal terga 3-5 variegated red and yellow; caudo-lateral angles of 8th and 9th abdominal terga produced into posteriorly directed sharp points ..... **australis**

TPC row well developed; TML7 present; abdominal terga 3-5 uniformly brick red; 8th and 9th terga not produced into points ..... *M.*? sp. (S. Africa)

7. Tergum 7 completely covered with a single large sclerite ..... **varipennis**

TM7 and TL7 narrowly but distinctly separated for greater part of length 8

8. TM7 extending to and broadly in contact with posterior margin of tergum 6 9

TM7 usually not extending anteriorly to tergum 6, at most very narrowly in contact with posterior margin of tergum 6 at midline 11

9. TM6 reduced to a small mesal spot ..... **burmanus**

TM6 a conspicuous transversely elongate bar 10

10. Pronotum and wing pads uniformly dark red-brown; fore femora with a single spine on inner face at distal 1/3 (in addition to major outer row of spines) ..... **punctatus** (?)

Pronotum dark red-brown but basal 2/3 of wing pads yellowish brown, contrasting with pronotum; fore femora with inner row of 3 sharp spines below (in addition to major outer row) ..... **yoshimotoi** (?)

11. Pronotum and basal 1/2 of wing pads flavescent, contrasting with dark brown apical 1/2 of wing pads; antennae with at least segment 1 light yellow, contrasting with darker brown succeeding segments ..... **subauratus** (?)

Pronotum and wing pads uniformly red-brown or yellowish brown; antennae dark brown 12

12. TMA7 absent, TML7 represented by 2 transversely ovoid widely separated lateral spots; TM7 narrowly in contact mesally with posterior margin of sternum 6; SM4 present as an irregular round spot ..... **lobatus** (?)

TMA7 and TML7 fused across meson (sometimes very narrowly); TM7 not reaching posterior margin of sternum 6; SM4 absent 13

13. TPC row present as distinct round spots; SM5 present as an irregular round mesal spot ..... **privus**

TPC row absent; SM5 absent or reduced to a few tiny dots ..... **obnubllis**

Macropes crassifemur Slater and Wilcox, new species

Body elongate, parallel sided; head and pronotum black, shining, becoming dark red-brown on posterior pronotal lobe; scutellum dull gray pruinose except along lateral margins on distal 1/2 and on median elevation; abdomen, legs, tylus and antennal segments III and IV dark red-brown to black, becoming lighter toward distal end of tibiae and femora; antennal segments II and III light yellow-brown; clavus and anterior 2/3 of corium opaque white, clavus slightly infuscated at anterior end and with a thin black line present near inner claval margin on anterior 1/3, posterior 1/3 of corium infuscated with brown, membrane brown except narrowly white at base and becoming slightly lighter along lateral and apical margins; head and pronotum anteriorly, laterally and across transverse impression shallowly punctate, calli nearly smooth, shallowly rugulose laterally, scutellum obscurely punctate basally and laterad of median elevation; body very sparsely clothed with short semi-decumbent sericeus hairs.

Head non-declivent, moderately convex across vertex, eyes small, ovoid, set well away from antero-lateral pronotal angles, tylus reaching distal 1/3 of 1st antennal segment, length head

.70, width .79, interocular space .52; pronotum subquadrate, lateral margins nearly parallel sided from humeri to calli area, slightly sinuate in area of transverse impression, strongly convexly narrowing anteriorly, anterior lobe with distinct longitudinal groove, transverse impression broad, shallow, complete, posterior margin nearly straight with slightly produced lobes laterad of scutellum, length pronotum 1.54, width 1.62; scutellum with wide prominent median elevation on distal 1/2, depressed laterad of elevation, lateral margins upturned on distal 1/2, length scutellum .68, width .76; hemelytra with lateral corial margins straight, slightly tapering from base to well rounded apex, membrane reaching 1/2 way onto 6th abdominal tergum, distance apex clavus - apex corium 1.22, apex corium - apex abdomen 2.66; fore femora enormously incrassate, block-like, armed below along entire length with 2 irregular rows of sharp, stout spines, middle and hind femora armed below on distal 1/3 of inner face with 2 short stout spines; metathoracic scent gland auricle large, elongately ovoid, slightly curving anteriorly; labium extending just beyond fore coxae, not attaining posterior margin of prothorax, 1st segment nearly attaining base of head, length labial segments I .50, II .40, III .34, IV .42; antennal segments II and III very slightly clavate, IV narrowly fusiform, length antennal segments I .24, II. 58, III .50, IV .64; total length 7.76.

Holotype ♂ PAKISTAN: Quetta, Bostan, 19.VIII.1967, Grass "Narkal" (I. Ahmad). In British Museum (Natural History).

Paratypes 1 ♂ same data as holotype - 1 ♂ Quetta, 18.VIII.1967, Narkal (I. Ahmad) - 1 ♂ same but 19.VIII.1967 - 1 ♂, 1 ♀ Quetta, Hanna, 19.VIII.1967 (I. Ahmad). In I. Ahmad and J. A. Slater collections.

This species is a member of the *raja* complex but is easily separated from the other species by its nearly uniformly white clavus. All the related species have at least the claval veins contrasting dark brown as in *raja*. The paratype series of *M. crassifemur* shows a great deal of variation in membranal coloration. Five of the seven specimens have the membrane chiefly white with a small diffuse discal brown spot which varies in size. However, we find no morphological differences in the series and feel that a single species is represented which shows gradations in the membrane coloration.

The dark membrane coloration is similar to the condition described by Motschulsky (1859) for *M. dentipes*, but that species is said to be even smaller than *spinimanus*, one of the smaller species in the genus (4.23-6.24).

Crassifemur is most closely related to *raja*, agreeing with it in general form and color except as previously noted. It also differs in having brown rather than yellow tibiae which contrast with the dark femora. The fore femora of this species are much more strongly incrassate, block-like and heavily spined than in *raja*, and *raja* has more numerous and prominent spines on the middle and hind femora.

Crassifemur can be separated from *major* by its smaller and less robust appearance (total length *major* 8.28-10.92; *crassifemur* 7.32-7.96), by its less spinose middle and hind femora, by the subquadrate shape of the pronotum (distinctly wider across the calli area in *major*) and by having antennal segments I and II distinctly lighter than III and IV whereas in *major* the antennae are nearly unicolorous brown although IV is sometimes darker.

Crassifemur differs from *M. minor* in the latter having prominent spination on the middle and hind femora, antenna II black, the scent gland auricle strongly curved anteriorly as a crescent (ovoid and not strongly curved in *crassifemur*) and having more extensive dark markings on the wing with contrasting dark veins on the clavus and corium.

Philippinensis differs from this species by having the veins and the anterior third of the clavus dark brown, antennae nearly unicolorous dark brown to black and much longer and more robust antennae (total length antennae/interocular space more than 5.0; less

than 4.0 in *crassifemur*).

Crassifemur can be separated from *comosus*, which it somewhat resembles in the dark wing condition, by the latter having a completely dark clavus and antennae, transverse pronotal impression with very deep distinct punctures (shallowly punctate in *crassifemur*), relatively long labium which extends to the posterior margin of the prosternum with the first segment surpassing the base of the head by one-third its length, and by having much longer and by having thicker hairs on the body.

From *dilutus* it can be distinguished by the presence of middle and hind femoral spines. These are absent in *dilutus*.

The species in this complex are quite similar in many respects but can be separated by the above characters and the characters given in the key.

Description of Nymphs

Fifth instar: (pinned) Quetta, Hanna

Head, pronotum, scutellum, wing pads except mesal 1/3, femora, tibiae, and antennal segments 3 and 4 dark red-brown to black, becoming yellow to yellowish brown on distal ends of femora and tibiae, all of antennal segments 1 and 2 and mesal 1/3 of wing pads; abdominal terga 1, 2, 6 and 7 reddish, 3-5 diffusely variegated, yellowish anteriorly, reddish posteriorly, sternum with similar color pattern; SG sclerites small, irregularly elliptical; TM 5 large, trianguloid; TM6 rectanguloid, narrowing to nearly straight anterior margin, occupying posterior 1/2 of tergum, TL6 prominent, ovoid; TM7 large, rectangular, covering nearly entire tergum and in contact with tergum 6 along entire anterior margin, well separated from large elliptical TL7 which extends anteriorly slightly beyond TM7, TA7 and TMA7 absent or fused with TL7; TML spots large, rounded; TPC row absent; SM6 large, triangular, reaching anterior margin of sternum; SM7 quadrate, in contact with SM6 along entire anterior margin, SL7 prominent, irregularly elongate-ovoid, not extending to anterior margin of sternum; SML row large, prominent; SPC row with tiny comma-shaped spots; length head .60, width .54, interocular space .48; length pronotum 1.04, width .90; wing pad extending to posterior 1/3 of 2nd abdominal tergum, length wing pad 1.48; length abdomen 3.90; fore femora strongly incrassate, armed below with 2 rows of sharp, stout spines, no bifid spine present; labium reaching well onto mesosternum, 3rd segment extending between fore coxae, length labial segments I .44, II .34, III .28, IV .38; antennae stout, terete, segment IV narrowly fusiform, length antennal segments I .18, II .46, III .38, IV .56; total length 6.48.

In the series of six pinned fifth instar nymphs there is very little variation in color or form except that one specimen has the abdomen chiefly yellowish, lacking reddish coloration.

Macropes philippinensis Distant Fig. 9.

1909, *Macropes philippinensis* Distant, *Rec. Ind. Mus.* **3**: 165.

This species is closely related to *raja* and *major*. It is a considerably larger and more robust species than *raja* with more strongly spinose fore femora. The clasper is as in fig. 9.

DISTRIBUTION: endemic to the Philippines.

MATERIAL EXAMINED: Holotype "P. I."- *Luzon*: Mt. Polis, 2400′ (G. Bottcher) - Camarines Sur, Mt. Iriga 500-600 m (H. M. Torrevillas)- Baibalan 4,000′ (G. Bottcher) - Lubuagan 3,500′ (G. Bottcher) -"Semov"- Mt. Makiling, Laguna (R. Shuster) - Mt. Makiling (Baker) - Los Banos (P. L. Baker) - *Negros*: Victorian occ. - *Mindanao*: Bukidnon, 1250 m, Mt. Katanglad (L. W. Quate) - Mt. Province, Mayoyab, Ifugao, 1,200-

1,500 m (H. M. Torrevillas) - E. slope Mt. McKinley, Davao Province, 3,300, on flowers (H. Hoogstraal). In British Museum (Natural History), United States National Museum, Bishop Museum and J. A. Slater collections.

Macropes major Matsumura Fig. 20.

1913, *Macropes major* Matsumura, *Thous. Ins. Japan Addit.* **1**: 144.
1914, *Macropes fossor* Bergroth, *Ent. Mit.* **3**: 356-7.

This is a very large, robust species (8-11) closely related to *philippinensis* but readily separable by the characters given in the preceding key. The pygophore opening is as in fig. 20.

Description of Nymphs

Fifth instar : (pinned) Taiwan

Head, pronotum, scutellum, apical 1/3 of wing pads, legs and antennal segments III and IV dark brown with remainder of wing pads, antennal segments I and II, tarsi and distal ends of femora testaceous; abdomen variegated reddish brown with testaceous areas mesally on tergum 1 and antero-laterad on terga 3-5, tergum 5 deep pink adjacent to SGP and laterad of TM5, tergum 6 nearly uniformly deep pink, yellowish laterad; SG sclerites small, subquadrate; TM7 and TL7 fused basally, nearly covering entire segment, very narrowly separated on anterior 1/4; TM6 broad, transversely quadrate, slightly narrowed anteriorly, fused with posterior spot of TML row on tergum 6, TL6 ovoid, reaching nearly 1/2 way to anterior margin of segment; TM5 well developed, fused with spots of TML row to give appearance of subquadrate sclerite with lateral margins concave, anterior margin sinuate, posterior margin nearly straight; TML spots round, anterior spots on tergum 6 irregular, transversely elongate, narrowly in contact with SG sclerites; TPC row with small longitudinally elongate dashes; SM7 broad, quadrate, reaching anterior margin of sternum 7, well separated from SL7, the latter covering outer 1/2 of preconnexival segment, narrowing anteriorly to a blunt point; SM6 broad, quadrate, reaching anterior margin of sternum 6, lateral margins irregular; SM5 transversely elongate, narrowing on midline to give a "lobed" appearance; SML row prominent, spots round to ovoid; SPC with irregular elongate dashes; fore femora incrassate, armed below with 2 rows of sharp spines, large bifid spine present on distal 1/4, middle and hind femora with a few short spines; labium reaching anterior margin of mesosternum; clothed with semi-decumbent sericeus hairs; length head .70, width .86, interocular space .58; length pronotum 1.10, width 1.86; wing pads extending over anterior 2/3 of 2nd abdominal tergum, length wing pads 1.84; length abdomen 5.44; length labial segments I .52, II .42, III .32, IV .42; length antennal segments I .24, II .63, III .66, IV .98; total length 8.44.

Fourth instar : (pinned)

Coloration and markings very similar to 5th instar; legs lighter brown, antennal segments 1 and 2 creamy white with red spots; length head .52, width .70, interocular space .46; length pronotum .74, width 1.18; wing pads extending 1/2 way over 1st abdominal tergum, length wing pads .74; length abdomen 1.48; length labial segments I .42, II .32, III .26, IV .34; length antennal segments I .16, II .43, III .42, IV .70 ; total length 4.86.

DISTRIBUTION : *M. major* and the junior synonym were both described from Taiwan and previously known only from there. However, it occurs in mainland China as well.

ADDITIONAL MATERIAL EXAMINED : TAIWAN : Ali Shan (Arisan), Tainan Dis. 2,200 m (L. Gressitt & Y. C. Wen) - N. Tsaoshan (Sozan), 200-300 m (Gressitt & T. C. Maa).

CHINA: Mokansan, Che Kiang Pr. (Mrs. Dora E. Wright) - Kouy-Tcheou De Pin-Fa (Père Cavalerie) - Hong Kong, N. T., Taipokau, Kowloon (Lee Kit Ming & Hui Wai Ming). In Bishop Museum, California Academy of Sciences, Paris Museum and J. A. Slater collections.

Macropes raja Distant

1909, *Macropes raja* Distant, *Ann. Mag. Nat. Hist.* (8) **3**: 323.

This species is closely related to *philippinensis* and distinguishable chiefly by its smaller size, light colored tibiae and less strongly spinose fore femora. The corium is pale yellowish with contrasting dark fuscous coloration narrowly along the apical corial margin and on the posterior half of each of the principal corial veins. Both adults and the 4th instar nymph have been described and figured by Slater, Ashlock and Wilcox (1969). We have subsequently examined two 5th instar nymphs from Laos which are very similar to the 4th in form and color with the wing pads extending onto the anterior portion of abdominal tergum three. The measurements are as follows: length head .56, width .70 interocular space .46; length pronotum .92, width 1.24; length wing pad 1.50; length abdomen 4.14; length labial segments I. 30, II .30, III .26, IV .36; length antennal segments I .22, II .46, III .44, IV .78; total length 6.64.

DISTRIBUTION: *M. raja* was originally described from Calcutta, India. It appears to be widely distributed in southeast Asia as Slater, Ashlock & Wilcox (1969) report specimens from numerous localities in Laos, Thailand and Annam and report a record from Java.

ADDITIONAL MATERIAL EXAMINED: JAVA: Soekaboemi (E. Le Moult). LAOS: Pakse (P. D. Ashlock). In Leiden Museum and J. A. Slater collections.

Macropes dilutus Distant Fig. 27, 28.

