THE MALAYAN MACHÆROTINÆ (CERCOPIDÆ)

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THREE PLATES AND ONE TEXT FIGURE

The insects composing this group, remarkable in both structure and habit, have been latterly considered to form a subfamily in the Cercopidæ. When only *Machærota* was known, this seemed doubtful, but through other recently described genera the relationship is much more evident. The habits of members of this group distinguish them from all other Cercopidæ, and from most other insects as well; since the nymphs live in calcareous tubes, of curious form characteristic of the various species, and possess remarkable structural adaptations to life in these tubes, which remain attached to their special food plants.

Had the Enderleiniini not been included in the group, the Machærotinæ would have been easy to define, the remarkable scutellar appendage and characteristic structure of the tegmina being diagnostic. Schmidt defined the Enderleiniini as having the scutellum without spinous appendage, but elongate caudad and reaching or exceeding the apex of the abdomen. However, *Machæropsis*, as illustrated by Lallemand,[1] has a scutellum not reaching half the length of the abdomen, though in structure otherwise it appears to be somewhat machærotine; and one of Schmidt's most recent genera, *Modiglianella*, is very close to cercopid genera like *Quinquatrus* Distant and *Hindola* Kirkaldy (=*Carystus* Stål). It seems, arguing from structure alone, that the tribe Enderleiniini should be transferred to the Aphrophorinæ, which already includes far more diverse elements, the latter subfamily to be divided into a number of coördinate tribes.[2] This would not preclude the possibility of the true Machærotinæ being offshoots from Enderleinia-like forms. The

[1] Cercopidæ of the Genera Insectorum (1912).

[2] In Fauna Brit. India, Rhynch. 6 (1916) 184, Distant describes a new genus, *Conditor*, of which he says, "Allied to *Machæropsis*." It does not, however, belong in the same tribe with *Machæropsis* (Enderleiniini), but is apparently closely related to *Pachymachærota* in the Machærotini.

present paper will deal only with the true Machærotinæ known from Malaya.

The first species known in this group was *Machærota ensifera* Burmeister, described in 1835, from Manila. In 1907 [3] Schmidt presented a monograph of the group, separating it into four tribes and recognizing eight genera. In 1912 the same [4] author added two genera, *Modiglianella* from Sumatra and *Neuromachærota* from German East Africa. Two Australian genera, *Polychætophyes* and *Pectinarophyes*, were described by Kirkaldy [5] in 1906, though these were not included in Schmidt's monograph.

Machæropsis Melichar is known only from Ceylon, *Enderleinia* Schmidt only from Togo, and *Pachymachærota* Schmidt from Australia and Sumba. Therefore, half of the known genera and the larger proportion of the known species come from the Malayan Region. Since this region, as well as Australasia, is but little explored as to the Homoptera, the known forms of this group probably represent but a small part of the genera and species in existence. So far, *Machærota* appears to be the only genus of wide distribution, species of it being found from India (with Ceylon and Andamans) and China, to the Philippines, Malaya, and Flores. It will undoubtedly be found still farther to the southeast, through the Moluccas. New Guinea will almost certainly yield interesting members of the group.

In the present paper, two new Philippine species are added to *Machærota; Grypomachærota* is shown to be represented by two new species in Borneo and to occur in Penang; and *Maxudea* is for the first time recorded from the Malay Peninsula.

The Machærotinæ present a most interesting field for anatomical study. The sclerites of the thorax are deeply and sharply marked, and present most remarkable forms. A sounder classification will undoubtedly be possible when these have been exhaustively studied. The hind femora (? in *Maxudea*) usually have a strong tubercle beneath at base. The membranous appendix of tegmina is usually transversely fluted. The impressed horizontal suture in front of ocelli is the actual anterior margin of vertex, the sutures passing forward from its extremities being the lateral margins of frons. The upper portions of the cheeks are thus distinctly superior. It thus results that the projection of the head in *Grypomachærota* and *Sigmasoma* is

[3] Ent. Zeitg. Stettin 68 (1907) 165–200.
[4] Ent. Zeitg. Stettin 73 (1912) 173–178.
[5] Bull. Haw. Sugar Plant. Exp. Sta. 1 (1906) 384–386.

entirely referable to the frons. For purposes of description in this paper, however, the entire superior surface of the head between the eyes is termed vertex.

Subfamily MACHÆROTINÆ sensu stricto

Key to the tribes.

a^1. Body slender; scutellum arched and with a distinct dorsal furrow; pronotum without produced lateral angles.
  b^1. Frons not produced above; hind tibiæ without a tooth..... Machærotini.
  b^2. Frons acutely produced above; hind tibiæ with one tooth..Sigmasomini.
a^2. Body very thick and stout; scutellum nearly flat and with dorsal furrow subobsolete; pronotum with lateral angles produced into high thin laminæ ..... Maxudeini.

Tribe MACHÆROTINI

This tribe includes but one Malayan genus, so far as known.

