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ATHETA AND ITS ALLIES OF SOUTHEAST ASIA (COLEOPTERA: STAPHYLINIDAE)

I. Reexamination of some species from Borneo and Singapore

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Abstract. As the first approach to a study of the *Atheta* fauna of SE Asia, 10 species from Borneo and Singapore are reviewed and redescribed. Their taxonomic position is also discussed.

In the vast area of SE Asia, with its tropical rain forest, a very rich *Atheta* fauna and allied forms are to be expected. The first approach to studying the fauna was made in Ceylon by Kraatz (1859) and Motschulsky (1857), and since, numerous species have been reported mainly by Bernhauer (1915, etc.) and Cameron (1920, etc.) from various countries of the area, although the research is still very incomplete and many species remain unknown. Preliminary to describing some of these new species, however, it was felt necessary to review some of the older, poorly known species. The British Museum (Natural History), London (BMNH) and the Field Museum of Natural History, Chicago (FMNH) kindly allowed me to inspect their types. These will be reported on in a series of papers; a summary review will be presented in a final paper. The species discussed in this first article are as follows: *Hylodesina moorei* Bernhauer, 1936; *Hylodesina sarawakensis* (Bernhauer, 1915), n. comb.; *Hylodesina hewitti* (Bernhauer, 1915), n. comb.; *Taxicera pendleburyi* (Cameron, 1933), n. comb.; *Mimacrotona cingulata* Cameron, 1920; *Acrotona* (*Acrotona*) *rufiventris* (Cameron, 1920), n. comb.; *Acrotona* (*Acrotona*) *horrida* (Cameron, 1933), n. comb.; *Atheta* (*Chaetida*) *ruparia* Cameron, 1920; *Atheta* (*Badura*) *vulgaris* Cameron, 1920; and *Atheta* (*Microdota*) *putridula* (Kraatz, 1859), n. comb.

Genus **Hylodesina** Bernhauer, 1936

Type-species: *Hylodesina moorei* Bernhauer, 1936: 215.

In *H. moorei,* the mandibles are produced to form a prolonged distal hook; the inner margin of the right mandible bears a well-defined notch and a row of dentition inside the margin. Labral margin is broadly produced medially and with slender, incurved *b*-sensillae which are widely separated by the produced margin. Inner armature of the aedeagus with basal capsule of copulatory piece, derived by the fusion of suspensoria. In addition, glossa is long and bisetose. Chaetal arrangement of labial palpus modified. Abdominal macrochaetotaxy 01 type.

Hylodesina is a close relative of *Halobrecta* Thomson, 1850, of the *Coprothassa* series (sensu Yoshii & Sawada 1976: 112) in all these respects.

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Hylodesina moorei Bernhauer FIG. 1

Hylodesina moorei Bernhauer, 1936: 216.

♂. Dark brown to black in ground color and strongly shining; head and pronotum dark brown, but elytra slightly brighter; abdomen becomes paler towards the basis; antennae mostly blackish excepting reddish-brown basal segments; legs totally paler. Body moderate in size and rather flat above. Head characteristically large for the corpus, with numerous coarse punctures on the middle, leaving a nearly smooth median area. Frontal margin fairly raised and with a row of 2 flat teeth. Surface covered with long secondary setae and conspicuous microsculpture. Eyes fairly convex laterally, with long post genae. Antenna short; segment I narrow in relation to II; III subequal to II in length; IV small, while VI abruptly large; XI moderately long. Cervical carina is diverged. Labrum (FIG. 1*A*) not emarginate, but lightly produced at the middle of the anterior margin: *m-2* on the level of *d-2*; *p-1* posterior to *p-2*. 1+1 secondary setae present. Labral margin (FIG. 1*B*) modified; *a* fairly long, setaceous; *b* converted to a narrowly elongate, curved spinule, which is separated from another spinule of *b* by the broad margin between. Mandibles large, produced distally, ending in a strong hook; right mandible (FIG. 1*C*) with deep notch on inner margin, and a row of coarse dentition placed well within inner margin. Maxillary palpus 4-segmented; segment II similar to III; IV (FIG. 1*D*) bears well-developed basal sensillae. Inner margin of lacinia gradually dilated and with dense marginal cilia. Distal comb consists of teeth which are clearly separate from one another. Galea with a large distal lobe bearing very short, dense cilia all over. Labial palpus (FIG. 1*E*) 3-segmented; setula α marginal; β close to *tp*; γ closer to seta *f* than to *b*; δ near level of *mp*; *a* on same level with *tp* and fairly short compared to *b*; *e* anterior to *f*; *g* remote from *mp*. Glossa (FIG. 1*F*) narrowly elongate and bifurcate apically into 2 narrow arms. A pair of long setae present at about middle of glossa. Paraglossa well developed with long setae. From prementum (FIG. 1*F*) the median area is broad, with numerous small pseudopores. In lateral area, anterior margin subcrenulated, with 1 setal pore, 2 real pores and a few small pseudopores. Mentum (FIG. 1*G*) emarginate in front; *v* is a small setula and close to *u* in position. Pronotum broadly depressed on the middle and abruptly narrowed behind; lateral erect setae fairly long and numerous in number; surface provided with many large and small punctures. Prosternum normal. Mesosternum shortly pointed behind and never carinate or raised in middle. Elytron longer than wide and not emarginate behind; surface lightly depressed along suture. Legs very long; pro- and mesotibiae densely spinose, with very short, fine macrosetae. Numerous long setae are situated inferior to the pro- (FIG. 1*H*) and mesotarsi. Abdomen nearly parallel, with markedly raised lateral margins. Macrochaetotaxy as 01-12-12-12-12-23, in which the intermediate seta to be denoted as *p-1* (FIG. 1*I*) is fairly advanced in position. Lateral erect setae long and conspicuous. Tergite VIII (FIG. 1*J*) short and nearly truncate on posterior margin; among 4+4 major setae, *a-2* closest to stigma; *a-1* much shorter than others; microsculpture with imbricate pattern. Sternum VIII (FIG. 1*K*) fairly constricted behind and ending in a truncate apical margin; major setae long and curved as in terg. VIII. In aedeagus median lobe (FIG. 1*L, M*) 0.62 mm long; in ventral view apical lobe acuminate and lightly sinuate basally; in lateral view nearly straight. Costa *ar. c.* mostly confluent, recurved distally, with high projection. Copulatory piece of inner armature (FIG. 1*N*) has enormously long, filiform apical process and small basal portion in which annellus is situated. Instead of suspensorium, a large membraneous capsule (*c* in FIG. 1*N*) present. Distal apodemes consisting of 2 pairs of angulate sclerites (*s*). Lateral lobe (FIG. 1*O*) narrowly elongate; vellum narrow; middle apodeme not differentiated. Distal segment strongly reduced compared to corpus; among 4 major setae *a, b* standing close together; *c, d* subequally short and apical in position.

Length: ca 3.00 mm (head 0.38 mm long × 0.60 mm wide; pronotum 0.50 mm × 0. 57 mm; elytra 0.56 mm × 0.72 mm).

♀. Unknown.

Material examined. Holotype ♂, from Mt Dulit, Sarawak (FMNH).

Remarks. The posteriorly dislocated seta *h* of the labial palpus, the prolonged distal hook of the mandibles and the numerous median pseudopores of the prementum are features peculiar to the present species. In addition, abdominal sternum