1901, *Macropes dilutus* Distant, *Ann. Mag. Nat. Hist.* (7) **8**: 467.

This is a smaller species than *raja* and it lacks spines on the middle and hind femora, possesses a completely darkened apical fourth of the corium and has unicolorous dark brown to blackish femora and tibiae. The sperm reservoir is as in fig. 27, 28.

DISTRIBUTION: *M. dilutus* was originally described from north India and subsequently reported by Distant (1904) from Burma, by Breddin (1907) from Ceylon and by Slater, Ashlock and Wilcox (1969) from Ceylon, Thailand and Viet Nam.

ADDITIONAL MATERIAL EXAMINED: BURMA: Bhana Birmania (Lea). CEYLON: Anuradhapura (W. Horn) - Andankulam, Trincomalee. S. INDIA: Tenmalai, 500-800′ (Travancore B. M.-C. M. Expdn.). In British Museum (Natural History), Deutsches Entomologisches Institute, Ceylon Museum and J. A. Slater collections.

Nothing is known of the variety *dilutus nesiotes* Breddin and we have been unable to locate the type specimen.

Macropes comosus Slater, Ashlock & Wilcox

1969, *Macropes comosus* Slater, Ashlock & Wilcox, *Pacif. Ins.* **11** (3-4): 678, 680-1.

This is a relatively small member of the *raja* complex and is closely related to *dilutus* and *minor*. It possesses spines on the hind femora and has a completely dark clavus. The scent gland auricle is ovoid and not strongly curved forward as it is in most other species of the

complex. The dorsal pubescence is also much longer and more upstanding than in either *dilutus* or *minor*.

DISTRIBUTION: Originally described and known only by the type material from Cambodia.

Macropes minor Slater, Ashlock & Wilcox

1969, *Macropes minor* Slater, Ashlock & Wilcox, *Pacif. Ins.* **11** (3-4): 678-9.

This small species is closely related to *dilutus* in general habitus, but may readily be distinguished by the spined middle and hind femora, much more strongly incrassate and angulate fore femora, tylus not attaining distal end of the first antennal segment and in details of color as discussed in the original description.

DISTRIBUTION: *M. minor* was described from Viet Nam and remains known only from there.

Macropes lobatus Slater, Ashlock & Wilcox Fig. 1, 25, 26.

1969, *Macropes lobatus* Slater, Ashlock & Wilcox, *Pacif. Ins.* **11** (3-4): 682.

This is a much smaller species (♂ 6.0-7.36, ♀ 6.08-7.44) than the closely related *punctatus*. It usually has much shorter antennae and the posterior pronotal lobes are usually relatively broader and more produced. Antennal segments II-IV are red-brown on most specimens whereas in *punctatus* they are black. Characters given in the preceding key will readily serve to recognize this species. The sperm reservoir is as in fig. 25, 26.

Nothing is known of the biology other than a collecting note "on grasses."

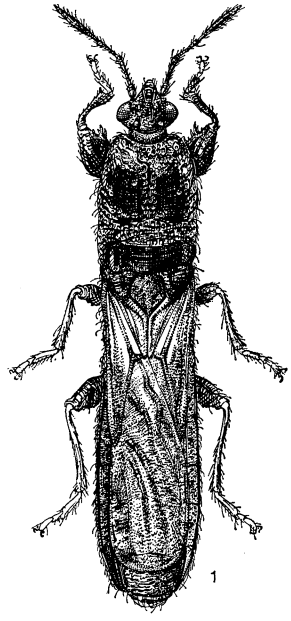

Fig. 1. *Macropes lobatus*, dorsal view.

Description of Nymphs

Fifth instar: (pinned) Viet Nam

Head, pronotum, scutellum, wing pads and antennae red-brown, legs light brownish yellow; abdomen above and below nearly uniformly light brick red; SG sclerites large, quadrate; TM7 broad, quadrate, anterior margin scalloped, barely reaching sternum 6 at midline, narrowly but distinctly separated from TL7, the latter broad, rounded at anterior end, nearly reaching segment 6, TMA7 separated into 2 transversely tear-shaped spots, TA7 absent; TM6 transversely elongate, in contact with posterior margin of tergum, TL6 absent; TML and TPC rows large, prominent, spots of latter smaller and more elongately ovoid; SM7 broad, quadrate, reaching sternum 6, well separated from SL7, the latter covering most of posterior 1/2 of segment, narrowing anteriorly, nearly reaching SPC spot; SM6 and SM5 irregularly rounded, not reaching posterior or anterior margins of sterna; SM4 present as a small irregular spot on meson; SML and SPC rows large, prominent; fore femora incrassate, armed below with 2 rows of stout

spines; labium extending well onto mesosternum, 2nd segment nearly attaining fore coxae; length head .44, width .62, interocular space .41; length pronotum .87, width 1.06; wing pads extending over anterior 1/2 of tergum 3, length wing pads 1.12; length abdomen 2.62; length labial segments I .42, II .36, III .30, IV .27; length antennal segments I .15, II .27, III .28, IV .50; total length 4.52.

DISTRIBUTION: *M. lobatus* was originally described from Hong Kong, Thailand, Sumatra and Viet Nam.

ADDITIONAL MATERIAL EXAMINED: INDIA: Anamalai Hills, Cinchona (P. S. Nathan). BURMA: Sadon, N. E. Burma, 1,200 m (Malaise). VIET NAM: Mt. Lang Bien (N. R. Spencer). In Stockholm Museum and J. A. Slater collections.

Macropes punctatus (Walker) Fig. 2.

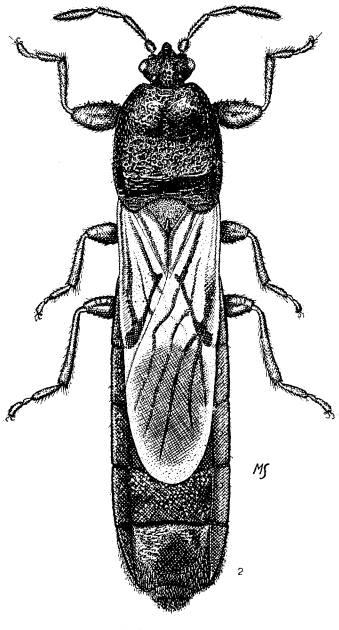

Fig. 2. *Macropes punctatus*, dorsal view.

1872, *Ischnodemus punctatus* Walker, *Cat. Hem. Het. B. M.* **5**: 132.

1901, *Macropes punctatus*: Distant, *Ann. Mag. Nat. Hist.* (7) **8**: 467.

Elongate, robust, parallel sided; head, pronotum and scutellar median elevation black, shining, with pronotal humeral angles and distal end of scutellum red-brown, remainder of scutellum dull gray pruinose; antennae, legs and abdomen above and below dark red-brown to black with tarsi and distal ends of femora and tibiae lighter brown; hemelytra creamy white with strongly contrasting dark brown veins except anterior 1/2 to 2/3 of radial vein yellowish, lateral area of corium including radial vein shining, membrane with a large black to brown central macula, narrowly pale translucent along lateral margins and at apex, area anterior to distal ends of coria concavely pale and opaque with veins strongly contrasting dark brown to black; head, pronotum and scutellum coarsely punctate except across pronotal humeri, conspicuously so on transverse pronotal impression and antero-lateral areas, a distinct longitudinal series of punctures mesally between calli; very sparsely clothed with short decumbent hairs.

Head non-declivent, acuminate, tylus broadened distally, reaching 1/2 way to distal end of 1st antennal segment, bucculae not protruding away from distal end of tylus, eyes ovoid, set slightly away from antero-lateral pronotal angles, length head .82, width 1.06, interocular space .70; pronotum subelliptical, with lateral margins slightly concave from humeri to calli area, then evenly curving inward to "angled" antero-lateral area, transverse impression broad, shallow, complete, anterior lobe with indistinct median groove, posterior margin lunately concave with posterior lobes strongly produced laterad of scutellum, length pronotum 2.18, width 2.04; scutellum with shallow median elevation on distal 1/3, length scutellum .74, width .80; hemelytra with lateral corial margins nearly parallel, membrane bluntly rounded, reaching posterior margin of abdominal tergum 5, distance apex clavus - apex corium 1.60, apex corium - apex abdomen 5.6; fore femora incrassate, armed below with a single row of stout, sharp curving spines, a bifid spine usually present on distal 1/4, fore tibiae robust, clavate, prominent hooked spines present at distal ends, spines on middle and hind femora obsolete,

barely discernible; metathoracic scent gland auricle small, ovoid; ovipositor sclerites relatively long, nearly attaining posterior margin of sternum 5, greatly constricting sternum 6 mesally; labium reaching between fore coxae, remote from anterior margin of mesosternum, 1st segment not attaining base of head, length labial segments I .58, II. 50, III .44, IV .46; antennae stout, segments 2 and 3 nearly terete, 4 narrowly fusiform, length antennal segments I .30, II .72, III .50, IV .82; total length 8.0-11.08.

Punctatus is most easily distinguished by its large size and heavily punctate pronotum with strongly produced caudo-lateral lobes. It is most closely related to *alternatus* and *lobatus* but readily distinguishable by the characters discussed under the latter species.

Collection records cited below indicate that this species occurs on both bamboo and *Saccharum.*

Description of Nymphs

Fifth instar: (pinned) Pakistan

Head, pronotum, scutellum, wing pads and femora reddish brown with apex of tylus and distal 1/3 of fore femora flavescent; abdomen brick red with bright yellow patches mesally on tergum 1 and on anterior 1/2 of terga 3-5 laterad of TML row: SG4-5 ovoid, SG5-6 subrectangular, SGA twice as large as SGP; TM7 very broad, truncate, reaching anterior margin of tergum, TL7 well developed, extending nearly to anterior margin, rounded at anterior end; TM6 transversely elongate, TL6 absent; TML row with large round to ovoid spots; TPC row with longitudinally elongate dashes and spots; SM7 broad, truncate, slightly narrowing anteriorly, in contact with posterior margin of sternum 6, SL7 elongate, narrowing anteriorly, reaching 1/2 way along segment, inner margin crenulate, well separated from SM7; SM6 triangular, nearly reaching anterior margin of sternum 6, SML row with prominent round to irregularly ovoid spots, SPC row reduced to small elongate dashes; fore femora armed below with a row of stout spines, lacking bifid spine, a single stout "extra" spine present on inner face at distal 1/3; labium reaching between fore coxae; length head .60, width .64, interocular space .42; length pronotum .76, width 1.0; wing pads extending midway onto 2nd abdominal tergum, length wing pads 1.36; length abdomen 3.60; length labial segments I .38, II .32, III .29, IV .28; antennae missing; total length 6.08.

DISTRIBUTION: *M. punctatus* was originally described without definite locality from north India and is here reported from Pakistan.

MATERIAL EXAMINED: Holotype "N. India" (British Museum (Natural History)). PAKISTAN: Pahari Binna, Rangamati (I. Ahmad)—Pahari Binna, Coxus Bazar (I. Ahmad)— Comilla, bamboo (I. Ahmad)—Rawalpindi, adults on *S. bengalense* (C. I. E. no. 17492) (=*Saccharum benghalense* Retz ? = *arundinaceum* Retz). In I. Ahmad and J. A. Slater collections.

Macropes albosignatus Distant Fig. 3, 12, 21, 31.

1918, *Macropes albosignatus* Distant, *Ann. Mag. Nat. Hist.* (9) **2**: 177.
1901, *Macropes sultanus* Distant, *Ann. Mag. Nat. Hist.* (7) **8**: 467. (?)

We had previously believed that *albosignatus* and *nigrolineatus* were conspecific. However, there are definite external and particularly genitalic differences that separate the two species (also see *bacillus* discussion).

Albosignatus has the opening of the male pygophore with an additional constriction near the anterior end and with the lateral margins evenly convex to the distal expansion (fig. 21) and

quite unlike the shape of the opening in *nigrolineatus* (fig. 19). The claspers of the two, although very similar, differ in the condition of the inner and outer lobes (fig. 11 & 12). The wings of the sperm reservoir are also distinctive (fig. 31).

Externally the two species are extremely similar and distinguishable chiefly by the characters given in the preceding key. The eye shape appears to be distinctive although it is difficult to use without representatives of both species available for comparison. The color characters while generally satisfactory are somewhat variable and occasional specimens show variation from the condition as given in the key.

The type of *sultanus* described from Zanzibar is very similar to *albosignatus* and the two may be conspecific. If this proves to be true, *sultanus* will of course have priority. However, in view of the unsatisfactory condition of this African complex we do not feel it desirable to establish formal synonymy at this time.

Slater and Wilcox (1973) note the host plant of *albosignatus* in South Africa and describe the immature stages.

As presently interpreted *albosignatus* is widely distributed in tropical Africa and extends southward into eastern South Africa.

Macropes nigrolineatus Distant Fig. 4, 11, 29, 30.

1918, *Macropes nigrolineatus* Distant, *Ann. Mag. Nat. Hist.* (9) **2**: 188.

Body slender, elongate, parallel sided; head, pronotum and scutellar elevation black, shining, becoming dark red brown across humeri, flavescent on posterior lobes, remainder of scutellum dull gray, pruinose; hemelytra creamy white marked with red-brown as follows: clavus except mesal 1/3 between veins, posterior 3/4 of inner corial vein, posterior 1/2 of outer vein, diffuse mesal spot on corium at level of apex of claval commissure, posterior 1/5 of corium, irregular narrow band across membrane sub-basally separated by pale lunate vitta from large brown macula covering most of membrane, broadly reaching lateral margins but remote from apex; antennae, legs and abdomen dark red-brown with antennal segments 1-3 narrowly lighter at distal end; head, pronotum and scutellum irregularly punctate, coarser punctures present in area adjacent to pronotal anterior margin and across transverse impression; very sparsely clothed with short semi-decumbent sericeus hairs.

Head wide, non-declivent, moderately convex across vertex, tylus broad, extending to distal

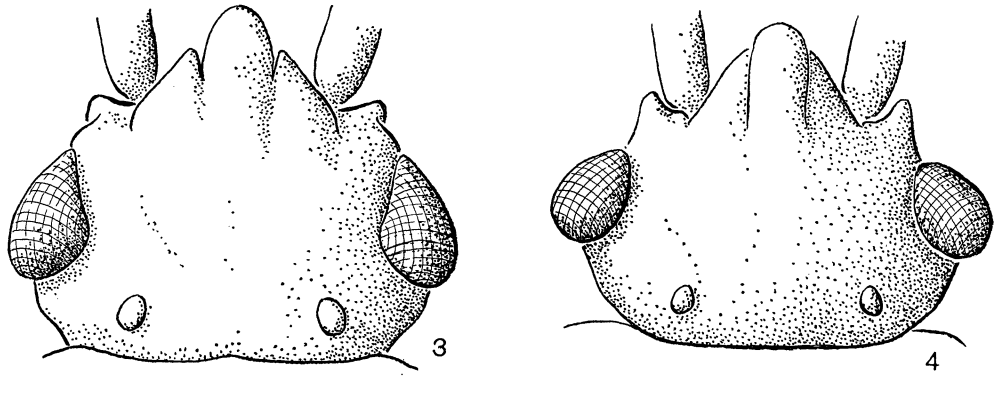

Fig. 3-4. 3, *Macropes albosignatus*, dorsal view, head. 4, *M. nigrolineatus*, dorsal view, head.

end of 1st antennal segment, eyes small, angled transversely, set well away from antero-lateral pronotal angles on broad lateral head extensions, ocelli prominent, length head .68, width .82, interocular space .53; pronotum long, lateral margins nearly parallel from humeri to calli, then angled, antero-lateral angles sharp, prominent, transverse impression broad, shallow, complete, posterior margin evenly concave with moderately produced posterior lobes laterad of scutellum, length pronotum 1.56, width 1.41; scutellum with median elevation on posterior 1/2, length scutellum .49, width .57; hemelytra with lateral margins parallel, non-tapering until well rounded apex, membrane nearly attaining anterior margin of 7th abdominal tergum; distance apex clavus-apex corium 1.03, apex corium-apex abdomen 2.96; fore femora strongly incrassate, armed below on distal 1/3 with a stout bifid spine, 7-8 additional thick spines present along ventral surface, fore tibiae thick, clavate with stout spines and a few smaller spines present distally, middle and hind femora mutic; metathoracic scent gland auricle rounded; labium reaching anterior margin of mesosternum, 1st segment attaining base of head, length labial segments I .51, II .39, III .36, IV .38; antennae stout, segments II and III slightly clavate, segment IV fusiform, length antennal segments I .19, II .44, III .42, IV .70; total length 7.44.