Genus MACHÆROTA Burmeister

Key to the species.

a^1. Claval vein apically forked.
  b^1. Body of scutellum not high arched posteriorly, its greatest depth much less than length; vertex anteriorly broadly rounded; spatulate scutellar furrow about half length of body of scutellum (Plate I, figs. 1 and 9)..... M. notoceras Schmidt.
  b^2. Body of scutellum high arched posteriorly, its greatest depth as seen from side about equaling length; vertex anteriorly subangulate; spatulate scutellar furrow much more than half length of body of scutellum (Plate I, figs. 2, 3, and 10; Plate II, fig. 1).
M. philippinensis sp. nov.
a^2. Claval vein simple.
  b^1. Median cell short and broad; length of vertex far less than width between eyes posteriorly; spatulate scutellar furrow less than half length of body of scutellum.
    c^1. Length of body of scutellum distinctly greater than that of pronotum; length of scutellar spine less than once and a half the length of body of scutellum; ocelli nearer to median line than to eyes (Plate I, figs. 4, 5, 11, and 14; Plate II, figs. 3 and 4).. M. ensifera Burm.
    c^2. Length of body of scutellum subequal to that of pronotum; length of scutellar spine a little less than twice length of body of scutellum; ocelli as near median line as to eyes (Plate I, figs. 6 and 12; Plate II, figs. 5, 6, and 13)..... M. luzonensis Schmidt.
  b^2. Median cell long and narrow; length of vertex subequal to width between eyes posteriorly; spatulate scutellar furrow much more than half length of body of scutellum (Plate I, figs. 7, 8, and 13; Plate II, figs. 2, 7, and 10)..... M. fusca sp. nov.

In *Machærota notoceras, M. philippinensis,* and *M. ensifera* the sharp upper border of the scutellar spine is extended into the scutellar furrow as a sharp median carina to half its length, whereas in *M. luzonensis* and *fusca,* it scarcely enters this

furrow. All of the species possess a small, thin, semitranslucent, decolored spot on the upper border of the spine near its base. The depth of coloring is widely variable in all of the species, and the males are always smaller and darker than the females. Structural characters only should be depended upon for classification. What appear to be the normal color forms are described in the following pages.[6]

Machærota notoceras Schmidt.

Machærota notoceras SCHMIDT, Ent. Zeitg. Stettin 68 (1907) 192.

This species is common on Penang Island, Wellesley Province, Straits Settlements.

Machærota philippinensis sp. nov.

Female.—Length to end of abdomen, 4.5 millimeters; to ends of tegmina, 6; to end of spine, 7.

Color chocolate; frontal ridge and apex of frons piceous; sides of frons with ten horizontal yellowish stripes, these with numerous short, coarse, appressed white hairs; second antennal joint rufous with white distal border; sides of body of scutellum with curved ivory-white areæ, reaching from anterior lateral angles to anterior extremity of scutellar groove; the thin margins of scutellar groove alternately black and yellow spotted; a few minute black dots on posterior lateral walls of scutellar body; posterior border of scutellar body below spine ivory-white, the stramineous spine separated from brown scutellar body by an irregular piceous border. Veins of tegmina stramineous with scattering piceous dots, the tegmina suffused with very pale stramineous, the costa brown near base. Abdominal dorsum black, first tergite yellow; venter largely piceous; tibiæ and tarsi paler brown than femora.

Frons very minutely punctate-rugose, near clypeus and with clypeus, coarsely punctate-rugose; median ridge broad and strong on upper half of frons; vertex sculptured like the frons. Pronotum deeply, coarsely reticulate-punctate, this becoming weaker near anterior border; the low weak median ridge is continuous throughout; on either side anteriorly are two short, broad, oblique, shallowly depressed areæ, which do not reach anterior margin, and are thickly, minutely punctate or shagreened within. Body of scutellum coarsely reticulate-punctate; scutellar furrow

[6] Characters given in the keys are not repeated in the descriptions, so that for complete diagnoses of the species, the two should be combined.

reticulate within, the lateral margins high and thin; spine with its point about 1 millimeter above apex of tegmina.

Male.—Length to end of abdomen, 3 millimeters; to end of tegmina, 4.5; to end of spine, 5.5.

Colors deeper than in the female, the pronotum almost piceous. The spine is more or less minutely dotted, and the lateral yellow marks on body of scutellum are abbreviated posteriorly.

This is a common species at Los Baños and on Mount Maquiling, both localities in Laguna Province, Luzon Island, Philippine Islands.

Machæroţa luzonensis Schmidt.

Machærota luzonensis SCHMIDT, Ent. Zeitg. Stettin 68 (1907) 189.

Female.—Length to end of abdomen, 4 millimeters; to ends of tegmina, 6; to end of spine, 7.

Color stramineous; spine, and scutellum caudad, pale reddish brown; legs yellowish. Frons yellowish, with eight horizontal piceous bands on either side, and with no median dark color except above; scutellum with an indistinct, median piceous stripe; posterior yellow border of body of scutellum broader below, the intramarginal, deeply depressed line piceous; the curved yellowish marks on sides of body of scutellum very indistinct; a few dark dots on borders of scutellar groove. Abdomen stramineous, ovipositor piceous.