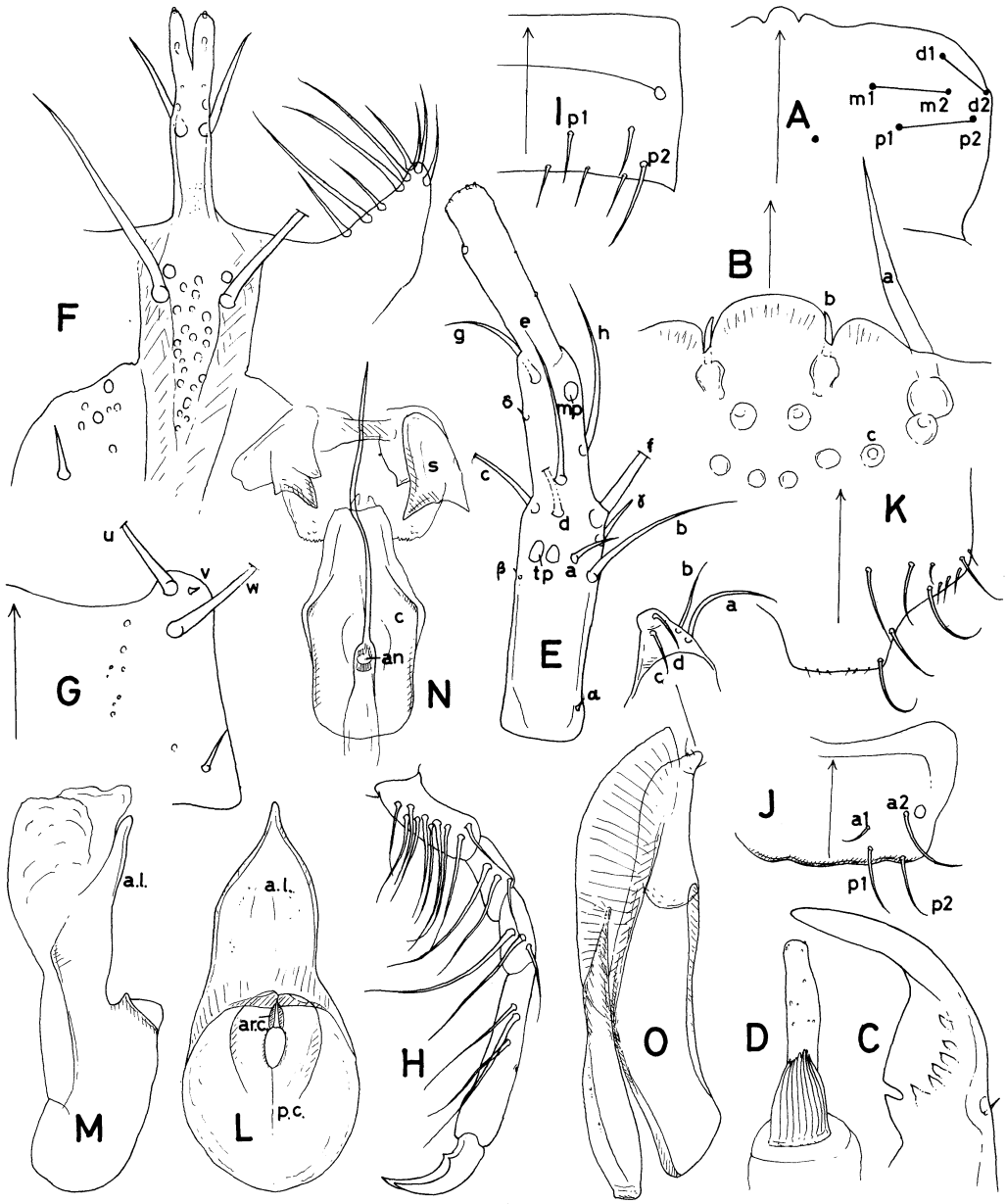

FIG. 1. *Hylodesina moorei*, holotype ♂: *A*, labral chaetotaxy; *B*, labral margin; *C*, right mandible; *D*, segment IV of maxillary palpus; *E*, labial palpus; *F*, glossa and prementum; *G*, mentum; *H*, protarsus; *I–J*, tergite III and VIII; *K*, sternite VIII; *L–M*, median lobe (ventral and lateral view); *N*, inner armature of aedeagus; *O*, lateral lobe. c, membranous capsule of copulatory piece; s, angulate sclerite of distal apodeme. Other abbreviations for structures in this figure and following figures are as in Sawada (1972: 34, 44): a. l., apical lobe; an, annelus; ar. c., arcuate costae; dt. ap., distal apodeme; m. c., median costa; mp, median pore; p. c., proximal costa; tp, twin pores; v. ap., ventral apodeme.

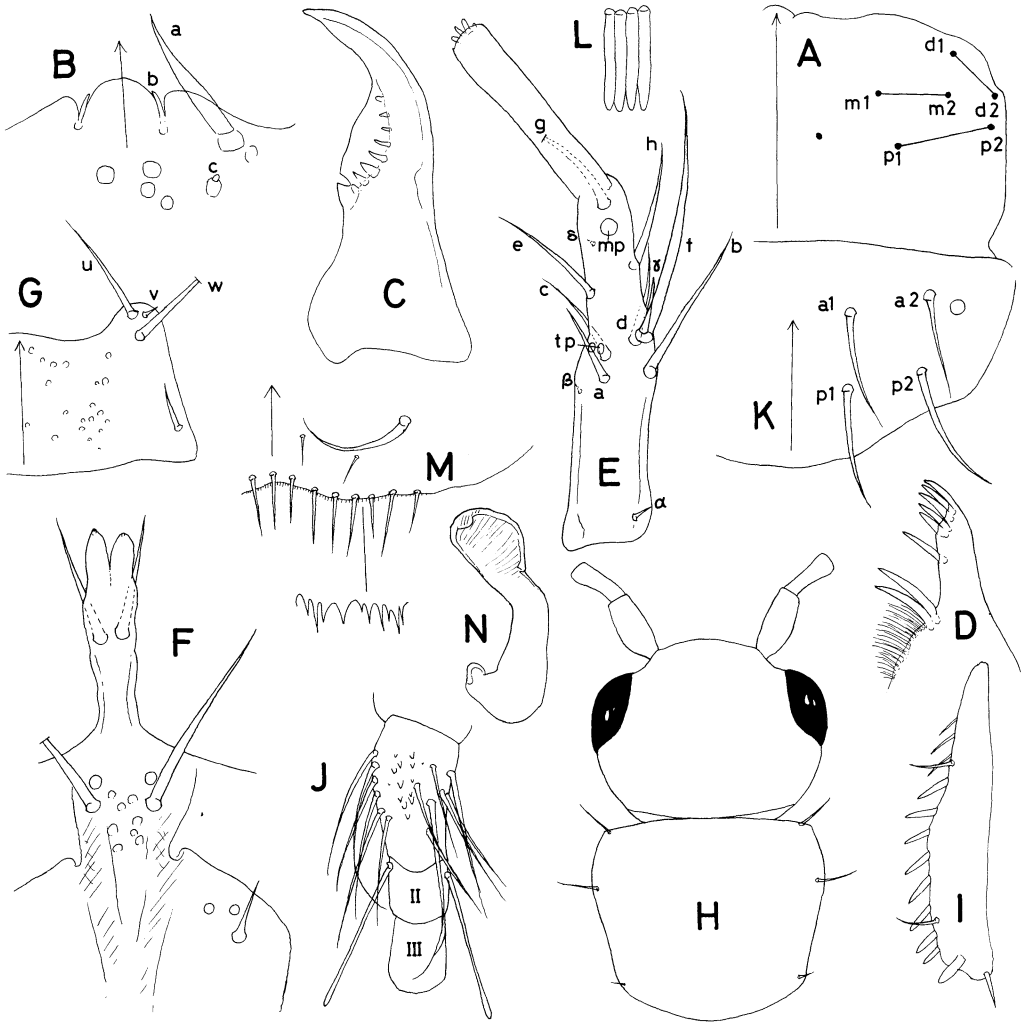

FIG. 2. *Hylodesina sarawakensis,* holotype ♀: *A,* labral chaetotaxy; *B,* labral margin; *C,* right mandible; *D,* lacinia; *E,* labial palpus; *F,* glossa and prementum; *G,* mentum; *H,* head and pronotum; *I,* protibia; *J,* protarsus (ventral view); *K,* tergite VIII; *L,* flat spines of terg. IX: *M,* sternite VIII; *H,* spermatheca. For explanation of abbreviations see FIG. 1.

VIII is characteristically produced posteriorly, and the pro- and mesotarsi possess long conspicuous setae.

Distribution. Borneo.

Hylodesina sarawakensis (Bernhauer), **new combination** FIG. 2

Atheta (*Taxicera*) *sarawakensis* Bernhauer, 1915: 31.

♀. Ground color dark brown and shining in dried condition. Body narrow. Head somewhat broader than long and abruptly narrowed behind; surface with coarse punctures. Eyes large. Antenna delicate for the corpus; segment III narrowly elongate; IV smallest; V–X abruptly dilated. Labrum (FIG. 2*A*) nearly truncate; *m-2* on level of *d-2*; *p-2* positioned close to *d-2*; medial row of setae short compared to proximal row. Sensilla *a* of labral margin (FIG. 2*B*) setaceous, strongly converging; *b* narrowly elongate, incurved and widely separated from each other; *c* nearly completely reduced. Mandibles prolonged beyond apex of head and ending in hooked apex; right mandible (FIG. 2*C*) with a small notch behind middle of inner margin and an inner row of dentition consisting of up to 7 short teeth. Maxillary palpus 4-segmented. Lacinia (FIG. 2*D*) narrowed distally, with short distal comb and 2 long teeth separated from the comb. Labial palpus (FIG. 2*E*) 3-segmented; α marginal, β remote from *tp*, which is small compared to *mp*; γ on same level with *f*; δ close to *mp*; *a* much shorter than *b*; *c* placed between *f* and *h*; *mp* clearly anterior to *h*. All segments long and nearly parallel. Glossa (FIG. 2*F*) fairly long and bifurcate at apex, with a pair of long setae near middle. In prementum (FIG. 2*F*) median area broad, with some 8 pseudopores; lateral area has 1 setal pore and 2 real pores transversely arranged and without any trace of pseudopores. Mentum (FIG. 2*G*) emarginate in front; *v* a minute setula, placed close to *u*. Pronotum (FIG. 2*H*) abruptly narrowed behind; lateral erect setae long, very fine; microsculpture conspicuous as on head. Sterna not modified. Pro- (FIG. 2*I*) and mesotibiae spinose, the former more or less dilated. Pro- (FIG. 2*J*) and mesotarsi with long setae, some spatulate. Elytron longer than pronotum measured with suture; surface similarly sculptured to pronotum. Flabellum of hind wings has 1 long seta. Macrochaetotaxy as 01-12-12-12-12-23. Abdomen parallel-sided and nearly glabrous except for posterior margin of each tergite where there are some setigerous granules. Terg. VIII (FIG. 2*K*) sinuately produced behind; among 4+4 subequally long major setae, *a-2* located before level of stigma; *a-1* on level of stigma. Terg. IX with a basal row of comb consisting of flat spinules (FIG. 2*L*). Stern. VIII (FIG. 2*M*) broadly emarginate at posterior margin, with minutely denticulated margin. Spermatheca (FIG. 2*N*) short, dilated towards end; bursa bulbous and with an obtuse umbilicus.