Specimens which can definitely be assigned to *nigrolineatus* are as follows: ZAMBIA: Congo Border, Tschinsenda (H. Silvester Evans). CONGO: Toumba, entre Matadi et Kinchassa, Mission Chari-Tchad (Dr. J. Decourse). SENEGAL: Niokola-Koba (Mission IFAN au Park National du Niokola-Koba). In J. A. Slater collection.

This species is closely related to *M. albosignatus* from which it can be separated by the smaller, more globose eyes (fig. 3, 4), characters of the genitalia (fig. 11, 19, 29, 30) and usually by the difference in color pattern of the wing as given in the key.

Macropes bacillus (Gerstaecker)

1873, *Ischnodemus bacillus* Gerstaecker, Decken's Reisen Ost. Afr. pp. 409-410.
1964, *Macropes bacillus* Slater, *Cat. Lyg. World* **1**: 494.

This species remains an enigma to us. It is closely related to *albosignatus* and *nigrolineatus* as is evidenced both by the original description and figure and by examination of the type. Unfortunately the type specimen in the Berlin-Humboldt Museum is badly mutilated with only the ventral portion of the abdomen and thorax and middle and hind legs present. The type is a male. Examination of the genitalia indicates that the claspers and pygophore opening are distinct from both those of *albosignatus* and *nigrolineatus*. The distal end of the pygophore opening is angulate rather than rounded laterally. The blade of the clasper is considerably broader than in *albosignatus* and with its inner margin bearing a series of small teeth. Until additional specimens with genitalia of the above type can be examined *bacillus* must remain a poorly understood species. The sperm reservoir indicates that it is most closely related to *albosignatus*.

Actually the whole complex of *albosignatus*, *nigrolineatus*, *bacillus* and *sultanus* is in a rather unsatisfactory condition which we believe will only be resolved by a study of considerable material from many localities.

Bacillus was described from Tanzania, the label on the type was "Lac Jife" which is on the Kenya, Tanzania border. But Gerstaecker in the original description states that it was taken between "Moschi und dem See Jife" indicating that it was from Tanzania. Villiers (1952) reported it from "Ubangi-Chari" but we have not examined the specimens and the record could refer to *albosignatus*.

Macropes alternatus Slater, new species

Body very elongate, robust, parallel sided; head and anterior pronotal lobe dark chocolate

brown to black; tylus, posterior pronotal lobe, legs, scutellar elevation and abdomen shining red-brown to castaneous, remainder of scutellum dull gray pruinose; hemelytra with lateral 1/3 of corium from immediately mesad of radial vein to lateral margin with exception of extreme distal end completely strongly shining, remainder of corium, clavus and concave basal 1/4 of membrane between coria dull, remainder of membrane contrastingly subshining; hemelytral coloration variegated, clavus, entire distal 1/2 of corium beyond level of distal end of claval commissure, entire shining lateral area of corium laterad of radial vein, and large mesal area of membrane except extreme base light reddish brown, a white spot immediately adjacent to apical corial angle and pale white to translucent lunate vitta across membrane immediately posterior to apical corial angle and very broad translucent membrane margin ; basal 1/2 of corium within radial veins as well as narrow lateral area of clavus adjacent to claval suture white, the cubital vein contrastingly light tan to testaceous, veins of membrane within darkened area a contrasting darker chocolate brown; pronotum shallowly and irregularly rugulose laterad on anterior lobe, coarsely punctate across transverse impression, remainder of pronotum smooth or with a few small obscure widely scattered punctures, lacking a median row of punctures between calli; scutellum coarsely irregularly punctate basally and laterad of median elevation; nearly glabrous above, very sparsely clothed with short, semi-decumbent or suberect sericeus hairs.

Head non-declivent, bluntly and nearly evenly tapering, bucculae large, visible from above and separated distally from apex of tylus, very slightly convex across vertex, eyes ovoid, set slightly away from antero-lateral pronotal angles, ocelli large, prominent, length head .70, width .88, interocular space .56; pronotum with lateral margins nearly parallel from humeral angles to anterior 1/3, then sharply angulately narrowing to anterior margin, transverse longitudinal groove between calli obsolete or absent, transverse impression broad, shallow, complete, posterior margin deeply lunately concave with lobes moderately produced laterad of scutellar base, length pronotum 1.66, width 1.60; scutellum with shallow median elevation on distal 1/2, length scutellum .68, width .68; hemelytra with lateral corial margins nearly parallel, membrane narrow, reaching over anterior 1/4 of 7th abdominal tergum, leaving connexivum exposed laterad, distance apex clavus - apex corium 1.34, apex corium - apex abdomen 3.10; fore femora incrassate, armed below with numerous sharp spines, a large bifid spine on distal 1/4, middle and hind femora with tiny spines and tubercles on ventral surface, fore tibiae stout, clavate, armed at distal end with a crown of short sharp spines, lacking a long hooked spine, shaft covered with small tubercles; metathoracic scent gland auricle short, broad, irregularly ovoid; labium barely extending to anterior margin of mesosternum, 1st segment not reaching base of head, length labial segments I .48, II .50, III .38, IV .50; antennae missing; total length 8.08.

Holotype ♂ INDIA: Trichinopoly (Jos. Dubreuil). In Hungarian Natural History Museum.

Paratypes 1 ♀ same data as holotype. S. INDIA: 1 ♀ Novuvaham (sp. ?) Nilgiri Hills, 6,000 ft., IV.1958 (P. S. Nathan). In P. D. Ashlock and J. A. Slater collections.

Alternatus is a member of the *punctatus* complex, having all femora spinose, the pronotum with posterior lobes produced laterad of the scutellum, the entire lateral area of the corium shining and with the anterior pronotal lobe lacking a conspicuous median groove.

This large species is closely related to *punctatus*, but differs in several color and structural features. In *alternatus* the hemelytral coloration is quite different from the condition found in *punctatus*. *M. alternatus* has a nearly completely dark corium posterior to the level of the posterior end of the claval commissure, and this dark coloration is continued anteriorly over the entire shining lateral corial area all the way to the base of the wing. The veins mesad of the

radius in the anterior half of the wing are pale and only slightly differentiated from the whitish corial ground color in this area. By contrast *punctatus* has the dark coloration reduced on the posterior half of the corium to the apical corial margin and the extreme apex of the corium but not including the extreme lateral margin. The radial vein is dark on the posterior third but the remainder of the lateral shining area is pale white to testaceous. The veins mesad of the radial vein on the anterior half of the corium are very dark chocolate brown at least on their posterior half. This gives a striped appearance to *punctatus* in contrast to a pale and dark patch effect in *alternatus*. In *punctatus* the anterior third of the membrane is pale with striking dark veins connecting the black mesal macula to the dark apical corial margin whereas in *alternatus* the anterior area of the membrane is dark, succeeded by a pale transverse lunate band, and the veins crossing this pale area from the dark mesal macula are pale and nearly unicolorous with the background coloration in this area. The clavus of *alternatus* is largely dark brown with at most a narrow pale stripe adjacent to the claval suture and a pale oblong central patch just within the first anal vein, whereas in *punctatus* the clavus is chiefly pale with dark margins. In *punctatus* there are distinct punctures present mesally between the calli and usually a few on the calli; in *alternatus* these areas are impunctate. In *punctatus* the juga lie flat against the sides of the tylus whereas in *alternatus* they project away from the tylus distally. *Punctatus* also has the tylus noticeably widened distally while it is nearly parallel sided in *alternatus*.

Macropes praecerptus Distant Fig. 5.

1904, *Macropes praecerptus* Distant, *Fn. Brit. Ind. Rhynch.* **2**: 26.

Body elongate, robust, parallel sided; head, pronotum and scutellar elevation black, shining, remainder of scutellum dull gray, pruinose; fore wing dark brown to black with testaceous markings as follows: mesally on posterior 1/2 of clavus and along corial suture, on anterior 1/2 of corium between cubital and medial veins, small diffuse spots at base of membrane, area adjacent to distal end of corium, and centrally on disc, with radial vein on anterior 1/2 of corium red-brown, raised and shining; antennae, tylus, legs and abdomen dark red-brown with tarsi becoming flavescent; head and pronotum shallowly and evenly punctate, scutellum with a few scattered punctures; clothed with short decumbent sericeus hairs.

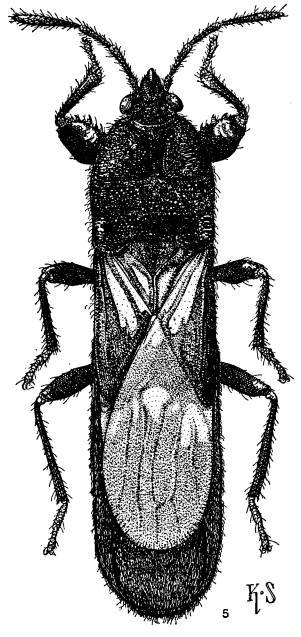

Fig. 5. *Macropes praecerptus*, dorsal view.

Head non-declivent, slightly convex across vertex, eyes prominent, set slightly away from antero-lateral pronotal angles on narrow lateral head extensions, tylus reaching distal end of 1st antennal segment, ocelli prominent, length head .68, width .84, interocular space .49; pronotum with lateral margins parallel on posterior lobe, then tapering arcuately and evenly to anterior margin (lacking "angled" appearance of *spinimanus*, etc.), posterior margin evenly concave with moderately produced lobes present laterad of scutellum, transverse impression broad, shallow, complete, anterior lobe with a faint median longitudinal "groove" or depression, length pronotum 1.60, width 1.63; scutellum lacking lateral spines, length scutellum .57, width .76; hemelytra with lateral corial margins slightly sinuate, nearly parallel, membrane tapering evenly to rounded apex, covering anterior 1/3 of 7th abdominal tergum, leaving connexivum partially exposed, distance apex clavus - apex corium 1.25, apex corium - apex abdomen 2.24; fore femur strongly incrassate, armed below with a large bifid spine on distal 1/3, numerous other short spines present along ventral sufrace, middle and

hind femora slightly incrassate, mutic; metathoracic scent gland auricle broad, rounded, bent slightly cephalad, slightly protrudant from body surface; antennae with segments II and III slightly clavate, IV fusiform, length antennal segments I .17, II .44, III .44, IV .80; labium reaching between fore coxae, 1st segment reaching base of head, length labial segments I .53, II .44, III .42, IV .38; total length 7.56.

This is a very distinctive species, and while the variegated color pattern might seem to place it in the *spinimanus* group, it has a resemblance to the *punctatus* group in many respects. The specimen from Laos is very similar to the holotype but has a very indistinct longitudinal groove and a more extensive T-shaped shining area on the scutellum. In the holotype the shining scutellar area is confined to the median elevation.

DISTRIBUTION: *M. praecerptus* was originally described from Burma and is here reported from Laos.

MATERIAL EXAMINED: Holotype BURMA: Carin Chebai (L. Fea) (British Museum (Natural History)). LAOS: Sayaboury Prov., Sayaboury (Native Collector, Rondon). In Bernice P. Bishop Museum.

Macropes brunneus Slater and Wilcox, new species

Body elongate, parallel sided; head; pronotum and scutellum black, shining, with tylus, broad area across pronotal humeri and distal end of scutellum red-brown, anterior 1/4 of scutellum dull gray pruinose, areas laterad of elevation with mixed pruinose and shining spots; femora dark chocolate brown, lighter at distal ends, tibiae and antennal segment I ochraceous (segments II-IV missing); hemelytra nearly uniformly dull smoky brown, almost entire membrane and clavus infuscated, radial and cubital veins of corium and apical corial margin strongly contrastingly shining, the radial vein prominently elevated for entire length and forming a conspicuous V-shaped juncture with narrowly shining apical corial margin; abdomen above and below red-brown to black, anterior pronotal lobe striate or rugulose laterad, transverse impression shallowly, irregularly punctate, area across humeri smooth, scutellum sparsely punctate anteriorly, coarsely so laterad of median elevation; thickly clothed with elongate upright and semi-upright sericeus hairs.

Head acuminate, very slightly convex across vertex, tylus slightly exceeding distal end of antennal segment I, eyes small, ovoid, prominently convex, set away from antero-lateral pronotal angles on narrow head extensions, ocelli large, prominent, length head .70, width .86, interocular space .54; pronotum with lateral margins parallel from humeri anteriorly to calli, then sharply arcuately curving mesally to anterior margin, anterior lobe with a conspicuous median groove, transverse impression broad, shallow, complete, posterior margin deeply lunately concave, lobes laterad of scutellum produced, length pronotum 1.70, width 1.68; scutellum with a prominent T-shaped elevation on distal 3/4, length scutellum .76, width .80; hemelytra with lateral corial margins parallel, membrane broadly rounded at apex, reaching 1/2 way onto 6th abdominal tergum, leaving connexivum partially exposed, distance apex clavus - apex corium 1.28, apex corium - apex abdomen 3.84; metathoracic scent gland auricle short, narrowly lobate; fore femora strongly incrassate, armed below with numerous sharp stout spines, large spine on distal 1/4 non-bifid, hind femur mutic; labium extending between fore coxae, not reaching onto mesosternum, 1st segment not attaining base of head, length labial segments I .45, II .38, III .32, IV .38; length antennal segment I. 10; total length 8.60.

Holotype ♀ INDIA: *Madras*: Pondichery. In Hungarian Natural History Museum.

We have had this very distinctive specimen for many years, but since additional material has not become available, with some reluctance we describe this new species based on a single female with the antennae and 4 of the legs missing. However the specimen is unique in several characters and clearly represents a distinct species. This species and *subauratus* are the only known *Macropes* which have both the cubital and radial veins of the corium as well as the apical corial margin completely contrastingly shining. Also it is the only species which has the fore wing nearly uniformly dull smoky tan except for the shining veins.

Brunneus does not fit well in any of the *Macropes* "groups" as they are currently defined, but appears in many ways to be related to the *punctatus* complex despite the lack of hind femoral spines.

Macropes privus Distant Fig. 10.

1909, *Macropes privus* Distant, *Ann. Mag. Nat. Hist.* (8) **3**: 325.
1918, *Macropes abbreviatus* Distant, *Fn. Brit. Ind. Rhynch.* **7**: 187.

Body robust, parallel sided; head, pronotum and scutellar median elevation black, shining, becoming dark red-brown across pronotal humeri, remainder of scutellum dull gray pruinose; apex of tylus, legs, antennae and abdomen dark red-brown to black, tarsi and apices of femora lighter; hemelytra with distal 2/3 of clavus except along inner margin, inner 1/2 of corium except veins and basal triangular area of membrane opaque white, remainder of clavus and corium suffused with light brown, membrane hyaline brown; head and pronotum finely punctate, more coarsely so across transverse impression, area of calli rugulose, scutellum with a few scattered punctures anteriorly; sparsely clothed with semi-decumbent sericeus hairs.