Frons nearly smooth, indistinctly shagreened, the lower border, with clypeus, more coarsely sculptured; face almost entirely without appressed white pubescence. Pronotum coarsely reticulate-punctate except near anterior margin, but the reticulations are not sharp; the four slightly depressed oblique areæ near fore margin short, minutely roughened, and piceous; the median ridge sharp and high. Reticulate character of puncturation less evident on body of scutellum; spine strongly curved at base, its point a millimeter above the apex of tegmina.

In all of the Philippine material before me, there appear to be but two specimens that approximately fit the original description of Schmidt's species. These are from Davao, Mindanao Island, Philippine Islands.

Machærota ensifera Burm.

Machærota ensifera BURMEISTER, Handb. Ent. 2[1] (1835) 128.

The disposition of colors on pronotum in longitudinal stripes clearly marks this species in all of its various light and dark phases. The common form in Luzon is pale in color, but very

dark-colored forms come from Palawan. The palest forms in my collection were taken in Imugan, Nueva Vizcaya Province, Luzon. The very broad, shining, black, median portion of face, broader above, is also characteristic in all color phases; in the Luzon forms this dark color is lacking on the lower frons and on clypeus, whereas in the dark Palawan forms it is broad throughout; only rudiments of horizontal, lateral, frontal stripes are present in any of the color phases. The four slightly depressed and finely sculptured oblique areæ near anterior border of pronotum are concolorous. The spine is scarcely curved where it joins body of scutellum, and its point is about 1.5 millimeters above apex of tegmina.

Abundant throughout the Philippine Islands.

Machærota fusca sp. nov.

Female.—Length to end of abdomen, 5 millimeters; to ends of tegmina, 7.25; to end of spine, 8.5.

Color stramineous to chocolate, to piceous, and strongly contrasted. Entire face black; vertex, pronotum, and scutellum chocolate; posterolateral areæ of pronotal disk stramineous; lateral angles of pronotum shining piceous; lateral areæ of vertex and short longitudinal stripes inclosing the ocelli posteriorly, stramineous; lateral yellow stripes on body of scutellum long, straight, more than two-thirds length of scutellar body and somewhat broader caudad; posterior border of scutellar body very narrowly and shortly yellowed; scutellar spine piceous. Pleuræ stramineous; venter piceous to brown; legs brown, femora stramineous at apex, fore and middle tibiæ stramineous at base, hind tibiæ stramineous on basal three-fourths. Abdomen stramineous above, with broad longitudinal lateral areæ brownish, the narrow venter brownish. Tegmina suffused with stramineous in the region of apical cells, where the veins are pale brown; the remainder of corium subhyaline with piceous veins.

Frons shining and nearly smooth except apically, laterally with subobsolete indications of a few horizontal lateral grooves; clypeus subrugose. Supra-antennal areæ of vertex foveate; frontal area of vertex depressed and with a delicate median carina, the true vertex rugose between the ocelli. Pronotum very coarsely reticulate-punctate except near fore margin, the reticula not sharp; the four finely sculptured depressed areæ near anterior margin very small; median ridge of pronotum weak, becoming obsolete posteriorly. Body of scutellum as coarsely sculptured as pronotum but more irregularly; scutellar furrow

cross wrinkled within, and with borders but little raised; lower posterior angle of posterior border of scutellum unusually prominent. Spine strongly curved, its point 1 millimeter above the apex of tegmina.

Two females of this fine species were taken at Baguio, Mountain Province, Luzon, Philippine Islands.

Tribe SIGMASOMINI

Key to the genera.

*a*¹. Vertical projection of head very long and sword-shaped, the head thus longer than pronotum ..... Sigmasoma Schmidt.

*a*². Vertical projection of head shortly acute, the head much shorter than pronotum ..... Grypomachærota Schmidt.

Genus SIGMASOMA Schmidt

Sigmasoma bifalcata Schmidt.

Sigmasoma bifalcata SCHMIDT, Ent. Zeitg. Stettin 68 (1907) 181.

This remarkable insect was described from Java, but similar forms will probably be discovered in other parts of Malaya also.

Genus GRYPOMACHÆROTA Schmidt

Schmidt [7] describes but one species of this genus, *G. turbinata*, crediting it to Java, Sumatra, and Borneo. Due to the very imperfect figures presented by him, and his very insufficient description, it may be fairly questioned if all of his material belongs to one species. As shown hereinafter, some species which present an extraordinary similarity in color, are completely distinct structurally. Schmidt's failure to give full structural details makes it difficult to compare *G. turbinata* with the three species recorded herein from Borneo.

Key to the species.

*a*¹. Medial cell about five times as long as wide and far longer than stem vein; anterolateral and posterolateral margins of pronotum deeply incurved; length of frons above eyes greater than length below antennæ; posteroinferior angle of scutellum high above lower margin and minutely acute; color pale, darker punctured; face pale with dark crossbars (Plate II, figs. 8, 9, and 11; III, figs. 1, 4, 5, and 8). G. borneensis sp. nov.

*a*². Medial cell little more than twice as long as wide or less, and shorter than stem vein; anterolateral and posterolateral margins of pronotum not deeply incurved; length of frons above eyes less than length below antennæ; posteroinferior angle of scutellum in line with lower margin, and large, obtuse; color dark, head black.