Length: 2.88 mm (head 0.35 mm long × 0.50 mm wide; pronotum 0.41 mm × 0.50 mm; elytra 0.50 mm × 0.67 mm).

♂. Unknown.

Material examined. Holotype ♀ from Mt Bongo, Sarawak (FMNH).

Remarks. *H. sarawakensis* must be included in the genus *Hylodesina* by the presence of a modified labral margin and notched mandible. In addition, the glossal setae are fairly long and the lateral area of the prementum is devoid of any pseudopores.

Distribution. Borneo.

Hylodesina hewitti (Bernhauer), **new combination** FIG. 3

Atheta (*Taxicera*) *hewitti* Bernhauer, 1915: 31–32.

♂. Light reddish brown in ground color and subopaque in dried condition; head darker than pronotum; elytra intensively pigmented; abdomen fairly bright leaving terg. VI–VII a little infuscate; antennae and legs uniformly brown. Body rather flat above and subparallel. Head large for corpus, flat above and never depressed or foveolated on the vertex; surface provided with numerous coarse punctures except for the smooth median area between antennae. Cervical carina diverged. Eyes large so that postgenae are fairly short. Antenna short, conspicuously hirsute on each segment; segment I apparently broad; III shorter than II; IV smallest, moniliform; V–X strongly transverse. Labrum (FIG. 3*A*) clearly produced on each lateral corner; as seta *d-2* is posteriorly dislocated, the distal row of setae obliquely arranged; *m-2* separated from distal row; *p-2* situated posteriorly compared to *p-1*; proximal row fairly long; 1+1 secondary setae present. Sensilla *a* of labral margin (FIG. 3*B*) normally long and setaceous; others inconspicuous. Mandibles elongate; right mandible (FIG. 3*C*) has a deep notch on middle of inner margin. Maxillary palpus 4-segmented; segment III subequal to II in length and only gently dilated distally. Lacinia (FIG. 3*D*) abruptly dilated on inner margin, 2 isolated teeth well differentiated. From labial palpus (FIG. 3*E*) segment III strongly swollen and with some distal sensillae; α normal but β close to *tp*; γ on same level

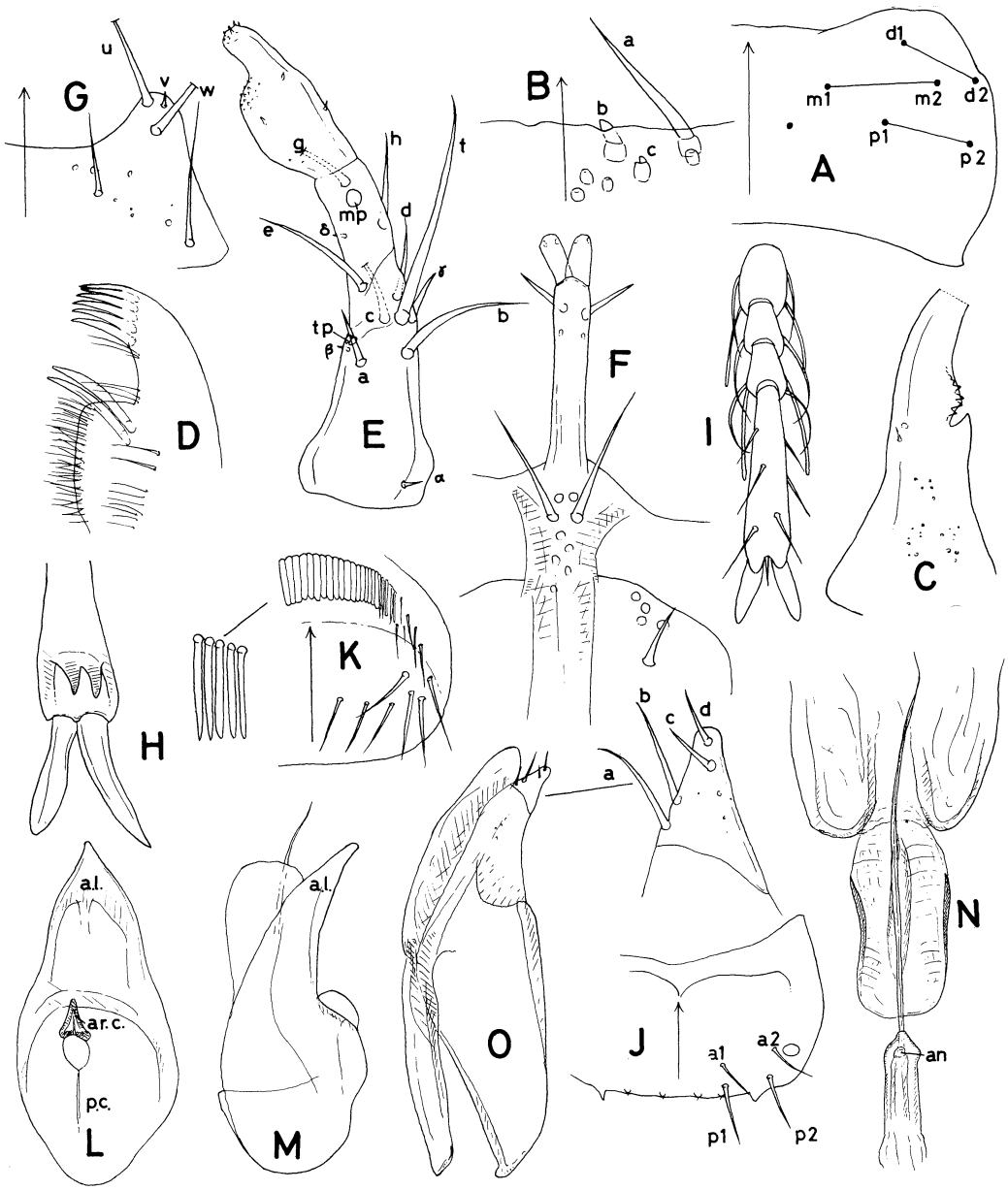

FIG. 3. *Hylodesina hewitti,* holotype ♂: *A,* labral chaetotaxy; *B,* labral margin; *C,* right mandible; *D,* lacinia; *E,* labial palpus; *F,* glossa and prementum; *G,* mentum; *H,* metatarsus (ventral view); *I,* protarsus; *J–K,* tergite VIII and IX; *L–M,* median lobe (ventral and lateral view); *N,* inner armature of aedeagus; *O,* lateral lobe. For explanation of abbreviations see FIG. 1.

with *f*; δ on level of *h*; *a* on level of *b*, much shorter; *e* normal in position, while *mp* apically dislocated to segment; *g* posterior to *mp* and fairly short in relation to *f*. Glossa (FIG. 3*F*) narrowly elongate and forked apically into 2 short lobes and with a pair of setae at distal 4th. Prementum (FIG. 3*F*) normally broad; paired distal setae apparently short and with some 6 small pseudopores; in lateral area 1 setal and 2 real pores are mingled with 2 small pseudopores. Each lateral corner of mentum (FIG. 3*G*) distinctly protruded, with long setae to be named as *u*, *w* and minute *v*, each confined to the corner. Pronotum somewhat flat above and depressed on middle, depression entirely confluent to basal fovea; sides abruptly narrowed behind, with nearly straight lateral margins; lateral erect setae fairly long. Prosternum broadly emarginate behind and without median carina. Legs long; tarsal formula, 4,5,5; metatarsus very long compared to tibia; segment I long; V subequal to I in length, with deep apical notch and unequal claws (FIG. 3*H*). Protarsus with long curled setae, some lightly clavate in form (FIG. 3*I*). Elytron much longer than pronotum measured with suture and slightly emarginate posteroexternally; surface much rougher than pronotum. Flabellum with 1 short and 2 very long setae. Mesosternum short, pointed behind and without median carina. Metasternum quite obtuse. Abdomen nearly parallel and subglabrous. Macrochaetotaxy as 01-02-12-12-12-23. Terg. VIII (FIG. 3*J*) short, nearly truncate in posterior margin, where there is a small tooth on each side and up to 4 fine thickenings between the teeth; stigma more distally removed than usual; *a-2* very close to stigma; microsculpture coarsely imbricate. Terg. IX (FIG. 3*K*) has a basal row of similarly long, flat spines. Stern. IX acuminate behind, with nearly truncate apex, where it is broadly concave and well sclerotized. In aedeagus median lobe (FIG. 3*L*, *M*) 0.60 mm long; in ventral view apical lobe sinuate basally and acuminate to form a short, acute apex; in lateral view it is gradually bent down in its full length. Costa *ar. c.* short, entirely confluent and fairly raised; others inconspicuous. Copulatory piece (FIG. 3*N*) enormously long, filiform with small basal portion where annellus is seen. There is a basal capsule (*c*) guarding the copulatory piece. Distal apodemes apparently membranous. Lateral lobe (FIG. 3*O*) well sclerotized; vellum considerably reduced; middle apodeme not differentiated; distal segment short, with 4 similarly short setae normally arranged.