Head slightly declivent, moderately convex across vertex, eyes prominent, set slightly away from antero-lateral pronotal angles on lateral head extensions, tylus extending just beyond distal end of 1st antennal segment, length head .44, width .68, interocular space .42; pronotum with anterior lobe swollen, elliptical, antero-lateral area "angled," transverse impression broad, deep, set far back of center of pronotum, posterior margin shallowly concave, length pronotum 1.46, width 1.28; scutellum with a T-shaped median elevation, length scutellum .50, width .62; hemelytra with lateral corial margins slightly sinuate, membrane narrow, extending onto anterior 1/2 of 7th abdominal tergum, leaving connexivum well exposed, distance apex clavus - apex corium .94, apex corium - apex abdomen 1.54; fore femora greatly incrassate, armed below with 2 rows of stout sharp spines, lacking bifid spines on distal 1/4, middle and hind femora mutic; metathoracic scent gland auricle small, ovoid; labium just attaining posterior margin of mesosternum, 1st segment nearly reaching base of head, length labial segments I .38, II .34, III .38, IV .30; antennae with segments II and III slightly clavate, IV narrowly fusiform, length antennal segments I .14, II .32, III .32, IV .57; clasper as in fig. 10; total length 4.58.

Description of Nymphs

Fifth instar: (pinned) intercepted in New York, U. S. A.

Head dark red-brown to black; pronotum, scutellum, wing pads, legs and antennae reddish brown, lighter at distal ends of femora, tarsi sordid yellow; abdomen mottled light reddish brown with 1st tergum nearly white mesally; SG sclerites subelliptical, concave mesally, SGA and SGP nearly equal in size; TM7 large, quadrate, narrowly separated from TL7, anterior margin shallowly excavated near antero-lateral angles, TL7 large, bluntly rounded anteriorly, covering most of preconnexival segment but not attaining anterior margin of segment,

TMA7 and TML7 fused across meson, expanded laterad, TA7 absent; TM6 a transverse dash, somewhat wider than SG sclerites, not in contact with posterior margin of tergum 6; TML and TPC rows with small irregularly rounded spots; sternum light reddish brown, becoming yellowish mesally; SM7 broad, tapering anteriorly to truncate anterior margin, in contact with posterior margin of sternum 6, SL7 covering posterior 2/3 of preconnexival segment except tapering to rounded apex nearly in contact with SPC sclerite; SM6 trianguloid, not attaining posterior margin of sternum 6, anterior margin truncate, in contact with posterior margin of sternum 5; SM5 irregularly ovoid, remote from anterior and posterior margins of sternum 5; SML row with round to ovoid spots; SPC row with smaller round spots and comma-shaped dashes along preconnexival suture; sparsely clothed with short semi-decumbent sericeus hairs; length head .44, width .66, interocular space .42; length pronotum .88, width 1.22; length scutellum .36, width .76; metathoracic wing pads extending over anterior 1/3 of abdominal tergum 3, length wing pads 1.04; length abdomen 2.60; labium reaching onto mesosternum, not attaining mesocoxae, length labial segments I .32, II .34, III .32, IV obscured; length antennal segments I. 14, II .30, III .28, IV .56; total length 4.44.

Fourth instar: (pinned)

Very similar to 5th instar in coloration and markings except ground color of abdomen slightly lighter, length head .36, width .52, interocular space .36; length pronotum .50, width .86; length wing pads .46; length abdomen 1.80; length labial segments I .26, II .23, III .24, IV .26; length antennal segments I .10, II .22, III .23, IV .44; total length 2.80.

Third instar: (pinned)

Similar to 4th instar in coloration and markings, length head .22, width .44, interocular space .30; length pronotum .34, width .68; length wing pad .22; length abdomen 1.32; length labial segments I .20, II .18, III .18, IV obscured; length antennal segments I .08, II .15, III .16, IV .34; total length 1.98.

The only biological information is a collecting record on bamboo.

The type series of *privus* in the British Museum consists of 1 ♂ and 2 ♀♀ from "Peradeniya, Ceylon X-07." Of these we select as Lectotype the ♀ bearing the British Museum "type" label. An appropriate label to this effect is placed on the specimen.

This species is readily distinguished from other members of the *femoralis* complex by the uniformly dark, nearly black, membrane which has a strongly contrasting opaque white area at the extreme anterior end.

DISTRIBUTION: *M. privus* was originally described from Ceylon but appears to be widespread in the Oriental region. It is also now known from Taiwan and possibly China. *M. abbreviatus*, which was synonymized by Slater and Ahmad (1967), was described from South India.

MATERIAL EXAMINED: intercept. New York 100, 204, 47-12202 (on bamboo). INDIA: Chikkaballapura (J. V. Campbell)— Thekkadi Periyar Dam, Travancore. TAIWAN: Taihorin (H. Sauter S. G.)— Taihorinsho (Sauter) — Kosempo (Sauter). In United States National Museum, Hungarian Natural History Museum, Leningrad Museum, Berlin-Humboldt Museum, British Museum (Natural History) and J. A. Slater collections.

Macropes obnubilis (Distant)

1883, *Ischnodemus obnubilis* Distant, *Trans. Roy. ent. Soc. Lond.* p. 431.
1936, *Macropes hedini* Lindberg, *Arkiv Zool.* **27**: 24.

This is a strongly pubescent species with a tan or dark brown distal fourth of the corium. The prominent "button-like" protrusion on the 3rd abdominal sternum of the ♂ is diagnostic. While apparently a member of the *femoralis* complex *obnubilis* is isolated from most members of the complex in not having a truly translucent membrane. It is closely related to *maculosus* new species.

Slater, Ashlock & Wilcox (1969) report breeding on dwarf bamboo *Arundinaria simoni* A. & C., and on a commercial bamboo where the feeding punctures become surrounded by dark rings causing a decorative effect that commands a higher commercial price.

The species was redescribed by Slater, Ashlock and Wilcox (1969) who also described the 5th instar nymph.

The type series consists of 2 ♀♀ bearing labels "Japan (Lewis)." The female bearing the British Museum "type" label is here selected as Lectotype and an appropriate label to that effect placed on the specimen.

DISTRIBUTION: *M. obnubilis* was originally described from Japan and the synonym *hedini* from China. Slater and Ahmad (1967) report it from Bonin Islands and Slater, Ashlock and Wilcox (1969) from Viet Nam and Guam.

ADDITIONAL MATERIAL EXAMINED: JAPAN: Nagasaki—Hanno Son—Tokio (*sic*). In British Museum (Natural History) and United States National Museum.

Macropes maculosus Slater and Wilcox, new species

Head, pronotum, narrow scutellar median carina, antennae, fore legs and abdomen black, shining, with apex of tylus, distal ends of antennal segments II and III, fore femora and scutellum red-brown, remainder of scutellum dull gray pruinose, middle and hind legs dark chocolate brown to nearly black, tarsi yellowish; hemelytra with clavus, entire posterior 1/2 of corium and outer 1/2 of anterior portion of corium black to dull brown, radial vein elevated and shining on anterior 1/2, remainder of corium a strongly contrasting creamy white with cubital vein light brown, membrane basally opaque white concavely across basal 1/3 and narrowly posterior to distal ends of coria, remainder of membrane forming a large hyaline brown macula; head and pronotum rugosely punctate, more coarsely so across pronotal transverse impression; dorsal surface including calli sparsely clothed with short semi-decumbent sericeus hairs.

Head non-declivent, moderately convex across vertex, tylus reaching distal end of 1st antennal segment, eyes ovoid, set slightly away from antero-lateral pronotal angles, length head .58, width .68, interocular space .40; pronotum with lateral margins parallel from humeri to area of calli, then evenly and carinately narrowing mesad to anterior margin, transverse impression wide, shallow, nearly obsolete, posterior margin slightly concave, length pronotum 1.22, width 1.12; scutellum with an obsolete but shining median elevation on posterior 2/3, length scutellum .42, width .56; hemelytra with lateral corial margins nearly parallel, membrane reaching 1/2 way onto 7th abdominal tergum, distance apex clavus - apex corium .86, apex corium - apex abdomen 1.36; fore femora greatly incrassate, armed below with numerous stout sharp spines, middle and hind femora mutic; metathoracic scent gland auricle elongate, bar-like, slightly wider at distal end; labium reaching just beyond anterior margin of mesosternum, 1st segment nearly attaining base of head, length labial segments I .40, II .41, III .42, IV .32; antennal segments II and III slightly clavate, IV narrowly fusiform, length antennal segments I .12, II .32, III .32, IV .60; total length 4.72.

Holotype ♂ MALAYA: Selangor-Pahang "boodes" (?), 2,000′, Jan. (1st or 14?), 1940 (H. M. Pendlebury). In British Museum (Natural History).

This small species is apparently a member of the *femoralis* complex and despite the striking color pattern is similar to *obnubilis* in general size and habitus. It can easily be distinguished by the large dark brown macula on the membrane (membrane uniformly testaceous in *obnubilis*), by the much more strongly incrassate fore femora, and by the lack of a prominent "button-like" protrusion mesally on abdominal sternum 3 of the male.

Macropes pilosus Slater, Ashlock & Wilcox

1969, *Macropes pilosus* Slater, Ashlock & Wilcox, *Pacif. Ins.* **11** (3-4) : 685.

This is a small, short, robust species with dark antennae. The pronotum is relatively broader and less elongate than in any of the closely related species. The dorsal surface is thickly clothed with both decumbent and upstanding hairs.

DISTRIBUTION : *M. pilosus* is known only from the type series from Laos and Thailand.

Macropes uniformis Distant Fig. 32.

1909, *Macropes uniformis* Distant, *Ann. Mag. Nat. Hist.* (8)3 : 324-5.

This species has an almost completely glabrous pronotal surface and a distinct pronotal shape in which the lateral margins are sinuate and the width across the area anterior to the transverse impression appears to be slightly broader than that across the humeri. The broad shining scutellar area will readily separate *uniformis* from such closely related species as *pilosus*, *femoralis* and *pseudofemoralis*.

Nothing is known of the biology other than collecting records at light.

There is a single ♂ from "Gopaldhara, 2,440′, 20-X-18" which will run here in the key. It differs from *uniformis* in many characters, and probably will prove to represent a new species. It has much larger eyes which are set away from the anterior pronotal margin (nearly in contact in *uniformis*), pronotum with a complete red-brown band on the posterior lobe and with lateral margins angled inward at the calli area (*uniformis* has only the humeral angles brown and the lateral margins evenly curving inward anteriorly), antennal segments II and III relatively much longer, being subequal in length and 2/3 the length of IV whereas in *uniformis* their combined length is only 1/2 of the length of IV, and this specimen is clothed with semi-decumbent sericeus hairs whereas *uniformis* is nearly glabrous dorsally.

Despite these many differences it does not seem advisable to describe a new species until more material is available for study.

DISTRIBUTION : The holotype (which has an oligomerous right antenna) is from Calcutta. Slater, Ashlock & Wilcox (1969) report specimens from Laos.

Macropes africanus Slater and Wilcox, new species Fig. 17.

Body elongate, slender, parallel sided; head, pronotum and scutellum black, strongly shining, scutellum becoming pruinose narrowly along anterior and lateral margins, pronotum light tan broadly across humeral area; clavus and corium light yellow testaceous, becoming suffused along inner margin of clavus, apical corial margin and adjacent distal area of radial vein narrowly but prominently dark reddish brown, strongly contrasting with light coloration of remainder of corium; membrane white, semi-translucent, the veins very slightly dusky; antennae and legs nearly uniformly dark chocolate brown, becoming paler testaceous on tarsi

and proximal end of tibiae; abdomen dark red-brown, becoming lighter along lateral margins of connexivum; head irregularly punctate and rugose, pronotum coarsely covered with anastomosing punctures in central area, posterior 1/5 and broad area of calli smooth and polished; body surface bearing elongate sericeus semi-decumbent hairs, semi-glabrous in polished areas of pronotum noted above.

Head non-declivent, slightly convex across vertex, eyes longitudinal, large, set slightly away from antero-lateral pronotal angles, but not produced laterally on ledge-like extensions, tylus extending anteriorly midway to distal end of 1st antennal segment; length head .52, width .63, interocular space .40; pronotum moderately convex with a deep prominent transverse impression set nearly midway on surface of disc, anterior lobe smooth and polished broadly in area of calli with a faint irregular depressed median longitudinal line, posterior lobe polished, the lateral margins straight from humeral angles to calli, then strongly and evenly tapered anteriorly, posterior margin concave with moderately produced lobes laterad of scutellum, length pronotum 1.10, width 1.10; scutellum with a very prominent wide median shining elevation, length scutellum .46, width .49; hemelytra with lateral corial margins nearly straight, slightly expanded distad of line across apex of claval commissure, the radial vein strongly and acutely produced, apical margin of corium nearly straight, membrane broad, covering abdominal connexivum, broadly rounded at apex, extending midway over 7th abdominal tergum, distance apex clavus - apex corium .80, apex corium - apex abdomen 1.89; metathoracic scent gland auricle short, broadly ovoid; anterior femora strongly incrassate, armed below on distal 1/2 with 4 to 6 elongate irregular sharp prominent spines, anterior tibiae somewhat thickened, with 3 sharp spines at apex, middle and hind femora mutic; labium extending well onto mesosternum but not attaining mesocoxae, length labial segments I .34, II .30, III .26, IV obscured; antennae moderately stout, terete, 4th segment narrowly fusiform, length antennal segments I .13, II .32, III .32, IV .57; clasper rather conventional for genus, posterior knob placed a considerable distance from base and with a prominent anterior sub-basal trianguloid flange (fig. 17); sperm reservoir with a pair of lateral wings and a central projecting prong as in related forms; total length 5.46.

Holotype ♂ TANZANIA: Africa Or. Katona, Arusha-Ju 1905. In Hungarian Natural History Museum.

Paratypes TANZANIA: 1 ♂, Bokoba, Victoria Nyanza, 21.VIII.1913 (Troitzkij). KENYA: 1 ♂, Ngong, April 1936 (A. S. J. Gedye) — 1 ♂, Ngong, Escarp, IV.1937 (H. A. J. Turner). CONGO: 1 ♀, Reg. Lac Kivu, Kadjudju - 1 ♀ Kivu: Ibanda, 1952 (M. Vandelannoite). In Coryndon Museum, Leningrad Museum, Musée Royal de l'Afrique Centrale, Paris Museum and J. A. Slater collection.

This species is of particular geographical importance in that it is the first *Macropes* known from Africa that does not belong to the "*albosignatus*" complex. It is, in fact, closely related to a number of Oriental species and typical of such a complex as that which contains *subauratus*, which it resembles in a number of characteristics, but from which it can readily be separated by the dark rather than light yellow legs, and the dark markings at the apex of the corium. The presence of a number of nominal species related to *albosignatus* in Africa and the absence of all of the other elements of the heterogeneous *Macropes* complex has been one of the striking differences between the blissine faunas of the Oriental and Ethiopian regions. The presence of this species in the highlands of East Africa is therefore of particular zoogeographic significance and must be interpreted as a presence of an old element linking the two faunas and certainly deriving from a period before the aridity barrier arose separating Africa and the Oriental region.

Slater & Wilcox (1973) described a fifth instar nymph from the Transvaal, South Africa

(Magoebaskloof) which they believe represents a species of *Macropes*. This is the nymph keyed in the preceding nymph key and it probably represents still another *Macropes* type in the Ethiopian fauna.