*b*¹. Scutellar spine not strongly decurved, its apex far above apex of tegmina.

[7] Ent. Zeitg. Stettin 68 (1907) 183.

c^1. Scutellar spine but slightly longer than scutellum; height of head above eye equal to depth of eye..... G. turbinata Schmidt.

c^2. Scutellar spine a half or nearly a half longer than scutellum; height of head above eye greater than depth of eye (Plate II, fig. 14; Plate III, figs. 2 and 6) ..... G. tricolor sp. nov.

b^2. Scutellar spine strongly decurved, its apex near apex of tegmina; height of head above eye much less than depth of eye (Plate II, figs. 12 and 15; Plate III, figs. 3, 7, 9)..... G. breviceps sp. nov.

Grypomachærota borneensis sp. nov.

Female.—Length to end of abdomen, 5 millimeters; to ends of tegmina, 6.5; to end of spine, 7.

Stramineous; lower part of face, sternum, and venter piceous, the latter sometimes paler; frons piceous basally and apically, the middle two-fourths stramineous, and each side with eight narrow oblique piceous stripes; vertex dark brown except the stramineous superior cheek areæ, an area connecting ocelli, and the postocular areæ. Punctures of pronotum brown, this rendering conspicuous the stramineous reticula, median carina, and posterolateral borders. Scutellum and base and lower border of spine pale brown; lateral pale stripes on body of scutellum straight, oblique, passing backward and upward to beyond middle; median dorsal line on body of scutellum and entire upper portion of spine except at base (where it is piceous), stramineous; posterior margin of body of scutellum shortly and broadly yellowish and immediately above this piceous; the inferolateral border also narrowly yellowish. Tegmina slightly suffused with stramineous apically, the veins brown to piceous. Legs brown to piceous, apices of femora and nearly all of tibiæ stramineous.

Frons finely, transversely, rugosely wrinkled and shining, more coarsely sculptured below and on clypeus; frons evenly convex on lower half, but with a strong median carina on upper half, this reaching the upper angle of appendage, where the lateral margins are also sharply carinate. Vertex horizontally rugose, with a median carina which apically becomes sharply raised and double; lateral areæ of frontal portion of vertex concave. Pronotum coarsely reticulate-punctate except near anterior border, the reticula not sharp; four small, depressed, oblique, finely sculptured areæ near fore margin as in *Machærota*. Scutellum sculptured like pronotum, the furrow cross wrinkled and with the upper carina of spine scarcely entering it; spine at base with lateral disks sharply longitudinally depressed, its point 1.5 millimeters above apex of tegmina.

This is a common species at Sandakan, British North Borneo.

Grypomachærota tricolor sp. nov.

Female.—Length to end of abdomen, 4 millimeters; to end of tegmina, 5.5; to end of spine, 6.5.

Color black, with red-brown spine, short yellow lateral marks and narrow yellow posterior border of scutellum; tegmina with piceous veins, these apically smoky bordered.

Frons shining, minutely, irregularly, transversely rugose, a sharp median carina only on upper fourth where the lateral margins of appendage are very shortly carinate; clypeus coarsely rugose. Vertex strongly transversely wrinkled, with a short double median carina near apex; lateral areæ of frontal portion of vertex convexly rounded. Pronotum thickly, very coarsely reticulate-punctate, more weakly near fore margin, the reticula sharp; a weak median carina on apical third only; the four small depressed areæ near fore margin rather narrow and elongate. Scutellum sculptured like pronotum; the furrow short, broad apically, and very shallow; lateral surfaces of scutellum below furrow strongly depressed; the lateral depressions on base of spine very deep, foveate; apex of spine 2 millimeters above apex of tegmina.

This very distinct species occurs at Sandakan, British North Borneo.

Grypomachærota breviceps sp. nov.

Length to end of abdomen, 3.5 millimeters; to ends of tegmina and of spine, 5.

Black, with red-brown spine, short lateral yellow marks on scutellum and short yellowish posterior border; legs brownish; tegmina apically suffused with stramineous and with brownish veins; corium transparent, with piceous veins.

Frons shining, finely transversely rugose, entirely without median carina, and with upper lateral carinæ of appendage very weak; clypeus more coarsely sculptured. Vertex finely transversely wrinkled and without median carina. Pronotum and scutellum sculptured as in *G. tricolor;* sides of scutellum below furrow not strongly or broadly depressed, the posterior submarginal impressed line in this species being a long, broad fovea; base of spine laterally not deeply foveate; the very strongly curved spine approaches ends of tegmina within a half millimeter, and does not pass the ends of tegmina, thus differing from all other Malayan Machærotini.

Specimens of this species were collected on Penang Island,

Wellesley Province, Straits Settlements. One might be inclined to place this with *G. tricolor* on color alone, but its structure is very different.