Length: ca 3.20 mm (head 0.41 mm long × 0.48 mm wide; pronotum 0.35 mm × 0.64 mm; elytra 0.52 mm × 0.80 mm).

♀. Unknown.

Material examined. Holotype ♂, from Sarawak (FMNH).

Remarks. As the right mandible has a marginal notch and the lateral lobe of the aedeagus has a short distal segment, the species is placed in *Hylodesina.* In this species the swollen labial palpus and unmodified labral margin are specific characters.

Distribution. Borneo.

Taxicera pendleburyi (Cameron), **new combination** FIG. 4

Atheta (*Atheta*) *pendleburyi* Cameron, 1933: 358.

♂. Dark brown in ground color, shining and with short pubescence; head darker; antennae brown and with paler basal segments; legs totally reddish brown. Body medium-sized and convex above in foreparts. Head rounded and with narrow median depression on the vertex; surface without any large punctures. Eyes large. Antenna long; segment I–III short; II nearly as long as III; IV much smaller than V, a little transverse; V–X gradually increasing in width; XI short; each segment has short macrosetae. Cervical carina diverged. Labrum (FIG. 4*A*) broadly emarginate in front; *m-2* reaching to distal row of setae; *p-1* clearly separated from medial row and much shorter than *m-2*; 3+3 secondary setae present. Sensilla *a* of labral margin (FIG. 4*B*) long and setaceous; *b*, *c* considerably reduced. Anterior margin has 2 deep notches to which *b* is inserted. Maxillary palpus 4-segmented; segment II robust and short compared to III, which is fairly dilated distally; IV relatively long and narrow in its full length. Lacinia not dilated in the inner margin. Labial palpus (FIG. 4*C*) long; setula α normal in position; β separated from *tp* and γ dislocated behind *f*; δ on level of *h*; *a* posterior to level of *b*; *e* fairly anterior to *f*; *mp* on same level with *h*. Glossa (FIG. 4*D*) forked and with a pair of distinct setae. Median area of prementum (FIG. 4*D*) normally broad and with some 5 pseudopores, while in the lateral area pseudopores are ca 10 in number, with

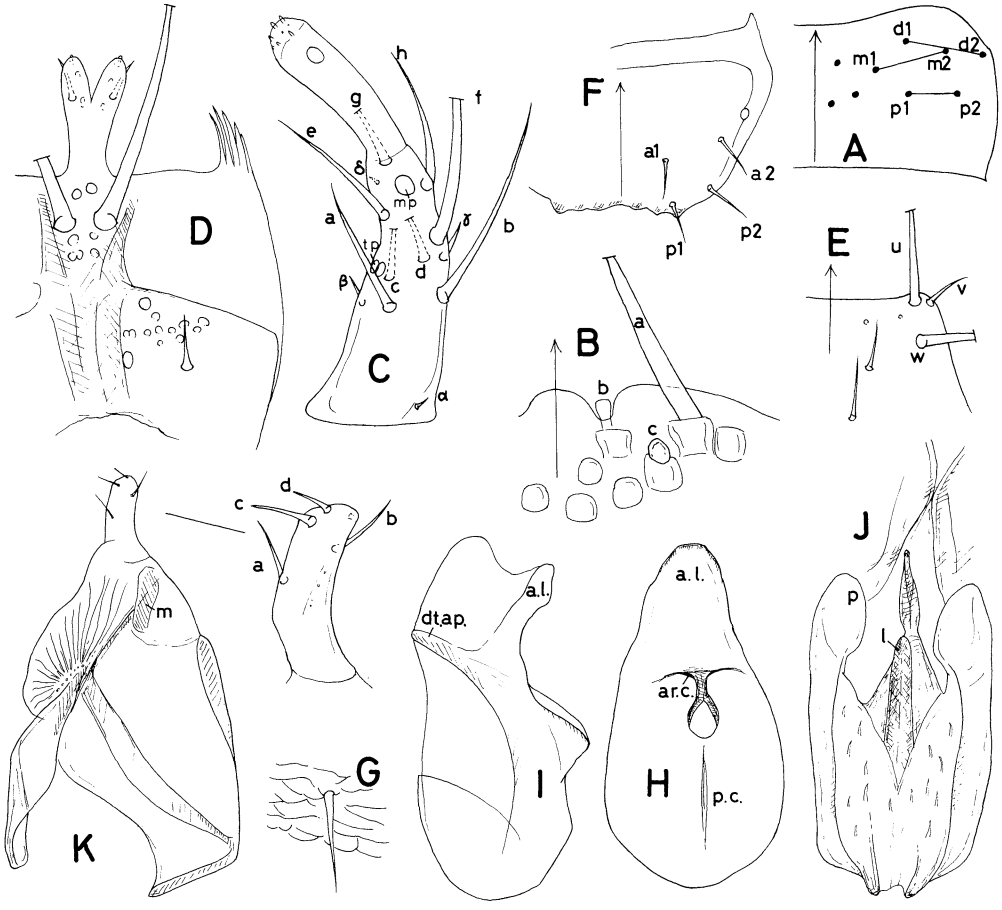

FIG. 4. *Taxicera pendleburyi*, holotype ♂: *A*, labral chaetotaxy; *B*, labral margin; *C*, labial palpus; *D*, glossa and prementum; *E*, mentum; *F–G*, tergite VIII with microsculpture; *H–I*, median lobe; *J*, inner armature of aedeagus; *K*, lateral lobe. *l*, sclerotized lobe of copulatory piece; *m*, middle apodeme of medial segment; *p*, apical dilatation of suspensorium; other abbreivations, see FIG. 1.

posterior one on border of median area. Mentum (FIG. 4*E*) nearly truncate in front; *v* short and positioned very close to *u*. Pronotum very convex above and not modified on the middle; sides uniformly arcuate in front and behind, with normally long lateral erect setae; surface subglabrous and microsculpture mostly vanishing; secondary setae along middle directed anteriorly. Mesosternum briefly pointed with narrowly rounded apex. Elytron not deplanate above and faintly emarginate posteroexternally, more densely granulated than in pronotum and with a short macrosetae on humeral corner. Flabellum of hind wing with 7 setae. Macrochaetotaxy of abdomen as 01-11-12-12-12-34. Abdomen nearly parallel from terg. II–IV and then gradually constricted distally, with some short erect setae. Terg. VII with punctiform median protuberance close to posterior margin. Terg. VIII (FIG. 4*F*) short; posterior margin faintly emarginate, obsoletely crenulated and with an indistinct tooth on each side; 4+4 major setae are shorter than usual. Microsculpture (FIG. 4*G*) imbricate in pattern. The median lobe of aedeagus (FIG. 4*H, I*) 0.42 mm long; apical lobe short and with subtruncate apex; in lateral view, abruptly bent downwards and with flat apical

portion. Costa *ar. c.* short and laterally ending in a slender projection; *v. ap.* indistinct. In inner armature of aedeagus (FIG. 4*J*) copulatory piece strongly modified; apical process spiniform, bent upwards and with constriction basally; over the corpus there is a long, strongly sclerotized lobe (*l*) which gives a peculiar appearance to aedeagus; suspensorium long and apically converted to a thin round plate (*p*). Distal apodeme poorly developed and narrowly sclerotized in middle. Lateral lobe (FIG. 4*K*) broad; proximal segment long, but vellum rather small; medial segment not produced but simply angulated proximally; middle apodeme (*m*) broad. Distal segment elongate; *a* inner-proximal and *b* outer-distal in position, *c, d* close to each other; *c* much longer than *d*.