The large female from Ibanda, Kivu, Congo, is brachypterous with the clavus and corium separate and the membrane translucent and lobate and extending only to near the posterior margin of the third abdominal tergum. The tergum itself has segments 1 and 2 dark red-brown and the succeeding segments uniformly bright orange.

Macropes pseudofemoralis Slater, Ashlock & Wilcox Fig. 16, 18, 36.

1969, *Macropes pseudofemoralis* Slater, Ashlock & Wilcox, *Pacif. Ins.* **11** (3-4): 684.

This small species possesses a strongly shining, relatively elongate, evenly tapering pronotum. It is closely related to *femoralis* and *harringtonae* and distinguishable chiefly by the characters given in the preceding key. The clasper and pygophore opening are as in fig. 16, 18.

Nothing is known of its biology other than its attraction to light.

DISTRIBUTION: *M. pseudofemoralis* is known only from Laos and Thailand.

Macropes femoralis Distant Fig. 34.

1918, *Macropes femoralis* Distant, *Fn. Brit. Ind. Rhynch.* (7) **8**: 186.

This species is closely related to *pseudofemoralis* and *harringtonae*. The pronotum, while essentially parallel sided, does taper gradually from the humeral angles to the area of the calli. Other differentiating characters are as in the preceding key.

Chatterjee (1937) reports specimens taken on *Pterolobium indicum* in India. However, since this is a member of the Leguminosae it almost certainly does not represent a true host plant.

The "type" specimen in the British Museum probably should be considered unique and thus the holotype, although a second British Museum specimen is from the same locality and by the same collector (Chikkabalapura, India, T. V. Campbell). However the label on this second specimen bears additional information indicating that it probably was not part of the original Distant material.

DISTRIBUTION: This species was described from India and subsequently reported by Slater, Ashlock and Wilcox (1969) from Sumatra.

ADDITIONAL MATERIAL EXAMINED: E. NEPAL: Taplijung Distr., Edge of mixed forest above Sangu, ca 6,500′ (R. L. Coe). E. PAKISTAN (Bangladesh): Chicknagul, 10 mi. N. Sylhet (E. S. Ross & D. Q. Carvagnaro). LAOS: Sayaboury Prov., Sayaboury (Native Collector). In British Museum (Natural History), California Academy of Sciences, and Bernice P. Bishop Museum. Fig. 35.

Macropes harringtonae Slater, Ashlock & Wilcox Fig. 35.

1969, *Macropes harringtonae* Slater, Ashlock & Wilcox, *Pacif. Ins.* **11** (3-4): 688.

This is a slender, elongate, parallel sided species. It is closely related to *femoralis* and *Pseudofemoralis* and differentiated primarily by the characters given in the preceding key. The ♂ clasper is also distinctive.

Specimens were intercepted in California from China "from bamboo seeds."

DISTRIBUTION: *M. harringtonae* was described from China and Taiwan.

ADDITIONAL MATERIAL EXAMINED: S. CHINA: Fukien, Shaowu: Shui Po Kai, 6.IV. 1944 (T. C. Maa)—Hunan, Luki: Pushih, 1.IV.1939 (T. C. Maa). In Bernice P. Bishop Museum and J. A. Slater collections.

Macropes australis (Distant), new combination

1901, *Ischnodemus australis* Distant, *Ann. Mag. Nat. Hist.* (7) **8**: 468.
1918, *Rhabdomorphus longurio* Bergroth, *Phil. J. Sci.* **13** (2-3) (D): 69.

Generally this elongate, slender species has the hemelytra nearly uniformly pale yellow testaceous with only the veins of the membrane dark brown.

We have examined 3 specimens, a ♂ from "W. Distr. Balimo, Papua, New Guinea (J. L. Gressitt)" (Bishop Museum), a ♂ from "48 km. N. Brisbane, Queensland, Australia II-11-1964 (J. Sedlacek)" (Bishop Museum) and a specimen without abdomen from Australia without further data (British Museum), which differ markedly in coloration but in which we have been unable to discover differentiating morphological features other than a very minor difference in the outer lobe of the clasper. These specimens have the greater portion of the hemelytral membrane dark chocolate brown with only the lateral and distal portions of the membrane pale. This dark membranal coloration is broadly in contact with the apical corial margin which is also chocolate brown as is the cubital vein on the clavus. These specimens also have dark castaneous femora and tibiae in contrast to the ochraceous colored legs of *australis* specimens with pale hemelytra. Until more adequate series are available we believe these dark colored specimens should be considered as probable color variants of *australis*.

We have examined two extremely large ♀♀ (9.20, 9.52) from Lemesaham, 600 m, Zamboango del Sur, Mindanao, Philippines, IX.7.1958 (H. E. Milliron) (light trap) (Bishop Museum) and from Townsville, N. Qld, 5.viii. 1956 (G. Monteith) (University of Queensland) which probably will prove to represent a distinct species. These specimens have the same dark membrane and claval veins as those noted above, but the inner corial vein is also darkened and the dark veins of the membrane are conspicuously joined distally which is not the case in typical specimens of *australis*. Until more adequate material is available we prefer to merely call attention to these unusual specimens.

This species is most closely related to *subauratus*, agreeing with it in general habitus. It can be distinguished by the veins of the membrane usually being differentiated in color (uniformly transparent in *subauratus*), by having a shorter labium which does not reach the mesosternum (in *subauratus* extending well onto mesosternum), and by having the scutellum nearly completely shining (in *subauratus* shining only on narrow elevated mesal strip, sometimes broadened basally).

DISTRIBUTION: *M. australis* is widely distributed in Australia, the Philippines, Malaya and Taiwan and was reported by Hoffman (1932) from Hainan Island, China. It is here reported for the first time from New Guinea and Ceylon.

MATERIAL EXAMINED: AUSTRALIA: *Queensland*: 32-48 km N. Brisbane (J. Sedlacek)—Brisbane (S. R. Curtis)—Brisbane (J. Rand)—Brisbane (D. J. Woodland)—Lam. Nat. Pk. (J. C. Cardale)—Eungella Nat. Pk. via Dalrymple Hts. (T. Weir)—Ipswich (D. L. Lloyd). PHILIPPINE IS.: Baguio, Benguet (Baker). NEW GUINEA: Papua, W. Distr., Balimo (J. L. Gressitt). CEYLON: W. Prov., Yakkala, 18 mls. NE Colombo, swept on grassland (Lund University Ceylon Expedition 1962, Brinck—Anderson—Cederholm). In Bernice P. Bishop Museum, University of Queensland Museum, Lund Uni-

versity Museum and J. A. Slater collections.

Macropes pronotalis Distant

1910, *Macropes pronotalis* Distant, *Fn. Brit. Ind. Rhynch.* **7**: 186.
1964, *Rhabdomorphus pronotalis* Slater & Ahmad, *Proc. Roy. Ent. Soc. Qld.* **75** (3) 24-26.
1969, *Macropes subauratus*: Slater, Ashlock & Wilcox, *Pacif. Ins.* **11**: 687 (in part).

Pronotalis is a member of the *femoralis* group and most closely related to *subauratus*. Some of the specimens cited as *subauratus* by Slater, Ashlock and Wilcox (1969) as well as much of the description should be placed here. Of the specimens retained in our collection the following pertain to *pronotalis*: INDIA: 2 ♂ W. Almora, Kumson (H. G. L.). VIET NAM: 1 ♂ 6 km SW of Dalat, 1,550 m, 11.IX.1960 (J. L. Gressitt).

Characters for this species in addition to those described by Slater and Ahmad (*ibid.*) are as follows; fore femora armed below with 2 rows of stout sharp spines; in ♂♂ fore tibiae constricted on proximal 1/3, then abruptly expanded and thickened to distal end to give a "scooped-out" appearance; fore tarsal segments swollen and thickened; scutellum nearly entirely shining, dull gray pruinose only narrowly across anterior end.

This species is closely related to *subauratus*, agreeing with it in general coloration and in having a slender elongate form. It may be distinguished by the characters given in the key and by having the pronotum considerably narrowed anteriorly, not having the "squared-off" appearance at the antero-lateral angles which is present in *subauratus*. Unfortunately there is no ♂ of *subauratus* available in our collection for study of the fore tibial condition.

DISTRIBUTION: *M. pronotalis* was originally described from India and previously known only from there. It is here reported from Viet Nam for the first time.

Macropes subauratus Distant

1904, *Macropes subauratus* Distant, *Fn. Brit. Ind. Rhynch.* **2**: 26.

This is an elongate, slender species of the *femoralis* complex which usually has bright yellow legs. The body is nearly parallel sided, although in the brachypter the pronotum is considerably swollen anteriorly. The labium extends onto the anterior portion of the mesosternum. It is most closely related to *pronotalis* from which it may be distinguished by the characters given in the preceding key and in the discussion of the latter species. More adequate material is required before really satisfactory conclusions on the status of *subauratus* and *pronotalis* can be reached.

The only biological information are collecting records on bamboo and grasses.

In the Bishop Museum there is 1 ♂ from Laos, Vientiane Province, Ban Van Eue, 15.XII. 1965, which has a general coloration and elongate slender habitus similar to *subauratus* but which has the membrane nearly uniformly opaque creamy white, has brown legs and antennae and has the scutellum shining except narrowly across the anterior end. This may prove to be a new species, but we prefer not to describe it until further material is available for study.

Description of Nymphs

Fifth instar: (pinned) Viet Nam.

Head, pronotum, scutellum and basal 1/2 of wing pads bright brownish yellow; antennal segment I sordid white, segment II and legs light brown, apical 1/2 of wing pads and antennal

segments III and IV dark brown; abdomen above and below uniformly yellowish orange with sclerites only slightly darker red-orange except red-brown SM7 and SM6; SG sclerites quadrate, in contact with anterior TML spots of terga 5 and 6; TM7 broad, subquadrate, anterior margin scalloped, not reaching posterior margin of tergum 6, TM7 and TML7 fused but constricted to a narrow band across meson, TL7 occupying posterior 3/4 of preconnexival segment, bluntly rounded anteriorly, well separated from TM7; TM6 a transversely elongate bar, TL6 absent; TML with prominent round to ovoid spots; TPC a series of longitudinally elongate spots; SM7 bluntly trianguloid, narrowing to anterior margin, in contact with posterior margin of sternum 6, SML7 covering posterior 1/2 of preconnexival segment, narrowing anteriorly, broadly separated from SM7, SA7 an ovoid spot near, but not in contact with, anterior margin of segment; SM6 narrow, much longer than wide, lateral margins parallel to broadly rounded anterior margin, nearly attaining posterior margin of sternum 5; SML spots round; SPC elongately ovoid; fore femora incrassate, armed below on distal 1/3 with 2-3 short sharp spines; labium reaching between fore coxae, not attaining posterior margin of prosternum; length head .38, width .58, interocular space .36; length pronotum .76, width 1.06; wing pads extending to posterior margin of abdominal tergum 3, length wing pads 1.22; length abdomen approx. 3.22 (broken); length labial segments I .28, II .24, III .20, IV .25; length antennal segments I .12, II .26, III .26, IV .42; total length 5.20 (approx.)

DISTRIBUTION: *M. subauratus* was originally described from Burma and reported by Slater, Ashlock & Wilcox (1969) from India, Malaya and Viet Nam. However, the Indian record and at least one of those from Viet Nam refer to *pronotalis*.

Macropes rufipes Distant

1911, *Macropes rufipes* Distant, *Entomologist* **44**: 105-6.

Body stout, robust, parallel sided; head, pronotum and distal 3/4 of scutellum black, shining with apex of tylus, area across pronotal humeri and distal end of scutellum red-brown, remainder of scutellum dull gray pruinose; appendages bright reddish brown with terminal 2/3 of 4th antennal segment nearly black; hemelytra pale testaceous, slightly darker along veins and a patch at base of membrane; abdomen red-brown above and below; head and pronotum finely punctate, area of calli striate with a prominent fovea in center of each callus; scutellum with coarse punctures laterad of median elevation; thickly clothed with long upright and short decumbent and semi-decumbent sericeus hairs.

Head non-declivent, moderately convex across vertex, tylus reaching distal end of 1st antennal segment, eyes ovoid, set slightly away from antero-lateral pronotal angles, length head .72, width .84, interocular space .54; pronotum with lateral margins sinuate, anterior lobe strongly elliptical with antero-lateral area "angled," transverse impression broad, deep, set far posteriorly, posterior margin shallowly concave with moderately produced lobes laterad of scutellum, length pronotum 1.95, width 1.64; scutellum with a broad triangular median elevation, length scutellum .64, width .88; hemelytra with lateral corial margin nearly parallel, membrane rounded at apex, reaching over anterior margin of abdominal tergum 7, leaving connexivum partially exposed, distance apex clavus-apex corium 1.10, apex corium-apex abdomen 2.40; fore femora enormously incrassate, block-shaped, armed below with short and long stout spines, no bifid spine present on distal 1/4, fore tibia very thick, armed with stout spines at distal end, 2-3 prominent thick curved or hooked spines present, middle and hind femora with 2-4 short spines below on distal 1/4; metathoracic scent gland auricle subovoid, anterior 1/2 gray pruinose; labium relatively short, not attaining fore coxae, 2nd segment reaching base of head, length labial segments I .22, II .18 III .32, IV .34; antennae with segments 2 and 3 cla-

vate, 4 narrowly fusiform, length antennal segments I .20, II .54, III .54, IV .76; total length 7.36.

In the sub-macropterous paralectotype the membrane is more acute at the apex, and reaches only over the anterior 2/3 of abdominal tergum five. The pronotal shape is the same as that of the macropter.

Rufipes is most closely related to *hoberlandti* and *consimilis* and differentiating characters are discussed under the latter species.

DISTRIBUTION: *M. rufipes* is thus far known only from India.

MATERIAL EXAMINED: INDIA: Gopaldhara Darjeeling, 3,440-4,720 ft. (H. Stevens)-Bengale, Kurseong (A. L. Montandon). In British Museum (Natural History) and J. A. Slater collections.

Macropes hoberlandti Slater & Ahmad

1967, *Macropes hoberlandti* Slater & Ahmad, *Acta Ent. Mus. Nat. Pragae* 37: 255-58.

This is a large robust species with testaceous hemelytra. It is closely related to *rufipes* but readily distinguishable by the longer labium that exceeds the fore coxae (not attaining the fore coxae in *rufipes*) and by the much shorter, broader pronotum. In *hoberlandti* the pronotal length is slighty less than the humeral width whereas in *rufipes* the pronotum is considerably longer than wide. There is considerable sexual dimorphism in the pronotal shape in this species, ♂♂ having the anterior pronotal lobe much more strongly expanded and elliptical and also the fore femora are more strongly enlarged than in the female.

DISTRIBUTION: *M. hoberlandti* is known only from Afghanistan.

Macropes consimilis Distant

1918, *Macropes consimilis* Distant, *Fn. Brit. Ind. Rhynch.* 7: 187.

Body stout, robust, subelliptical; head and anterior 2/3 of pronotum black, shining, tylus, posterior 1/3 of pronotum and scutellar median elevation shining red-brown, remainder of scutellum dull gray pruinose; antennae and legs testaceous except fore femora red-brown on proximal 2/3; hemelytra nearly uniformly sordid white, the veins slightly darker; abdomen above and below yellowish to reddish brown; head and pronotum finely punctate, more coarsely so across pronotal transverse impression; clothed with short decumbent and semi-decumbent sericeus hairs.