Tribe MAXUDEINI

Genus MAXUDEA Schmidt

From the viewpoint of species, the same difficulty pertains to this remarkably distinct genus as to *Grypomachærota*. The fig-

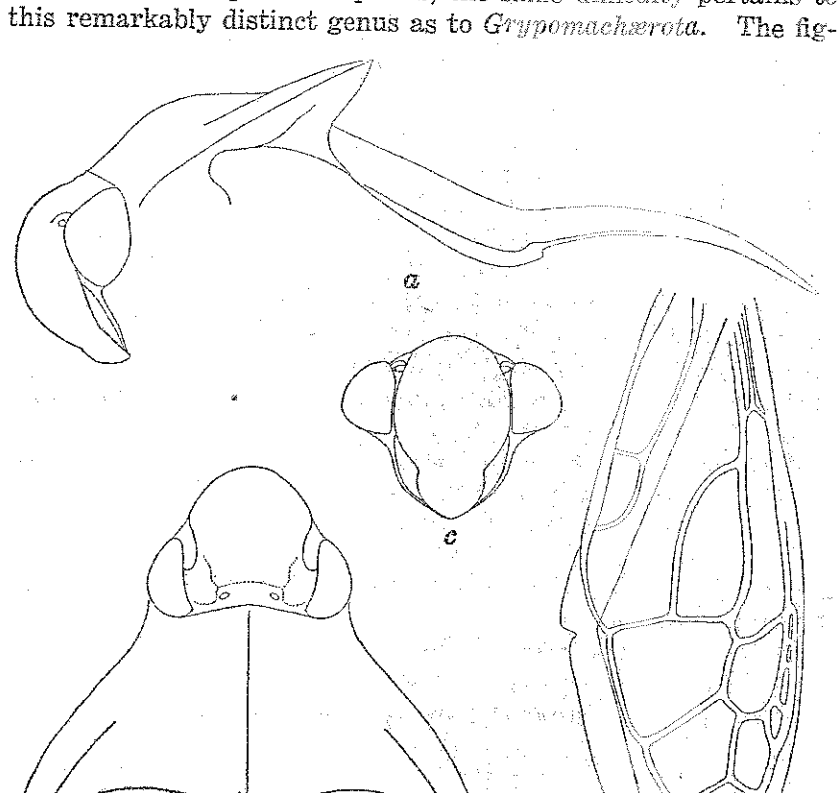

FIG. 1. *Maxudea schmidtii* sp. nov.; *a*, lateral view of head, pronotum, and scutellum; *b*, dorsal view of head and pronotum; *c*, face; *d*, tegmen.

ure and the description given by Schmidt are exceedingly crude. His lateral view of the insect is a quartering one with the head turned slightly away, so that it is impossible to secure exact

proportions of scutellum or of pronotal laminæ. The structure at the base of the scutellar spine as shown for the Sumatran species described by Schmidt,[8] *Maxudea crassiventris,* is so entirely different from that of a species obtained from Penang, that it is necessary to maintain the latter as distinct, at least until better structural data as to *M. crassiventris* can be secured.

Key to the species.

a^1. Lower margin of scutellar spine, above posteroinferior angle, strongly concave.....M. crassiventris Schmidt.

a^2. Lower margin of scutellar spine, above posteroinferior angle, straight. M. schmidtii sp. nov.

Maxudea schmidtii sp. nov.

Female.—Length to end of abdomen, 6.5 millimeters; to ends of tegmina, 7.5; to end of spine, 8; breadth from tip to tip of pronotal laminæ, 5.

Color largely piceous, the pronotal laminæ shining. Face stramineous, a broad median stripe and lower third of frons and clypeus black; lateral portions of frons with about eight dark horizontal lines; vertex stramineous with dark sutures; the frontal horizontal lines continued to ocellar (true frontal) transverse suture. Anterior portion of pronotum stramineous, with four dark spots; disk of pronotum piceous, laminæ black. Scutellar body stramineous with dark punctures, without yellow lateral marks or yellow posterior margin, the spine and inferolateral margins of scutellar body chocolate. Abdomen piceous, the segments with paler margins. Legs reddish brown, basal two-thirds of femora black. Tegmina suffused with stramineous, veins brownish, darker basally.

Frons shining, irregularly shallowly roughened, the horizontal lines being distinct shallow furrows; clypeus coarsely transversely wrinkled. Frontal portion of vertex with an acutely triangular median depression just in front of ocellar suture. Pronotum thickly, coarsely reticulated punctate except near anterior margin, the reticulæ and median carina sharp (stronger anteriorly); the four small depressed areæ near fore margin are irregularly subcircular; anteriorly and posteriorly the flattened laminæ are sharp margined; subparallel with anterior margin of lamina, and near to this margin, a sharp carina passes from disk of pronotum to tip of lamina, forming a sulcus between

[8] Ent. Zeitg. Stettin 68 (1907) 176.

this and margin. Scutellar body sculptured like pronotum, the area of scutellar furrow slightly depressed, without raised margins, the strong reticula here greatly lengthened horizontally to form a series of horizontal carinæ; inferoposterior margin practically absent, the normal inferoposterior tooth of the other Machærotinæ adjoining the base of the spine. All pleuræ strongly rugose; seven tergites thickly, finely rugose-punctate; lower surface of femora bisulcate. Apex of spine 3 millimeters above ends of tegmina.