Length: 2.70 mm (head 0.32 mm long × 0.45 mm wide; pronotum 0.42 mm × 0.57 mm; elytra 0.48 mm × 0.71 mm).

♀. Unknown.

Material examined. Holotype ♂, from Mt Kinabalu (1900 m), North Borneo [Sabah] (FMNH).

Remarks. In all respects, the present species is to be included in *Taxicera* Mulsant et Rey, 1873. In facies and also in detailed structures, except for the different features of the inner armature of the aedeagus, this species is closely allied to the Japanese *T. academica* Sawada, 1976.

Distribution. Borneo (Mt Kinabalu).

Mimacrotona cingulata Cameron FIG. 5

Mimacrotona cingulata Cameron, 1920: 269.

♀. Ground color in glycerol bright reddish brown and shining; head more intensively pigmented than pronotum; elytra similarly infuscate to the head; abdomen reddish brown and darker towards the extremity; antennae brown, fairly infuscate distally and legs uniformly paler. Body robust in foreparts and narrowed behind. Head rounded in outline and not modified in middle; surface obsoletely punctured throughout. Eyes moderate in size, flat above and postgenae subequal to eyes in length. Antenna short and dilated distally; segment I–II stout; III narrower and shorter than II; IV wider than long and similar to V in size; VII–X strongly transverse; XI short. Cervical carina seemingly not diverged. Labrum (FIG. 5*A*) peculiarly modified: sensilla *a* setaceous; *b* also setiform, and not conical as usual; *c* entirely reduced. Mandibles short and briefly hooked at apex; right mandible (FIG. 5*B*) with an obtuse molar tooth and with a row of marginal serrulations distal to the tooth. Maxillary palpus (FIG. 5*C*) 4-segmented; segment II normally dilated, III fusiform and fairly long; IV short and with a faint constriction before apex. Galea has a small distal lobe and lacinia gradually dilated on its inner margin. Labial palpus (FIG. 5*D*) 3-segmented; segment III fairly long; α placed marginal; β close to *tp*: γ posterior to *b*: δ on level of *h*; *a* close to *tp* and on same level with β; *c, d* more advanced than usual; *f* remote from *b* and well inside margin; *tp* large compared to *mp*. Glossa (FIG. 5*E*) considerably reduced, forked to 2 short arms whose apices tend to be bent upwards; paired basal pores separated from each other. Median area of prementum (FIG. 5*E*) unusually broad, not constricted behind, with well-defined lateral margins and with very few, small pseudopores confined in the middle. Lateral area has only 2 large real pores and 1 setal pore. Setula *v* of mentum (FIG. 5*F*) short; *u* reduced to a peglike projection and *w* dislocated close to anterior margin. Pronotum fairly convex above and never depressed or foveolated in middle; sides more strongly narrowed anteriorly; lateral erect setae very minute and not longer than secondary setae; surface with distinct granules all over; secondary setae along middle directed posteriorly. Prosternum acutely carinate to form a pointed apex. Mesosternum finely bifurcate at apex. Elytron short for corpus, its posterior margin sinuate so that the external corner is clearly produced behind; a row of marginal setae present on the posterior margin. Flabellum without setae. Macrochaetal arrangement as 01-02-02-03-03-23. Abdomen broad and convex above and only terg. III is depressed basally; lateral erect setae inconspicuous; surface bears conspicuous squamose reticulation (FIG. 5*G*) to give species very unique appearance. Terg. VIII (FIG. 5*H*) not modified, but entirely truncate behind; among 4+4 major setae, *a-2* near by stigma and *p-1* and *p-2* placed close to each other. Microsculpture indistinct as a whole. Tibiae have very short macrosetae

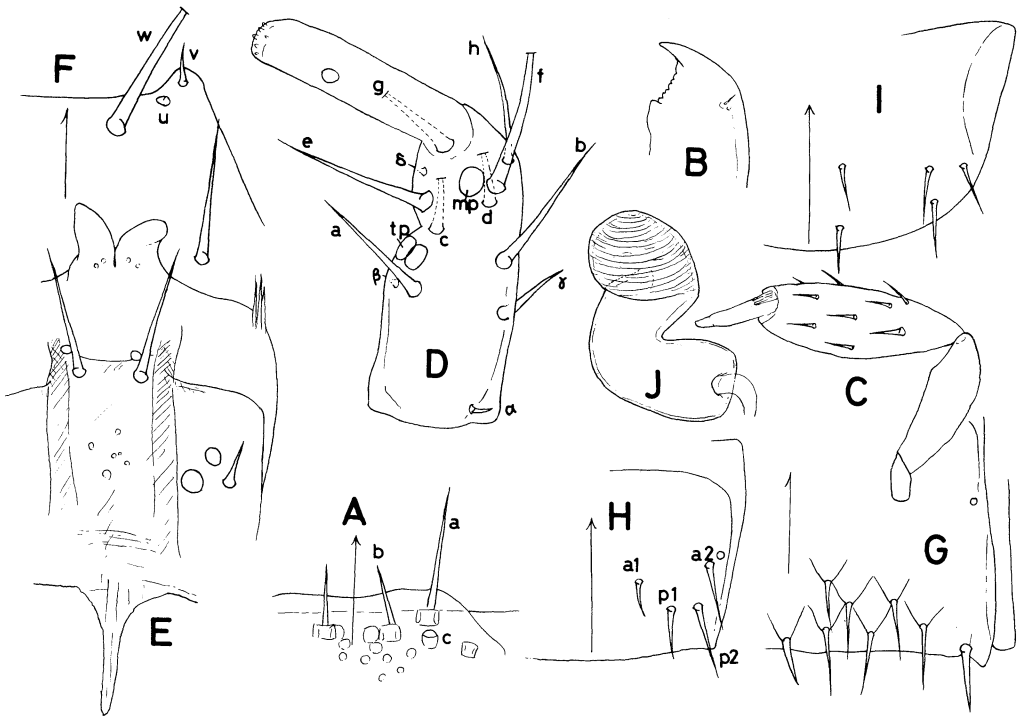

FIG. 5. *Mimacrotona cingulata,* syntype ♀: *A,* labral margin; *B,* right mandible; *C,* maxillary palpus; *D,* labial palpus; *E,* glossa and prementum; *F,* mentum; *G–H,* tergite IV and VIII; *I,* sternite VIII; *J,* spermatheca. For explanation of abbreviations see FIG. 1.

and metatarsus with elongate segment I, subequal to V. Sternite VIII (FIG. 5*I*) rounded behind, major setae reduced to 5+5 in number. Spermatheca (FIG. 5*J*) stout and strongly twisted; bursa broad and without umbilicus; a large opening present on opposite end.

Length: 1.55 m (head 0.26 mm long × 0.29 mm wide; pronotum 0.23 mm × 0.42 mm; elytra 0.26 mm × 0.45 mm).

♂. Unknown.

Material examined. Syntype, 1♀, from Bukit Panjang, Singapore (BMNH).

Remarks. In facies *M. cingulata* is similar to species of *Acrotona,* but the lateral area of the prementum is broad and destitute of pseudopores, so that it may be a near relative of *Liogluta.* The macrochaetotaxy is 01-02- . . . , lacking the anterior major setae on each tergite, and in this respect it belongs to the *Tachyusa* series (sensu Yosii & Sawada 1976: 127–28). In addition, the setaceous sensillae of the labral margin and the squamose pattern on the abdomen are very peculiar. Definite placement of this species must await availability of a ♂ for study.

Distribution. India, Malaysia, West Indies.

Acrotona (Acrotona) rufiventris (Cameron), **new combination** FIG. 6

Atheta (Acrotona) rufiventris Cameron, 1920: 264–65.