Head non-declivent, moderately convex across vertex, tylus extending to distal end of 1st antennal segment, eyes ovoid, set slightly away from antero-lateral pronotal angles, length head .72, width .86, interocular space .58; pronotum with lateral margins parallel from humeri to area of calli, then evenly tapering mesad to anterior margin, transverse impression broad, shallow, nearly obsolete, posterior margin shallowly concave, length pronotum 1.40, width 1.60; scutellum with a broad triangular median elevation, length scutellum .54, width .78; hemelytra with lateral corial margins slightly sinuate, broadest posterior to level of apex of claval commissure, membrane broad, nearly completely covering connexivum laterad, apex broadly rounded, reaching over anterior 1/3 of 7th abdominal tergum, distance apex clavus - apex corium 1.32, apex corium - apex abdomen 2.52; fore femora incrassate, armed below with 2 rows of stout spines, lacking bifid spines on distal 1/4, tibiae with crown of spines at distal end but lacking large prominent curved spines as in *rufipes*, middle and hind femora mutic; metathoracic scent gland auricle ovoid, slightly protrudent from body surface; ovipo-

sitor sclerites reaching posterior margin of 5th sternum, completely bisecting sternum 6; labium extending well onto mesosternum, 1st segment nearly reaching base of head, length labial segments I .50, II .54, III .40, IV .44; antennal segment II (from brachypter) clavate, III and IV missing, length antennal segments I .20, II .42; total length 6.80.

The brachypterous specimen of *consimilis* does not have the strongly elliptical swollen anterior lobe of the pronotum as does the closely related *rufipes*, but instead has the same general shape as the macropterous specimen. In the brachypter the membrane extends to the anterior margin of abdominal tergum five.

Consimilis is similar to *rufipes* in general habitus and coloration but can easily be distinguished by the lack of spines on the middle and hind femur, by the less swollen and spinose fore femora (large and block-shaped in *rufipes*, with many scattered spines), by the lack of long prominent hooked spines on the distal end of the fore tibiae, and by the different pronotal shape discussed above. Also *rufipes* has a much shorter labium which does not extend to the fore coxae.

The type series in the British Museum consists of 2 ♂♂ "Kodai Kanal S. India (T. V. Campbell)." Of these we select as Lectotype the specimen labeled as above and bearing the British Museum "type" label.

DISTRIBUTION: This species is known only from India.

ADDITIONAL MATERIAL EXAMINED: INDIA: Inde Mere, Madura (Jos. Dubreuil)—Trichinopoli (Noualhier). In Hungarian Natural History Museum and J. A. Slater collections.

Macropes burmanus Slater and Wilcox, new species Fig. 6, 15, 22.

Body elongate, robust, parallel sided; entire head and pronotum and broad median elevation of scutellum black, shining, remainder of scutellum gray pruinose, pronotal humeri becoming dark red-brown; all legs uniformly yellowish brown; apex of tylus and antennal segments 1 and 2 red-brown with 3rd and 4th antennal segments darker brown; clavus and corium testaceous, clavus dusky on basal 1/3 and adjacent to claval commissure, corium dark brown along apical corial margin and broadly adjacent to radial vein on distal 1/3, leaving extreme lateral margin of corial apical angle pale, membrane opaque white to testaceous with veins contrastingly dark brown, a diffuse brown patch present adjacent to distal 1/2 of apical corial margin, radial vein elevated and shining on anterior 1/2 of corium; abdomen dark red-brown to black above and below; head, pronotum and scutellum closely and shallowly punctate, more coarsely so across pronotal transverse impression, calli relatively smooth, glabrous, area laterad of calli transversely rugulose; clothed with short, semi-decumbent sericeus hairs.

Head slightly declivent, sharply acuminate, moderately convex across vertex, tylus extending nearly to distal end of 1st antennal segment, eyes small, set slightly away from antero-lateral pronotal angles on lateral head extensions, length head .64, width .76, interocular space .46; pronotum with lateral margins nearly parallel on posterior 2/3 then angled sharply mesad at level of calli to anterior margin, posterior margin deeply concave mesally before scutellum, lobes laterad of scutellum moderately produced, transverse impression broad, shallow, complete, anterior lobe lacking a distinct median furrow, length pronotum 1.44, width 1.48; scutellum with a low T-shaped median elevation, length scutellum .60, width .72; hemelytra with lateral corial margins straight, membrane gradually tapering to broadly rounded apex, reaching onto anterior 1/3 of 7th abdominal tergum, leaving connexivum well exposed, distance apex clavus-apex corium 1.28, apex corium-apex abdomen 2.0; fore femora incrassate, armed below

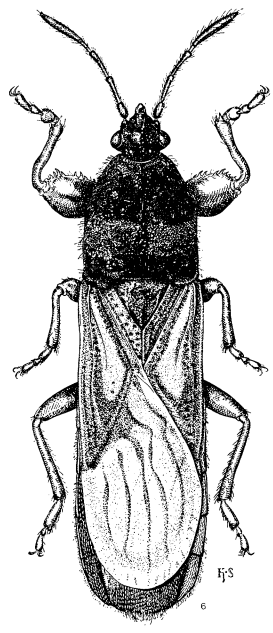

Fig. 6. *Macropes burmanus*, dorsal view.

with 2 rows of sharp stout spines, no bifid spine present on distal 1/4, middle and hind femora mutic ; metathoracic scent gland auricle small, ovoid, non-linear ; male bearing a prominent "button-like" projection mesally on sternum 4 adjacent to posterior margin ; labium barely reaching onto mesosternum, 1st segment not exceeding base of head, length labial segments (from paratype) I .46, II .52, III .40, IV .40 ; antennae stout, segments II and III slightly clavate, IV narrowly fusiform, length antennal segments I .17, II .40, III .42, IV .68 ; clasper and pygophore opening as in fig. 15, 22; total length 6.52.

Holotype ♂ NE BURMA : Kambaiti, 7,000 ft., 18/4. 1934 (R. Malaise). In Stockholm Museum.

Paratypes NE BURMA : 6 ♂, 12 ♀ same data as holotype except following dates : 1.5, 8-12/4, 25-27/4, 12-15/4, 12/5, 19/4, 29/3, 23/5, 12/4, all 1934 - 2 ♂, 7 ♀ same except 2,000 m, following dates : 12/4, 12/5, 15/5, 18/5, 23/5, 24/5, 1/6, all 1934. In Stockholm Museum and J. A. Slater collections.

The paratype series shows a slight variation in the color pattern of the wing, with the clavus ranging from almost completely pale testaceous to nearly uniformly smoky brown ; the subbasal spot on the membrane may be nearly absent, or it may be much more extensively developed than it is in the holotype. A few specimens also have a diffuse light brown patch on the apical 2/3 of the membrane.

Burmanus is most easily recognized by the button-like projection on the ♂ 4th abdominal sternum. It is most closely related to *consimilis*, having the same type of scent gland auricle, same length labium and similar general habitus. However, *consimilis* is a more robust, relatively broader species with the hemelytra uniformly testaceous. The pronotum of *burmanus* is relatively longer and more attenuated anteriorly with the ratio of length pronotum × 100/width pronotum (♀) averaging 92.0 in *burmanus* and 87.5 in *consimilis*. (In *burmanus* ♂♂ the length and width are subequal.) *Consimilis* also has a much wider fore wing which completely covers the connexivum, whereas in *burmanus* the connexivum is always at least partially exposed.

The entire type series is macropterous.

The 5th instar nymph described below was collected with several of the paratypes (2,000 m, 24/5. 1934) and probably represents this species.

Description of Nymphs

Fifth instar : (pinned)

Head, pronotum, scutellum, wing pads, legs and antennae dark brown with tarsi and distal ends of femora flavescent ; abdomen uniformly dark brick red ; SG sclerites subquadrate with posterior margin concave mesally, longitudinal measurement of SGA 2× the SGP ; TM7 broad, quadrate, in contact with anterior margin of tergum 7 for nearly entire width, TA7 absent, TL7 broad and lobate, reaching anterior margin of tergum 7 ; TM6 reduced to a small irregularly rounded sclerite adjacent to posterior margin ; TPC sclerites prominent, longitudinally ovoid, becoming much larger posteriorly ; TML row well developed, sclerites ovoid to subquadrate, those on tergum 6 extremely enlarged ; sternum 7 completely sclerotized except for a testaceous

strip along preconnexival suture and a red area adjacent to lateral margin on anterior 1/2 of preconnexivum; SM6 broadly subtriangular, broadly in contact with anterior margin of sternum 6; SPC sclerites large, comma-shaped to ovoid; SML row extremely enlarged, sclerites round to ovoid.

Head non-declivent, acuminate, tylus extending to distal end of 1st antennal segment, eyes small, set slightly away from antero-lateral pronotal angles, length head .56, width .76, interocular space .54; pronotum with lateral margins somewhat arcuate on posterior 1/2, posterior margin nearly straight, length pronotum .94, width 1.26; wing pads with lateral margins nearly straight, carinate, extending to posterior margin of abdominal tergum 3, length wing pad 1.40; fore femora incrassate, armed below with numerous stout sharp spines; labium reaching onto mesosternum, 2nd segment surpassing base of head by 1/2 its length, length labial segments I .38, II .44, III .32, IV .34; antennae stout, segments II and III slightly clavate, IV narrowly fusiform, length antennal segments I .18, II .26, III. 30, IV .62; total length 5.0.

Macropes maai Slater and Wilcox, new species Fig. 7, 23, 24.

Body very elongate, 5× pronotal width, robust, parallel sided; head, pronotum and scutellum black, shining, with scutellum narrowly gray pruinose anteriorly and antero-laterad, apex of tylus and area across pronotal humeri red-brown; legs and first 3 antennal segments bright red-brown to ochraceous, antennal segments III and IV dark brown; hemelytra including membrane testaceous-yellow with anterior 1/4 of clavus dusky brown, corium dark brown on distal 1/2 and along entire apical corial margin, membrane with veins and a narrow irregular strip adjacent to apical corial margin contrasting dark brown; abdomen above and below dark chocolate brown to black; head and pronotum including calli shallowly and closely punctate with area of transverse impression and scutellum more coarsely punctate; thickly clothed with elongate semi-erect posteriorly directed hairs.

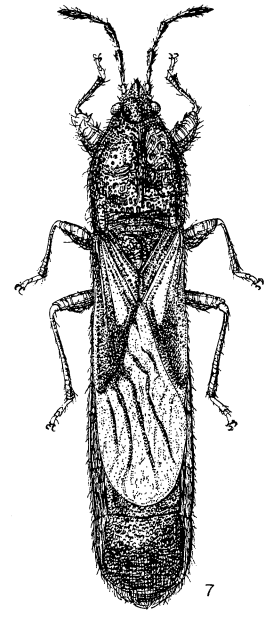
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Fig. 7. *Macropes maai*, dorsal view.

Head non-declivent, acuminate, moderately convex across vertex, tylus extending to distal end of 1st antennal segment, eyes small, set on short lateral shelf-like extensions, length head .78, width .98, interocular space .68; pronotum nearly parallel sided laterally on posterior 2/3, angled sharply mesad at level of calli to anterior margin, transverse impression broad, complete, posterior margin concave mesally, length pronotum 1.78, width 1.78; scutellum with a low T-shaped median elevation, length scutellum .68, width .88; hemelytra with lateral corial margins nearly parallel, radial vein carinate and narrowly shining on anterior 1/2, membrane evenly rounded at apex, reaching posterior margin of abdominal tergum 6, leaving connexivum well exposed laterad, distance apex clavus - apex corium 1.60, apex corium - apex abdomen 3.54; fore femora strongly incrassate, armed below with numerous sharp stout spines; middle and hind femora mutic; metathoracic scent gland auricle ovoid, non-linear; labium reaching onto mesosternum, 1st segment not attaining base of head, length labial segments I .52, II .60, III .50, IV .40; antennae stout, segments II and III slightly clavate, IV narrowly fusiform, length antennal segments I .24, II .58, III .50, IV .90; sperm reservoir as in fig. 23, 24; total length 8.92.

Holotype ♀ (BISHOP 9890), S. CHINA : Fukien, Shaowu : Tachulan, 1,000 m, 10. IV.1943 (T. C. Maa). In Bernice P. Bishop Museum.

Paratypes 1 ♂ same data as holotype—2 ♂, 2 ♀ same except 14.V, 21.IV, 20.IV and 6.VI.1943. In Bishop Museum and J. A. Slater collections.

Maai is somewhat similar to *burmanus* in general coloration. However it can easily be distinguished by its much larger size (♂ 8.12-8.52, ♀ 8.92-9.0 ; *burmanus* ♂ 6.46-6.52, ♀ 6.56-6.84), and by the relatively more robust body of *burmanus* with the ratio of width pronotum ×100/ total length - *maai* ♀ average 20.3, *burmanus* ♀ average 22.2.

The three ♂ specimens of *maai* are brachypterous with the membrane extending only over the anterior 1/4 of the 4th abdominal tergum. The pronotal shape is greatly modified in these brachypters, with the area anterior to the transverse impression swollen and considerably wider than the area across the humeri. Also the pronotum is relatively much longer in these ♂♂ than in the larger ♀ macropters, rather than being reduced in length, as is the case in most brachypterous specimens. *Maai* resembles a very large robust *subauratus* type because of the elongate narrow body but is actually more closely related to the *burmanus-rufipes-consimilis* complex.

We take pleasure in dedicating this species to Prof. T. C. Maa of Bishop Museum.

Macropes exilis Slater and Wilcox, new species Fig. 8.

Body very elongate, slender, parallel sided ; head pronotum and scutellar median elevation black, shining remainder of scutellum dull gray pruinose; tylus, legs, antennae and pronotal humeri dark red-brown to black with distal ends of femora and tibiae ochraceous, tarsi flavescent ; hemelytra testaceous-yellow, veins light brown, clavus infuscated basally, corium with distal 1/2 nearly uniformly dark brown, but becoming lighter along lateral margins, membrane pale tan, a broad transverse lunate white band across membrane between and slightly caudad of corial apices with veins and an irregular narrow strip adjacent to apical corial margin a strongly contrasting dark brown ; abdomen black above and below with lateral margins of connexiva red-brown ; head, pronotum and scutellum shallowly often rugosely punctate, pronotal transverse impression with deeper coarse punctures ; clothed with elongate semierect sericeus hairs.

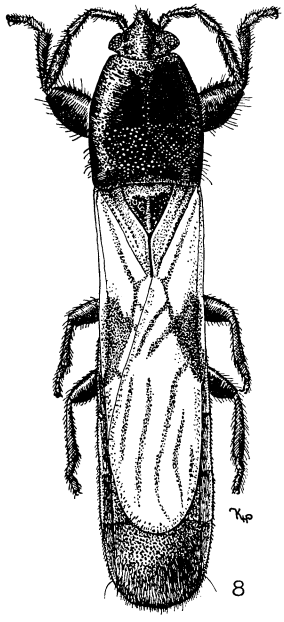

Fig. 8. *Macropes exilis*, dorsal view.