A specimen of this unique insect was taken on Penang Island, Wellesley Province, Straits Settlements; this is the first record, belonging to the Asian mainland, for this genus.

ILLUSTRATIONS

PLATE I

FIG. 1. *Machærota notoceras* Schmidt, lateral view of head, pronotum, and scutellum.
2. *Machærota philippinensis* sp. nov., face.
3. *Machærota philippinensis* sp. nov., lateral view of head, pronotum, and scutellum.
4. *Machærota ensifera* Burm., lateral view of head, pronotum, and scutellum.
5. *Machærota ensifera* Burm., face.
6. *Machærota luzonensis* Schmidt, lateral view of head, pronotum, and scutellum.
7. *Machærota fusca* sp. nov., lateral view of head, pronotum, and scutellum.
8. *Machærota fusca* sp. nov., face.
9. *Machærota notoceras* Schmidt, dorsal view of head and pronotum.
10. *Machærota philippinensis* sp. nov., dorsal view of head and pronotum.
11. *Machærota ensifera* Burm., dorsal view of head and pronotum.
12. *Machærota luzonensis* Schmidt, dorsal view of head and pronotum.
13. *Machærota fusca* sp. nov., dorsal view of head and pronotum.
14. *Machærota ensifera* Burm., posterior legs, inner and outer view.

PLATE II

FIG. 1. *Machærota philippinensis* sp. nov., tegmen.
2. *Machærota fusca* sp. nov., hind wing.
3. *Machærota ensifera* Burm., tegmen.
4. *Machærota ensifera* Burm., hind wing.
5. *Machærota luzonensis* Schmidt, tegmen.
6. *Machærota luzonensis* Schmidt, tegmen, showing more normal venation than in fig. 3.
7. *Machærota fusca* sp. nov., tegmen.
8. *Grypomachærota borneensis* sp. nov., hind wing.
9. *Grypomachærota borneensis* sp. nov., tegmen.
10. *Machærota fusca* sp. nov., upper surface of scutellum, with furrow.
11. *Grypomachærota borneensis* sp. nov., upper surface of scutellum, with furrow.
12. *Grypomachærota breviceps* sp. nov., tegmen.
13. *Machærota luzonensis* Schmidt, upper surface of scutellum, with furrow.
14. *Grypomachærota tricolor* sp. nov., upper surface of scutellum, with furrow.
15. *Grypomachærota breviceps* sp. nov., upper surface of scutellum, with furrow.

PLATE III

FIG. 1. *Grypomachærota borneensis* sp. nov., lateral view of head, pronotum, and scutellum.
2. *Grypomachærota tricolor* sp. nov., lateral view of head, pronotum, and scutellum.
3. *Grypomachærota breviceps* sp. nov., lateral view of head, pronotum, and scutellum.
4. *Grypomachærota borneensis* sp. nov., as seen when dorsum of pronotum is horizontal.
5. *Grypomachærota borneensis* sp. nov., as seen when surface of vertex is nearly horizontal.
6. *Grypomachærota tricolor* sp. nov., as seen when surface of vertex is nearly horizontal.
7. *Grypomachærota breviceps* sp. nov., as seen when surface of vertex is nearly horizontal.
8. *Grypomachærota borneensis* sp. nov., face.
9. *Grypomachærota breviceps* sp. nov., face.

TEXT FIGURE

FIG. 1. *Maxudea schmidtii* sp. nov.; *a*, lateral view of head, pronotum, and scutellum; *b*, dorsal view of head and pronotum; *c*, face; *d*, tegmen.