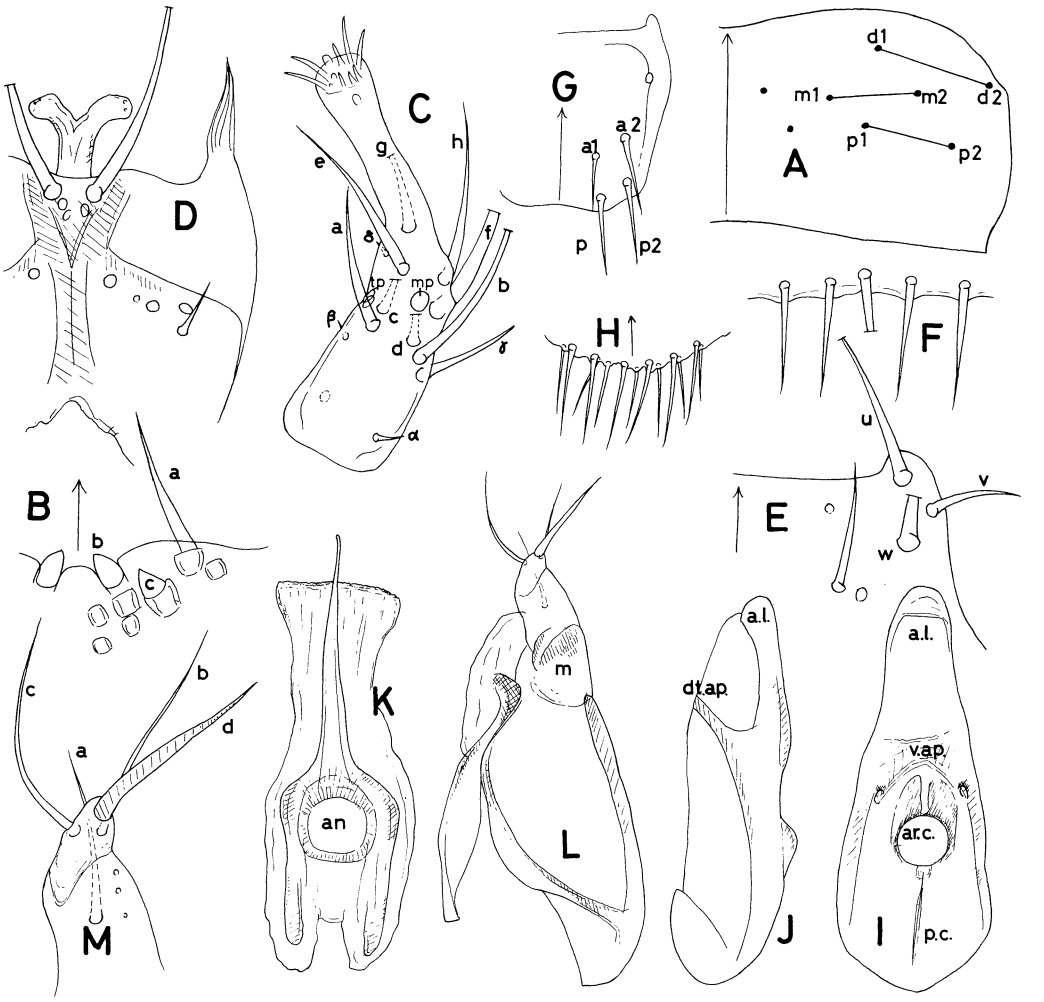

FIG. 6. *Acrotona (Acrotona) rufiventris*, syntype ♂: *A*, labral chaetotaxy; *B*, labral margin; *C*, labial palpus; *D*, glossa and prementum; *E*, mentum; *F*, posterior margin of tergite IV; *G*, terg. VIII; *H*, sternite VIII; *I–J*, median lobe; *K*, inner armature of aedeagus; *L–M*, lateral lobe and its distal segment. m, middle apodeme of medial segment; other abbreviations, see FIG. 1.

♂. Ground color bright brown and shining; head slightly darker than pronotum; elytra uniformly brown and abdomen more infuscate with many conspicuous black macrosetae standing along the lateral margins. Antennae brownish and a little paler basally; legs paler, with short black macrosetae on tibiae. Body small and narrow. Head rounded, moderately granulated and without median depression in middle. Eyes rather large, not produced laterally beyond head contour. Antenna normal in length, but fairly dilated toward the extremity; segment II subequal to III in length; IV clearly broader than long and subequal to V; VII–X transverse; XI broad and as long as 2 preceding together. Cervical carina indistinctly diverged. *m-2* of labrum (FIG. 6*A*) separated from distal row of setae; *a-2* posterior to level of *p-1*; 2+2 secondary setae present. Sensilla *a* of labral margin (FIG. 6*B*) normally setaceous; *b* well developed, oblong

and ending in an acute apex; *c* similarly pointed but smaller; anterior margin deeply emarginate and forming notches in which *b* is inserted. Labial palpus (FIG. 6*C*) has setula α normal, but β separated from *tp* and γ just behind *b*; δ anterior to level of *e*; *a* on level of *b*, while *e* fairly anterior to *mp*; segment III apparently long compared to others and bearing unusually elongate apical sensillae to give a peculiar appearance. Glossa (FIG. 6*D*) diverged and apical portion thickened. Median area of prementum narrow and constricted, with some 3 large pseudopores, while lateral area has only 1 or 2 pseudopores together with 2 real and 1 setal pores. Setula *v* of mentum (FIG. 6*E*) long and placed posterior to *u*. Pronotum fairly convex above with dense granules throughout; lateral margins slightly arcuate and with short lateral erect setae. Elytron weakly emarginate posteroexternally; surface more coarsely sculptured than in pronotum; a row of long secondary setae along the hind margin. Flabellum has 4 setae. Abdomen roughly granulated. Macrochaetal arrangement as 01-02-13-13-13-34. Posterior margin of each tergite (FIG. 6*F*) clearly crenulated. Terg. VIII (FIG. 6*G*) not modified, but shallowly emarginate behind; among 4+4 major setae *a-2* widely remote from stigma and *a-1* shortest. Microsculpture densely transverse. Stern. VIII (FIG. 6*H*) has the posterior margin fairly crenulated and with a row of short and long marginal setae corresponding to the crenulation. Median lobe of aedeagus (FIG. 6*I, J*) 0.23 mm long, narrowly elongate and gradually narrowed forming an obtuse apical lobe; in lateral view it is gently dilated proximally with a small projection behind the middle. Costa *ar.c.* separated from each other for a short distance and recurved to form paired thin plates anterior to the orifice; *v. ap.* weak. Copulatory piece (FIG. 6*K*) broad at basis with a long acicular apical process; annellus large and suspensorium rudimentary. No ventral plate present. Vellum of lateral lobe (FIG. 6*L*) considerably reduced; middle apodeme (*m*) retarded and basal corner of medial segment quite obtuse; distal segment (FIG. 6*M*) very short; seta *a* proximal and short compared to the distally placed *b; c* subequal to *d* in length and *d* much stouter and apically situated.

Length: 1.80 mm (head 0.24 mm long × 0.32 mm wide; pronotum 0.33 mm × 0.45 mm; elytra 0.24 mm × 0.51 mm).

♀. Unknown.

Material examined. Syntype, 1♂, from Singapore (BMNH).

Remarks. As the hind margin of the abdominal tergites is crenulated and as the macrochaetotaxy of the abdomen is 0-1 or 01-type, this species is included in *Acrotona* (s. str.). The species is allied to the Japanese *A.* (*A.*) *lutulenta* (Sharp, 1888) in many respects, but in the present species, the suspensoria of the aedeagus are reduced and destitute of the distal apodeme. Also, seta *d* of the distal segment of the lateral lobe is modified to an unusual stout, black seta. The long sensilla of the labial palpus are very characteristic.

Distribution. India, Malaysia.

Acrotona (Acrotona) horrida (Cameron), **new combination** FIG. 7

Atheta (*Acrotona*) *horrida* Cameron, 1933: 359.

♀. Ground color brown to blackish and shining; head nearly black, but pronotum brownish; elytra brown with yellow tinge; abdomen a little darker towards the extremity; antennae dark brown and with yellowish basal segments; legs paler as usual. Body fairly narrow. Head small for the corpus and without depression in the middle. Eyes moderate in size and post-genae fairly long; surface is nearly glabrous, with some long secondary setae. Antenna short and not dilated distally; segment I narrow in relation to II, the latter fairly elongate and a little longer than III; IV as long as broad and similar to V in form; XI slightly broader than long. Cervical carina diverged. Labrum (FIG. 7*A*) deeply emarginate in front; *m-2* on same level with *d-2*; proximal row of setae much shorter than distal row; 2+2 secondary setae present. Sensilla *a* of labral margin (FIG. 7*B*) setaceous, robust at base, while *b* is normal in size; *c* broad and rounded at apex. Mandibles briefly hooked at apex; right mandible (FIG. 7*C*) has a distinct tooth on the inner margin. On labial palpus (FIG. 7*D*) setula α normal; β minute and close to *tp*; γ on level of *b* and δ