Head non-declivent, acuminate, moderately convex across vertex, tylus extending to distal end of 1st antennal segment, eyes small, sessile, ovoid, nearly in contact with anterolateral pronotal angles, angled cephalo-mesad from posterior to anterior margin, length head .62, width .82, interocular space .54 ; pronotum elongate, parallel sided from humeral angles to area of calli then slightly tapering mesad to anterior margin, forming a nearly even taper to apex of head, posterior margin shallowly concave, lobes laterad of scutellum moderately produced, length pronotum 1.52, width 1.38 ; scutellum with an indistinct median elevation on distal 2/3, length scutellum .54, width .68 ; hemelytra with lateral corial margins nearly parallel, radial vein carinate and narrowly shining on basal 1/2, membrane evenly rounded, reaching anterior margin of abdominal tergum 7, leaving connexivum partially exposed, distance apex

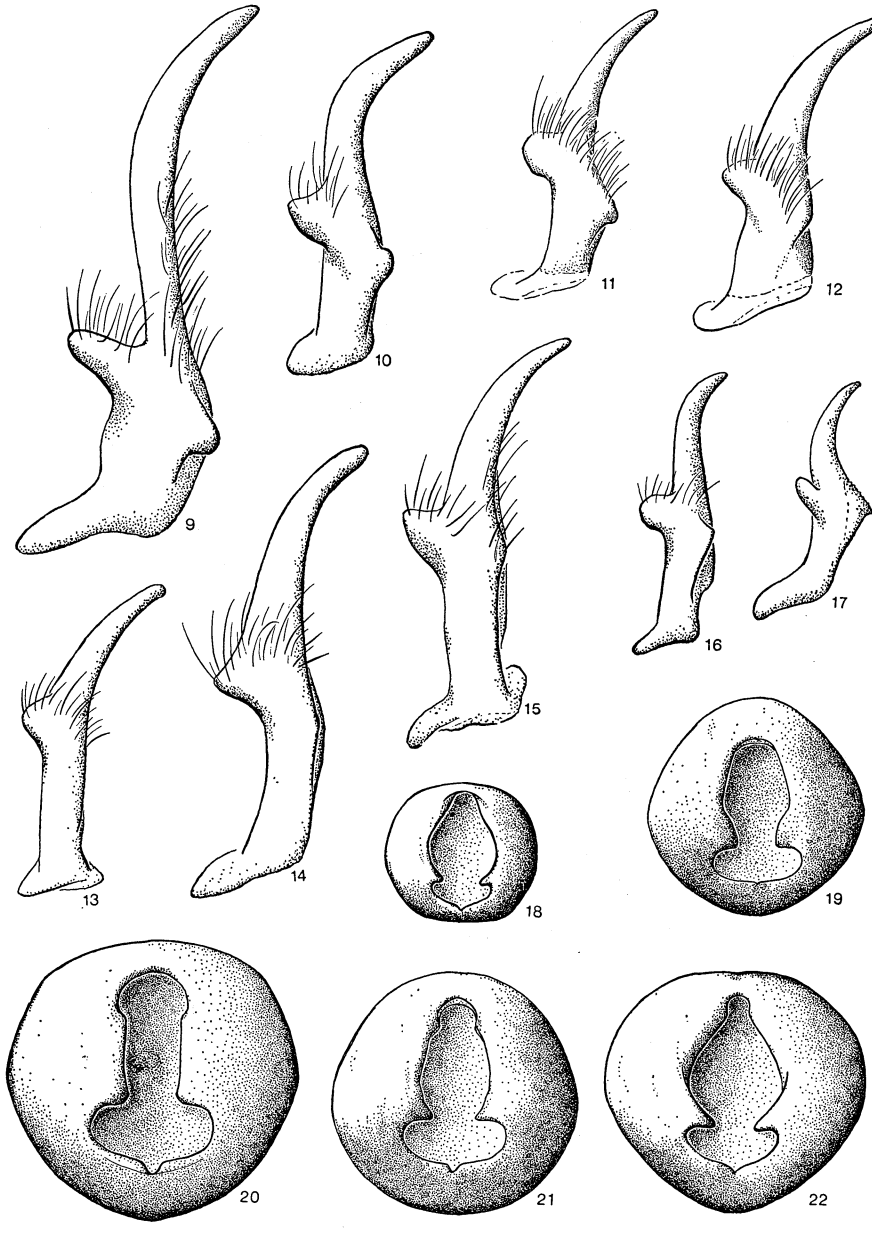

Fig. 9-22. 9-17, clasper: 9, *Macropes philippinensis*; 10, *M. privus*; 11, *M. nigrolineatus*; 12, *M. albosignatus*; 13, *M. spinimanus*; 14, *M. varipennis*; 15, *M. burmanus*; 16, *M. pseudofemoralis*; 17, *M. africanus*. 18-22, pygophore: 18, *M. pseudofemoralis*; 19, *M. nigrolineatus*; 20, *M. major*; 21, *M. albosignatus*; 22, *M. burmanus*.

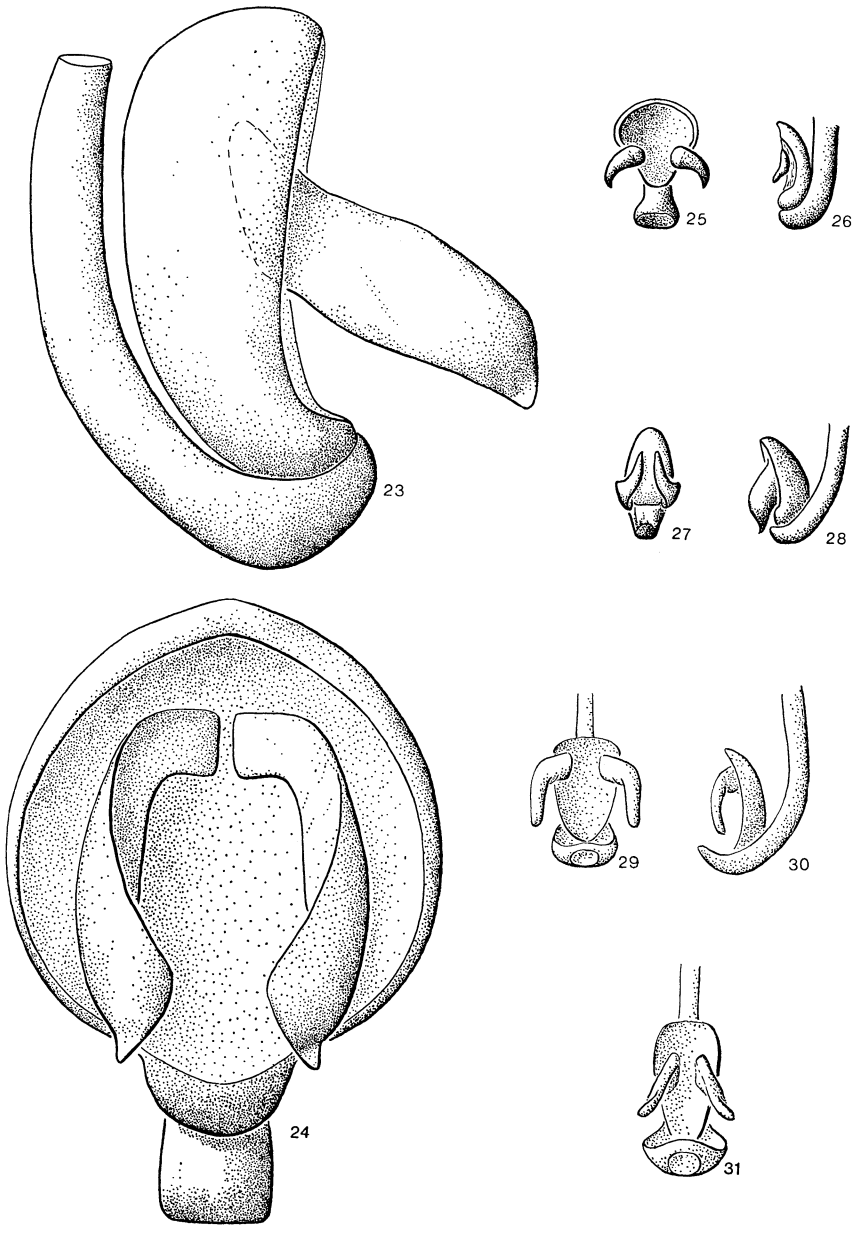

Fig. 23–31, sperm reservoir: 23, *Macropes maai*, lateral view; 24, *M. maai*, dorsal view; 25, *M. lobatus*, dorsal view; 26, *M. lobatus*, lateral view; 27, *M. dilutus*, dorsal view; 28, *M. dilutus*, lateral view; 29, *M. nigrolineatus*, dorsal view; 30, *M. nigrolineatus*, lateral view; 31, *M. albosignatus*, dorsal view.

clavus - apex corium 1.34, apex corium - apex abdomen 2.92; fore femora moderately incrassate, armed below with numerous sharp stout spines, lacking bifid spine on distal 1/4, middle and hind femora mutic; metathoracic scent gland auricle short, broad, slightly curved anteriorly at distal end; labium reaching onto anterior portion of mesosternum, remote from mesocoxae, 1st segment not exceeding base of head, length labial segments I .44, II .42, III .43, IV .38; antennae stout, segments II and III clavate, IV narrowly fusiform, length antennal segments I .18, II .38, III .42, IV .62; total length 7.56.

Holotype ♀ (BISHOP 9891), S. CHINA : Fukien, Shaowu : Tachulan, 1,000 m, 30. IV.1943 (T. C. Maa). In Bernice P. Bishop Museum.

Paratype 1 ♀ same data as holotype except 6.VI.1943. VIET NAM : 1 ♀ Tonkin, Hoabinh., VIII. 1918 (R. V. de Salvaza). In British Museum (Natural History) and J. A. Slater collections.

Exilis is very similar to *maai* in general habitus and coloration but can easily be distinguished by its relatively narrow more cylindrical and tapered body with the ratio of width pronotum ×100/total length 18.00-18.61 (*maai* average 20.3). *Exilis* also has a relatively short 2nd labial segment which is subequal to segment III, whereas in *maai* segment II is considerably longer than III.

There is one additional mutilated ♀ in the Bishop Museum which probably represents this species from S. China, Fukien, Chungan, Bohea Hill, 30.IV.1940 (T.C. Maa). The Tonkin paratype has almost the entire distal 2/3 of the scutellum shining.

Although this is a much smaller more slender species than *maai* the color pattern and overall resemblance is remarkably close. Since the 2 species are sympatric at Shaowu China, it is possible that there is a Mullerian mimicry association between these 2 species. *Exilis* has a pale whitish lunate vitta across the membrane just posterior to the distal ends of the coria that is lacking in *maai*, and the femora are dark chocolate brown rather than orange-red.

Macropes spinimanus Motschulsky Fig. 13.

1859, *Macropes spinimanus* Motschulsky, *Etud. Ent.* **8**: 108.
1859, *Macropes dentipes* Motschulsky, *Etud. Ent.* **8**: 108 (?)
1872, *Ischnodemus centralis* Walker, *Cat Hem. Het. B. M.* **5**: 132.
1907, *Macropes leucoderma* Breddin, *Deut. Ent. Zeit.* **1907**: 46. **New synonym.**
1907, *Macropes sinhalanus* Kirkaldy, *Can. Ent.* **39**: 332. (?)
1909, *Macropes singularis* Distant, *Ann. Mag. Nat. Hist.* ser. 8: **3**: 323-4.

This is a small species (4.2-6.3) with a strongly variegated color pattern. The ♂ posterior femora usually possess a ventral protrusion in the middle that when present is characteristic, but this is a variable character and reduced or absent on small specimens. Antennal segments I and II are usually pale yellow and contrast with the 2 dark distal segments, and the legs are usually dark to yellowish brown, although the color is somewhat variable. The clasper is as in fig. 13.

Slater, Ashlock & Wilcox (1969) have synonymized *singularis* Distant as representing the macropter of *spinimanus*. They give a redescription of the species.

We have not been able to locate for certain the type specimen of *sinhalanus* but careful study of the original description leads us to believe that it is a brachypterous specimen of *spinimanus*. The brachypters in our collection fit most of the characters in the description in both color and form and in possessing a double row of punctures longitudinally on the anterior pronotal lobe. However, in some specimens the punctures coalesce to give the ap-

pearance of an irregular longitudinal groove.

Dentipes was described as being a little smaller and narrower than *spinimanus*, having the hemelytra black posteriorly without a white margin and with the femora and tibiae for their greater part a darker brown. All of these characters fit the *spinimanus* specimens available for study except that most specimens have a distinct white apical margin on the hemelytra, which is the common condition of all *Macropes* species which have variegated hemelytra. The type of *dentipes* is largely destroyed (see Bergroth 1921). The senior author has examined the type specimen and found only the venter remaining, making it impossible to compare it with other species. We are not formally synonymizing the species at the present time because of the described dark condition of the wing which we find only in *praecerptus*, a much larger species in the genus, and because *spinimanus* represents a difficult area in the genus. Eventually it will probably be found that *dentipes* is indeed a synonym of *spinimanus* but this decision cannot be made until the fauna of Ceylon is more thoroughly understood.

The only biological information is a collecting record on bamboo.

Slater and Ahmad (1967) transferred *leucoderma* to the genus *Ischnodemus*. This assignment is erroneous. The action was based on study of a specimen in the Deutsches Entomologisches Institute from East Africa bearing a type label "M. leucoderma." We have recently examined this specimen again and find it to be a specimen of *Ischnodemus zavattarii* Mancini. However, the specimen does not agree at all with the original description of *leucoderma* and the type label must have been placed on this specimen in error. We have, however, examined a brachypterous male in the Deutsches Entomologisches Institute from "Bandarawella Ceylon Horn" which certainly represents the holotype of *leucoderma* as it agrees with the original description in every particular. An appropriate type label has been placed on this specimen. It appears to represent *spinimanus*, although the hind femora are little produced in the middle, and it is here synonymized.

DISTRIBUTION: *M. spinimanus* and most of its apparent synonyms were described from Ceylon. Slater, Ashlock & Wilcox (1969) report records from India, Viet Nam, Thailand and Cambodia. It is here reported for the first time from Laos.

ADDITIONAL MATERIAL EXAMINED: CEYLON: Peradeniya (Dr. Uzel) (the type locality of *sinhalanus* and possibly the type specimen ?)—Sabaragamuwa Prov., Dearwood Kurwita, 6 mi. NNW Ratnapura, indigenous forest (Brinck, Anderson, Cederholm). INDIA: Kodaikanal (T. V. Campbell)—Chikkaballapura (T. V. C.)—Machura (Jos. Dubreuil)—Trichinopoly (Jos. Dubreuil). LAOS: Uekinak nr. PakKading (*sic*) (J. L. Gressitt)—Vientiane Prov., Ban Van Eue, Malaise trap (Native Collector, Rondon). In Bernice P. Bishop Museum, British Museum (Natural History), Hungarian Natural History Mu-

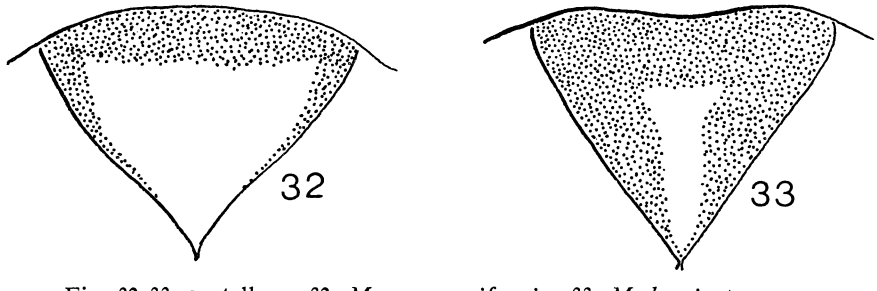

Fig. 32-33, scutellum: 32, *Macropes uniformis*; 33, *M. harringtonae*.

seum, Deutsches Entomologisches Institute, Vienna Museum and J. A. Slater collections.

Macropes yoshimotoi Slater, Ashlock & Wilcox

1969, *Macropes yoshimotoi* Slater, Ashlock & Wilcox, *Pacif. Ins.* **11** (3-4) : 694.

This species is closely related to *spinimanus* but is a larger species (6.5), lacks the swollen protrusion midway along the ventral surface of the ♂ hind femur and possesses a prominent row of tubercles on the inner face of the hind tibiae. The legs of *yoshimotoi* are bright yellow. Slater, Ashlock and Wilcox (*ibid.*) describe the 5th instar nymph.