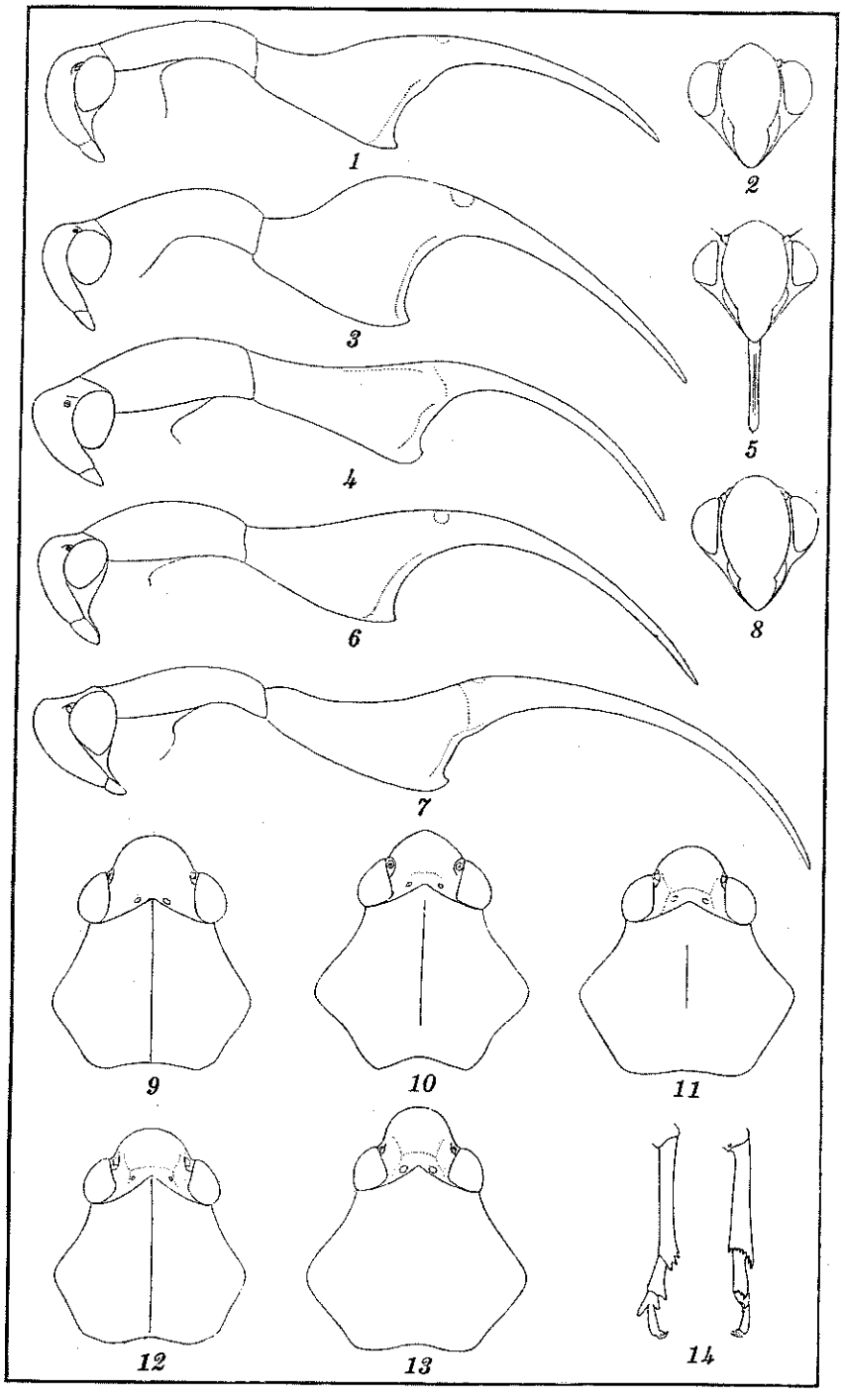

PLATE I. MALAYAN MACHÆROTINÆ.