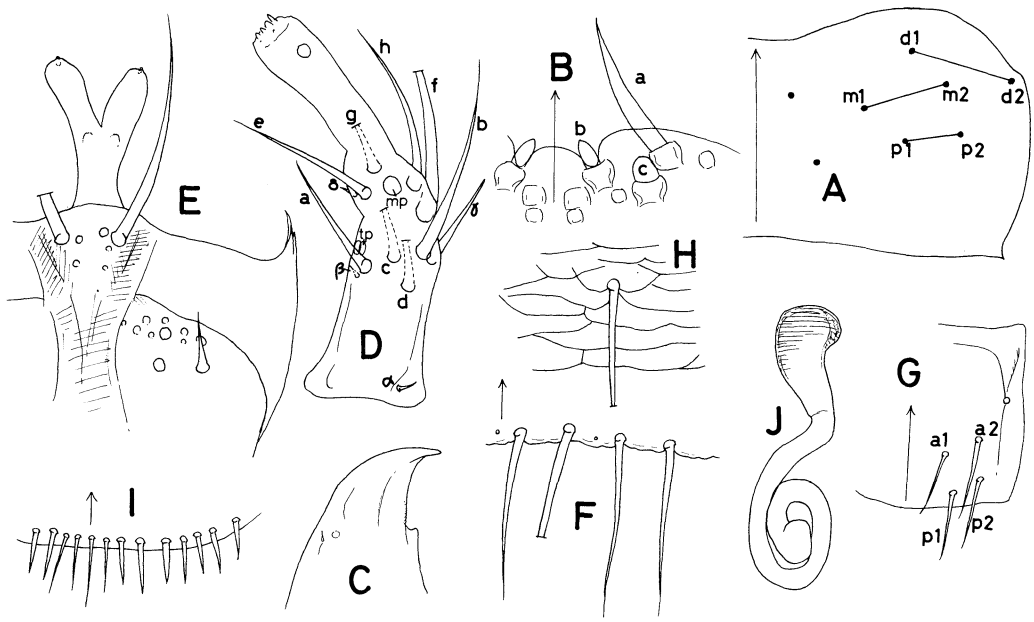

FIG. 7. *Acrotona (Acrotona) horrida,* syntype ♀: *A,* labral chaetotaxy; *B,* labral margin; *C,* right mandible; *D,* labial palpus; *E,* glossa and prementum; *F,* posterior margin of tergite IV; *G–H,* terg. VIII and its microsculpture; *I,* marginal setae of sternite VIII; *J,* spermatheca. For explanation of abbreviations see FIG. 1.

on same level with *e*; *f* is fairly posterior to *mp*; segment II very short compared to III. Glossa (FIG. 7*E*) forked from middle into 2 obtuse arms. Median area of prementum (FIG. 7*E*) broad, fairly constricted and with a few small pseudopores. Some 8 pseudopores present in lateral area. Pronotum uniformly convex above and destitute of any trace of median depression; sides nearly straight in basal ½ and posterior corner well defined; lateral erect setae all short. Prosternum normal; mesosternum broad, briefly pointed behind, and separated from the metasternum by a short distance. Elytron is short for the pronotum and faintly emarginate posteroexternally; surface more roughly sculptured than pronotum. Flabellum has 4 setae. Macrochaetotaxy as 01-12-13-13-13-33. Posterior margin of each tergite (FIG. 7*F*) clearly crenulated. Terg. VIII (FIG. 7*G*) unmodified, but gently rounded behind; among 4+4 major setae, *a-2* clearly posterior to level of stigma; microsculpture of middle area (FIG. 7*H*) transversely imbricate. Stern. VIII (FIG. 7*I*) subtruncate behind with row of long and short marginal setae. Meso- and metatibiae with long black macrosetae. Spermatheca (FIG. 7*J*) coiled entirely; bursa relatively narrow and with a small umbilicus.

Length: ca 2.70 mm (head 0.35 mm long × 0.47 mm wide; pronotum 0.39 mm × 0.53 mm; elytra 0.38 mm × 0.75 mm).

♂. Unknown.

Material examined. Syntype, 1♀, from Mt Kinabalu, North Borneo [Sabah] (BMNH).

Remarks. In many characters this species is near the Japanese *A. lutulenta* (Sharp, 1888), but in *A. horrida,* the abdominal tergite VIII is much shorter with the stigma posteriorly located. Also, sternum VIII is nearly truncate at the middle of the posterior margin. The microsculpture of tergite VIII is apparently different and the

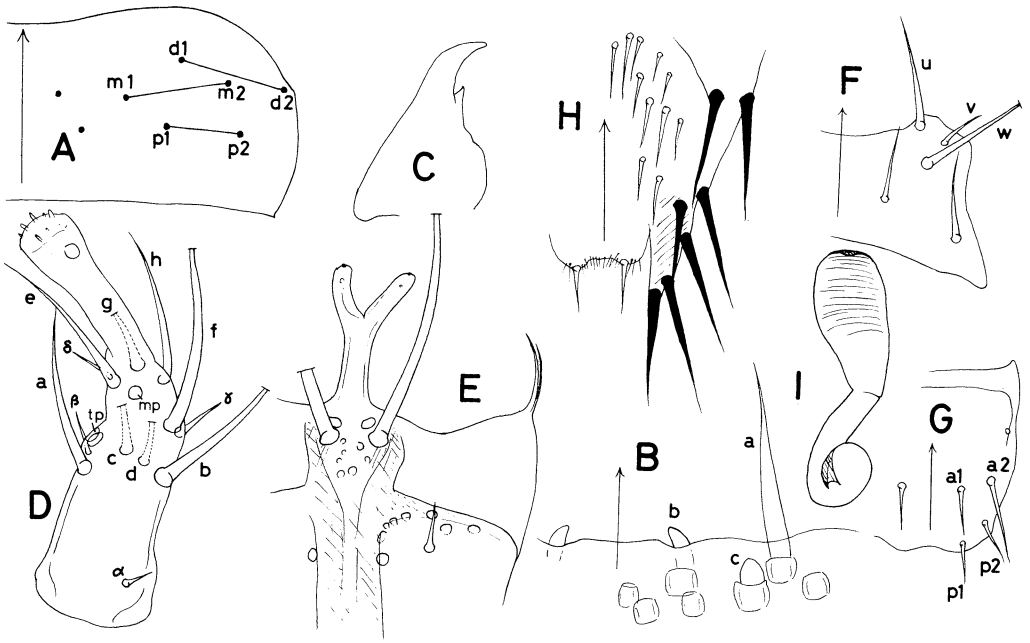

FIG. 8. *Atheta (Chaetida) ruparia*, syntype ♀: *A*, labral chaetotaxy; *B*, labral margin; *C*, right mandible; *D*, labial palpus; *E*, glossa and prementum; *F*, mentum; *G*, tergite VIII; *H*, macrosetae of terg. IX; *I*, spermatheca. For explanation of abbreviations see FIG. 1.

elytra are somewhat emarginate posteriorly in the present species. From *A. rufiventris* Cameron, it may be separated by the form of the glossa.

Distribution. Borneo (Mt Kinabalu).

Atheta (Chaetida) ruparia Cameron FIG. 8

Atheta (Colpodota) ruparia Cameron, 1920: 264.
Atheta (Acrotona) ruparia: Cameron, 1938: 395.

♀. Dark brown in ground color and shining; head intensively pigmented and pronotum a little darker than elytra; abdomen uniformly colored; antennae dark brown with brighter basal segments. Legs uniformly paler. Body narrow and subparallel with conspicuous black setae on abdomen. Head small, evenly rounded in outline and with distinct granules. Eyes moderate in size. Antenna long, not dilated toward extremity and with long black macrosetae on basal segments; segment I stout; II subequal to III in length; IV as long as wide and much smaller than V; X nearly as long as wide, while XI normally long. From labrum, *m-2* (FIG. 8*A*) close to distal row of setae; *d-1* standing well within margin; proximal row of setae short compared to medial row; 2+2 secondary setae present. Sensilla *a* of labral margin (FIG. 8*B*) long and setaceous; *b* short, conical and widely separated; *c* robust; anterior margin faintly emarginate. Mandibles briefly hooked at apex; right mandible (FIG. 8*C*) has a distinct inner marginal tooth. Maxillary palpus stout and short. Lacinia abruptly dilated on inner margin. Galea with a large distal lobe. On labial palpus (FIG. 8*D*) setula α remote from basal margin; β long and γ placed close to *f*; δ long and close to level of *g*; *a* located on level of *b*; *e* anterior to *mp*; *f* fairly remote from *mp*. Glossa (FIG. 8*E*) long and forked to short arms. Median area of prementum normally broad, with some 5 small pseudopores. In

lateral area, posterior real pore on border of median area, with some 5 pseudopores. Mentum (FIG. 8*F*) fairly emarginate in front with a long setula *v* located posterior to level of *u*. Pronotum evenly convex above and evenly rounded laterally; surface with dense granules all over. Lateral erect setae similarly long. Elytron rather short for pronotum and not emarginate behind; 1 long seta on humeral corner. Macrochaetal arrangement as 01-13-13-13-13-24. Abdomen nearly parallel and with long, black macrosetae along lateral margin; each tergite has smooth posterior margin with very fine granules. Terg. VIII (FIG. 8*G*) elongate and fairly emarginate along hind margin; among 4+4 major setae, *a-2* much longer than others and clearly separated from stigma; microsculpture in middle transverse in pattern. Terg. IX (FIG. 8*H*) markedly produced on each side and provided with some 7 black conspicuous macrosetae; between these prolongations a pair of short marginal setae present. Meso- and metatibiae have long macrosetae. Spermatheca (FIG. 8*I*) shortly coiled with a large bursa, which is coarsely corrugated, and with umbilicus mostly reduced.