DISTRIBUTION : Known only from Viet Nam and Thailand.

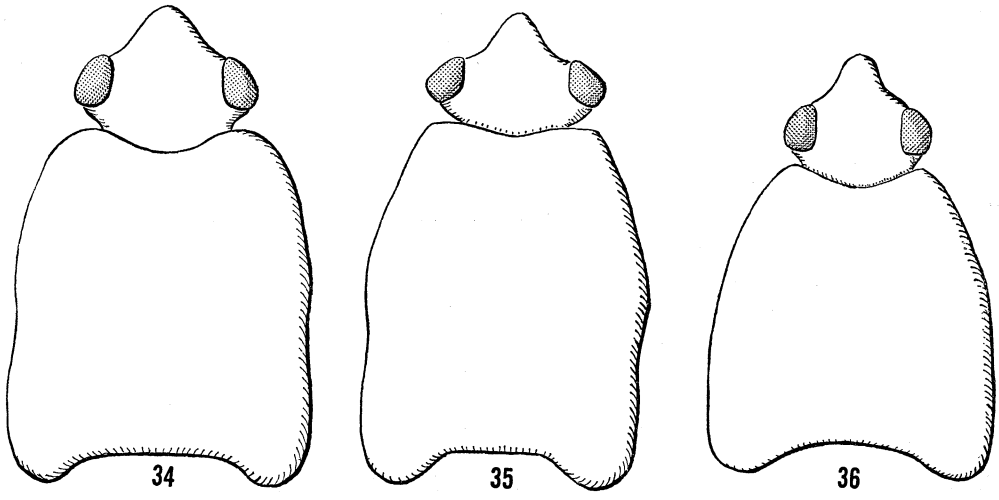

Fig. 34-36, head and pronotum : 34, *Macropes femoralis* ; 35, *M. harringtonae*, ; 36, *M. pseudofemoralis*.

Macropes lacertosus Bergroth

1918, *Macropes lacertosus* Bergroth, *Phil. J. Sci.* **13** (2-3) D : 66-7.

Body robust, elongate, parallel sided; head, pronotum and scutellar median elevation black, shining, becoming red-brown to flavescent on tylus, dark red-brown in area across pronotal humeri, remainder of scutellum dull gray pruinose ; antennal segments II and III flavescent, IV becoming dark red-brown; abdomen and legs red-brown with tarsi and distal ends of femora flavescent ; hemelytra variegated brown and white, dark brown areas on anterior 1/3 of clavus, along apical corial margin widening triangularly at junction of radial vein then narrowing to posterior end, leaving corium pale laterally; a diffuse patch across membrane anterior to distal ends of coria ; a diffuse vitta on disc of membrane, remote from lateral margins and apex ; head and pronotum rugulose, finely punctate across pronotal transverse impression, scutellum lacking distinct punctures ; clothed with decumbent and semi-decumbent sericeus hairs.

Head non-declivent, moderately convex across vertex, tylus broad, extending 3/4 way to distal end of 1st antennal segment, eyes small, ovoid, set well away from antero-lateral pronotal angles, ocelli inconspicuous, length head .57, width .66, interocular space .42; pronotum

with lateral margins sinuate, anterior lobe swollen and elliptical with antero-lateral area "angled," transverse impression very deep, narrow, complete, set far posterior to center of pronotum, posterior margin nearly straight, length pronotum 1.56, width 1.18 ; scutlluem with a low median elevation on distal 1/2, length scutellum .44, width .50 ; hemelytra with apical corial margins nearly straight, membrane broadly rounded at apex, reaching anterior margin of abdominal tergum 7, distance apex clavus - apex corium .94, apex corium - apex abdomen 2.08 ; fore femora greatly incrassate, armed below with 2 rows of stout sharp spines, a large "double" (but not bifid) spine present on distal 1/4, middle and hind femora with 2-6 widely spaced short spines below ; metathoracic scent gland auricle narrow, linear, slightly curved anteriorly ; labium not attaining fore coxae, 1st segment remote from base of head, length labial segments I .36, II .30, III .30, IV .30 ; antennal segments II and III terete, IV narrowly fusiform, length antennal segments I .15, II .34, III .38, IV .58 ; total length 6.0.

The above description is from a ♂, Philippine Islands, Baguio, Benguet (Baker).

The ♀ paralectotype differs from the ♂ described above in having much more extensive dark markings on the wing with the distal half of the coria and the basal third of the membrane forming a complete dark brown band across the wing, and the remainder of the membrane dark brown except white narrowly along the apex and as 3 spots, a small medial spot at level of corial apex and a larger spot laterally on each side of the membrane posterior to the apex of the corium. The pronotum is much more hirsute, has a shallower, wider, more anteriorly placed transverse impression, and does not have the anterior lobe swollen and elliptical. The ♀ also lacks spines on the middle and hind femora, and has the labium extending between the fore coxae.

The other specimens before us show considerable variation in the size and shape of the dark markings on the wing, and some have the fore femora nearly black.

Slater, Ashlock and Wilcox (1969) note that specimens from Mt. Macquiling and Los Banos are considerably darker on the hemelytra than are those from Baguio and St. Thomas, and that the ♂♂ of the latter have a more strongly swollen pronotum with a deeper transverse impression and median longitudinal groove. These authors have designated a ♀ from "Mt. Makiling" Luzon as lectotype.

This species is most closely related to *simoni* and *spinimanus* and can be separated by the characters given in the preceding key.

DISTRIBUTION: *M. lacertosus* is known only from the Philippines.

MATERIAL EXAMINED: PHILIPPINE ISLANDS: paralectotype Mt. Makiling, Luzon (Baker)—Paete (spelling ?)—St. Thomas, Luzon—Los Banos, Nord-Luzon (G. Bottcher)-Baguio, Benguet (Baker). In British Museum (Natural History), Helsinki Museum and J. A. Slater collections.

Macropes simoni Distant

1918, *Macropes simoni* Distant, *Ann. Mag. Nat. Hist.* (9) **2** : 486-7.

Body elongate, slender, parallel sided ; head, pronotum and scutellum black, shining, with tylus, area across pronotal humeri and apex of scutellum dark red-brown ; legs and antennae castaneous with tarsi and distal ends of tibiae flavescent, fore femora dark red-brown ; hemelytra with clavus uniformly light brown, corium white on anterior 1/2, the veins yellowish brown, radial vein raised and shining on anterior 1/2, posterior 1/2 of coria and basal 1/3 of membrane brown, forming a complete band across wing, with posterior margin of band concave, a transverse interrupted white lunate vitta present anterior to and between distal ends of coria, remainder of membrane light brown except narrowly adjacent to apical and lateral

margins ; abdomen above and below red-brown ; head, pronotum and scutellum finely punctate, more coarsely so across pronotal transverse impression, a faint longitudinal line of punctures at midline of anterior pronotal lobe ; clothed with short, semi-decumbent sericeus hairs.

Head non-declivent, moderately convex across vertex, tylus reaching distal end of 1st antennal segment, eyes prominent, set slightly away from antero-lateral pronotal angles, length head .52, width .68, interocular space .40 ; pronotum with lateral margins parallel from humeri to calli area, then angled mesally to anterior margin, transverse impression broad, shallow, complete, posterior margin slightly concave, length pronotum 1.36, width 1.24 ; scutellum with a broad triangular median elevation, length scutellum .52, width .58 ; hemelytra with lateral corial margins nearly straight, membrane broad, bluntly rounded at apex, reaching over anterior margin of abdominal tergum 7, distance apex clavus - apex corium 1.08, apex corium - apex abdomen 2.30 ; fore femora greatly incrassate, armed below with numerous stout sharp spines, no bifid spine present on distal 1/4, middle and hind femora mutic ; metathoracic scent gland auricle broad, ovoid ; labium extending to anterior margin of mesosternum, 1st segment nearly attaining base of head, length labial segments I .38, II .40, III .36, IV .30 ; antennal segments II and III slightly clavate, IV missing, length antennal segments I .16, II .36, III .46 ; total length 6.32.

Simoni is a small variegated species closely related to *spinimanus* but possesses a longer labium which exceeds the fore coxae, a more oval, shorter and broader scent gland auricle, lacks ♂ hind femoral ventral protrusions and has a completely dark clavus.

The type series consists of 2 ♂♂ labeled "Philippines" (E. Simon) 1908. (British Museum (Natural History)). The specimen bearing the British Museum "type" label has been selected as lectotype and an appropriate label attached.

The lectotype shows oligomery of the left antenna, with segments III and IV apparently being fused.

DISTRIBUTION : *Simoni* is known only from the Philippines.

ADDITIONAL MATERIAL EXAMINED : PHILIPPINE ISLANDS : Pr. Rizal, Montalban, Luzon (G. Bottcher) — Subic Bay Nav. Sta. (Holway). In Bernice P. Bishop Museum and J. A. Slater collections.

Macropes umbrosus Slater and Wilcox, new species

Body robust; head, pronotum, scutellum, legs and abdomen above and below dark red-brown to nearly black, scutellar base gray pruinose, apex of tylus yellow ; clavus and corium dark red-brown with a large white patch extending from lateral margin to cubital vein at level of claval commissure, membrane dark brown, marked conspicuously with white as follows: a short narrow strip at extreme base along inner margin, narrowly along apical margin and as a broad transverse lunate vitta across central area, this vitta diffusely interrupted with brown mesally ; antennal segments I and II yellowish brown, becoming darker centrally on III, IV dark red-brown ; head sparsely punctate, pronotum with anterior lobe and area across humeri shallowly rugulose, transverse impression thickly punctate, scutellum with areas laterad of median elevation coarsely irregularly punctate ; sparsely clothed with short semi-decumbent sericeus hairs, appearing nearly glabrous.

Head acuminate, slightly declivent, moderately convex across vertex, tylus extending nearly to distal end of 1st antennal segment, eyes large, set slightly away from antero-lateral pronotal angles, ocelli prominent, length head .56, width .74, interocular space .44 ; pronotum with transverse impression placed far posteriorly, lateral margins arcuate, much wider at calli area than across humeri, posterior margin shallowly concave, lobes not strongly produced laterad of scutellum, length pronotum 1.78, maximum width 1.70, width across humeri 1.46 ; scutellum

with a broad prominent T-shaped elevation, length scutellum .64, width .70 ; hemelytra with lateral corial margins parallel, membrane evenly rounded at apex, reaching over anterior 1/2 of abdominal tergum 7, distance apex clavus - apex corium 1.20, apex corium - apex abdomen 2.20 ; metathoracic scent gland auricle small, ovoid, angled slightly cephalad ; fore femora greatly incrassate, armed below with numerous sharp stout spines, lacking bifid spine on distal 1/4, middle and hind femora moderately incrassate, mutic; labium reaching just beyond fore coxae, 1st segment nearly attaining base of head, length labial segments I .46, II .45, III .40, IV .30 ; antennal segments II and III slightly clavate, IV narrowly fusiform, length antennal segments I .16, II .48, III .52, IV .80 ; total length 6.76.

Holotype, ♂ CEYLON: Puwakpitiya, Hiver, 1906-7 (E. Bugnion). In Paris Museum.

Paratypes, CEYLON: 1 ♀ same data as holotype - 1 ♂, 1 ♀ Labugama, 15-18. VIII.1932 - 2 ♂, 1 ♀ same data but 23.VI.36, 17.VI.32 and 4.VI.34. In Ceylon Museum and J. A. Slater collections.

This species has a color pattern similar to that of *lacertosus*, but it is not closely related, being much larger and more robust, lacking spines on the ♂ hind femora, having a distinctive "banded" color pattern on the wing, and in being nearly glabrous.

Umbrosus is a member of the *spinimanus* complex and can easily be distinguished by the dark anterior third of the corium which area is pale (except the veins) in the other species in the complex. In those species the corium has a bicolored appearance with the anterior half pale and posterior half brown whereas in *umbrosus* there is a "spotted" appearance with the corium brown anteriorly and posteriorly with a large light macula at the level of the claval commissure.

Although all of the specimens are macropters the pronotum of the ♀ of this species is very different from that of the ♂, being parallel sided and lacking the swollen and arcuate anterior lobe which is so striking in the ♂♂.

Macropes varipennis (Walker) Fig. 14.

1872, *Ischnodemus varipennis* Walker, *Cat. Hem. Het. B. M.* **5** : 131.
1894, *Macropes annamita* Bergroth, *Rev. d'Ent.* **13** : 155. **New synonym.**
1901, *Macropes varipennis* : Distant, *Ann. Mag. Nat. Hist.* (7) **8** : 466.

This is a very distinctive, elongate species which is readily recognizable among the "variegated" species by the extremely short labium and the presence of a large distally located ventral spine on the ♂ hind femur. There is considerable sexual dimorphism with ♂♂ having much more heavily incrassate and spinose fore femora. The clasper is as in fig. 14. Slater, Ashlock & Wilcox (1969) figure and discuss in detail the variability and relationships with other genera.

The only biological information is a collection record stating "vie sur feuilles bamboo."

Description of Nymphs

Fifth instar : (pinned) Laos

Head, pronotum, scutellum, wing pads, femora, tibiae and antennal segments III and IV dark brown with distal area of femora and antennae I and II testaceous ; abdomen nearly uniformly brick red above and below except strongly contrasting bright yellow patches anterolaterad on tergum 5 and on sternum 6 broadly in area surrounding SM6 ; SG4-5 subquadrate, lateral margins indented mesally, SG5-6 transversely rectangular, SGA larger than SGP; all sclerites on tergum 7 fused into a single plate covering entire segment except for narrow short indentations an-

teriorly at preconnexival suture; TM6 a transversely elongate bar, TL6 absent; TML spots large, rounded; TPC row a series of small spots and longitudinally elongate dashes; SM7 broad, quadrate, reaching posterior margin of sternum 6, lateral margins slightly sinuate, well separated from SL7, the latter longitudinally elongate, reaching anterior 1/3 of preconnexival segment, but not in contact with inner or outer margin of segment, narrowing to a blunt point anteriorly; SL6 broadly trianguloid, anterior margin bluntly rounded, not reaching posterior margin of sternum 5; SML prominent, spots round to ovoid; SPC a series of irregular dashes; fore femora incrassate, armed below with short spines, a large bifid spine present on distal 1/4, middle and hind femora mutic; labium short, stout, not attaining fore coxae, 2nd segment remote from base of head; length head .54, width .76, interocular space .50; length pronotum 1.12, width 1.36; wing pads extending over anterior 1/2 of abdominal tergum 2, length wing pads 1.70; length abdomen 4.12; length labial segments I .32, II .16, III .24, IV .18; length antennal segments I .16, II .42, III .46, IV .68; total length 6.84.

Two specimens from Tonkin, Viet Nam, differ from the nymph described above in having TA7 narrowly but distinctly separated from TL7 in one specimen, and in having the abdominal ground color yellow and brown rather than red as in the other specimen.

DISTRIBUTION: *M. varipennis* was originally described from Cambodia and reported by Slater, Ashlock and Wilcox (1969) from Viet Nam, Laos and Thailand.

ADDITIONAL MATERIAL EXAMINED: VIET NAM: Cap. St. Jaques 7–10. LAOS: Sayaboury Prov., Sayaboury (Native Collector). In Paris Museum and Bernice P. Bishop Museum.

Annamita was described from Hue, Viet Nam, and subsequently reduced to a variety of *varipennis* by Distant (1901). It is probably based on the Helsinki specimens referred to by Slater, Ashlock and Wilcox (1969), although there is no type information associated with the specimens. Although these specimens are considerably smaller than other material we do not find morphological differences and feel for the present it should be considered synonymous.

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