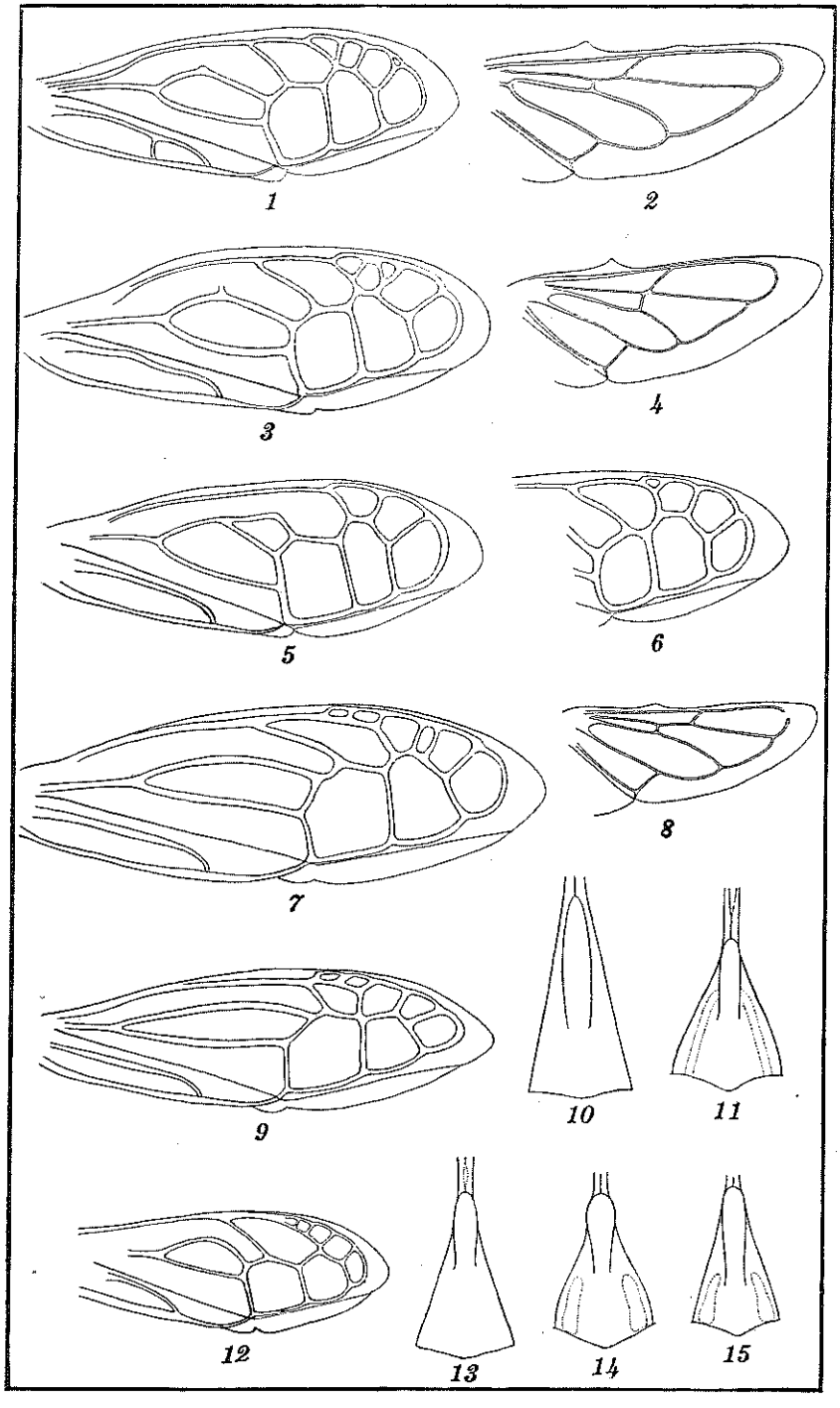

PLATE II. MALAYAN MACHÆROTINÆ.

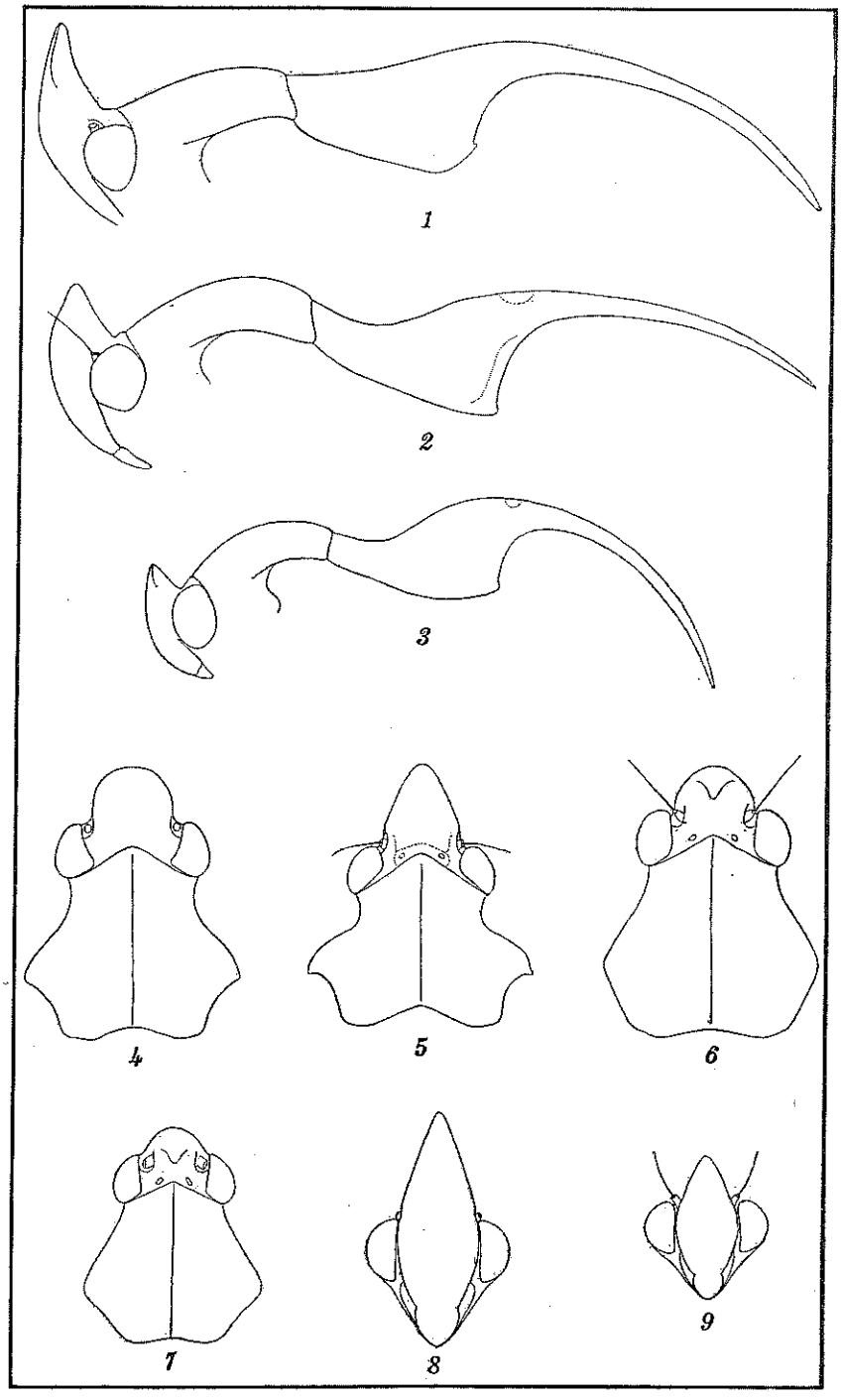

PLATE III. MALAYAN MACHÆROTINÆ.