Length: ca 2.80 mm (head 0.35 mm long × 0.42 mm wide; pronotum 0.39 mm × 0.56 mm; elytra 0.35 mm × 0.64 mm).

♂. Unknown.

Material examined. Syntype, 1♀, from Singapore (BMNH).

Remarks. As tergite IX is produced posteriorly and bears conspicuous macrosetae, and as all body setae are long, this species must be included in the subgenus *Chaetida*. The shape of tergite IX and short spermatheca are characteristic of this species.

Distribution. India, Andaman Is, Malaysia, South China, Philippines.

Atheta (Badura) vulgaris Cameron FIG. 9

Atheta (*Microdota*) *vulgaris* Cameron, 1920: 258–59.

♂. Ground color dark brown and well shining; head and abdomen uniformly darker and elytra paler than pronotum; antennae brown; legs paler. Body small and subparallel. Head subrectangular in outline and rather large for corpus; surface evenly convex above and without depression in middle. Eyes small and slightly convex; postgena mostly not narrowed behind and subparallel. Antenna not dilated distally, densely pubescent and with short macrosetae; segment III shorter than II; IV small and as long as wide; III–X increasing in width; XI fairly long, surpassing the 2 preceding together. Cervical carina normally diverged. Mandibles normal in form. Anterior margin of labrum (FIG. 9*A*) clearly emarginate in middle; *m-1* posteriorly situated on same level with *p-1*; *m-2* clearly separated from distal row of setae; proximal row shorter than medial row. Only 1+1 secondary setae present. Sensilla *a* of labral margin (FIG. 9*B*) reduced to a short setula; *b* small; *c* elongate and pointed. On labial palpus (FIG. 9*C*) all setae are robust; α advanced in position; β remote from *tp* and very small; γ long and on level of *b*; δ small and close to *g*; *e* on same level with *mp*; *f* close to *h*; segment II very short compared to III; apical sensillae of III more developed than usual; a round marking of segment I present on each palpus. Glossa (FIG.. 9*D*) long and forked into 2 short arms, with 2 indistinct basal pores. Median area of prementum (FIG. 9*D*) narrow, with about 2 pseudopores; 2 real pores of the lateral area mingled with about 4 large pseudopores and setal pore close to margin. Pronotum as long as wide, evenly convex above and without depression in middle; lateral erect setae normal in length and secondary setae of middle directed anteriorly; surface with dense granules all over. Elytron has a long macrosetae on the humeral corner; hind margin not emarginate laterally; surface more densely granulated than on pronotum. Flabellum has 4 setae. Macrochaetal arrangement as 01-12-12-13-13-23. Abdominal tergites have smooth hind margin. Terg. VIII (FIG. 9*E*) truncate behind and gently emarginate in middle of posterior margin. Among 4+4 major setae *a-2* fairly posterior to level of stigma; microsculpture (FIG. 9*E*) of imbricate pattern. Median lobe of aedeagus (FIG. 9*G, H*) 0.21 mm long. In ventral view apical lobe long, gradually narrowed to form broadly rounded apex and in lateral view it is feebly concave. Costa *ar. c.* strongly approximate distally and recurved to form thin plates (*s*) anterior to orifice; *m. c.* entire and *v. ap.* discernible. Copulatory piece (FIG. 9*I*) narrowly elongate, with acuminate apical process and hyaline long posterior process (*p*). Lateral lobe (FIG. 9*J*) with rudimentary vellum and with callosity (*c*) distally; medial segment produced behind to form an

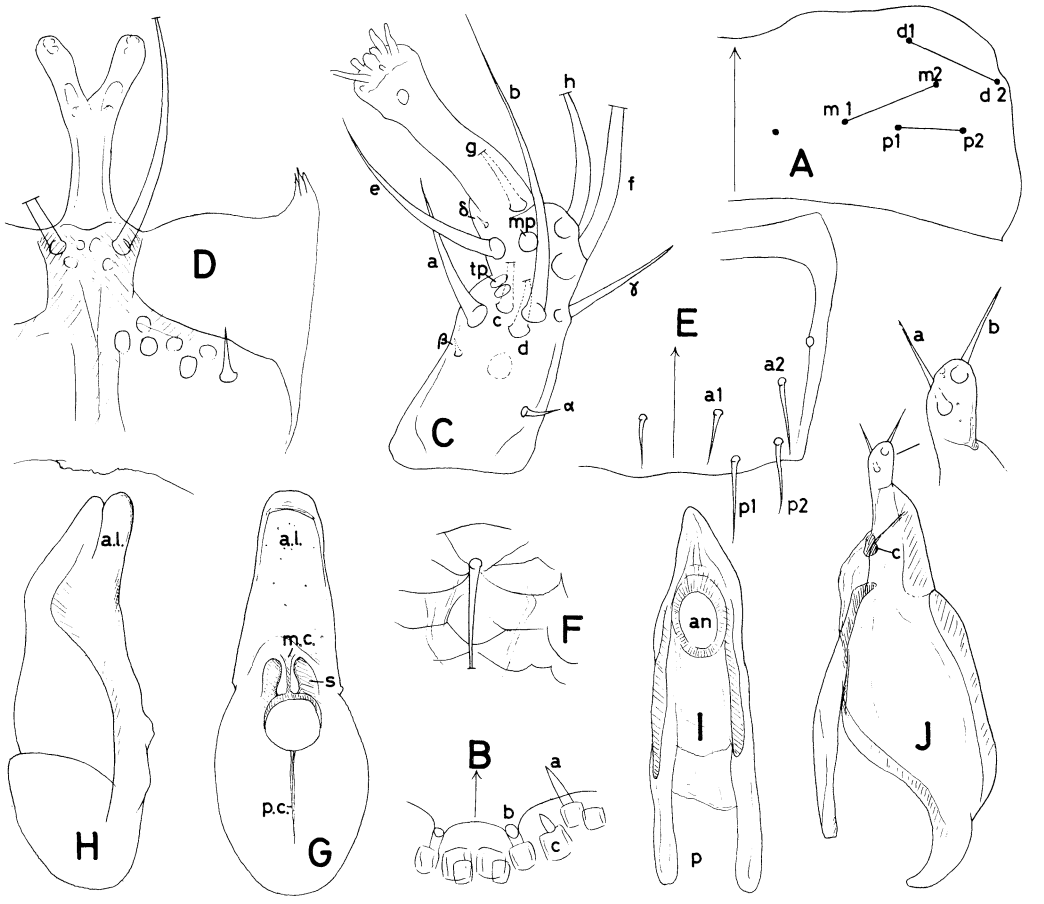

FIG. 9. *Atheta (Badura) vulgaris*, syntype ♂: *A*, labral chaetotaxy; *B*, labral margin; *C*, labial palpus; *D*, glossa and prementum; *E–F*, tergite VIII and its microsculpture; *G–H*, median lobe; *I*, inner armature of aedeagus; *J*, lateral lobe. c, callosity of medial segment; s, sclerotized plate surrounded by arcuate costa; other abbreviations, see FIG. 1.

elongate posterior process; distal segment very short for corpus and with 2 long setae representing *a*, *b*, whereas *c*, *d* are completely reduced.

Length: 1.50 mm (head 0.26 mm long × 0.26 mm wide; pronotum 0.26 mm × 0.32 mm; elytra 0.22 mm × 0.39 mm).

Material examined. Syntype, 1♂, from Singapore (BMNH).

Remarks. The present species is closely allied to the Japanese *A. kanagawana* Bernhauer, 1907, but the costation of the median lobe is different and seta *c*, *d* of the lateral lobe are absent. In *A. vulgaris* Cameron, all the macrosetae of the body are longer and the apical sensillae of labial palpus is fairly prolonged.

Distribution. India, Malaysia.

Atheta (Microdota) putridula (Kraatz, 1859) FIG. 10*A–K*

Homalota putridula Kraatz, 1859: 35.
Atheta (*s. str.*) *putridula*: Cameron, 1938: 347.

♂. Ground color reddish brown, shining and with black body setae. Head intensively pigmented. Pronotum and elytra similarly colored, but abdomen only fairly infuscate towards extremity. Antennae dark brown leaving the pale basal segments. Legs paler. Body small and robust. Head nearly round in outline and finely punctured all over. Eyes large compared to short postgenae. Cervical carina normally diverged. Antenna dilated distally; segment I short and robust; II more slender than I, III cup-shaped and a little shorter than II; IV broader than long and similar to V; VII–X subequal in form; XI elongate, as long as 2 preceding together. Labrum (FIG. 10*A*) clearly transverse; *m-l* close to level of *p-l*; proximal row of setae long; 2+2 secondary setae present. Sensilla *a* of labral margin (FIG. 10*B*) remarkably short and converging; *b* truncate at apex and *c* large and ovate. Mandibles unmodified. Lacinia has well-developed distal comb; inner margin posterior to the comb is abruptly dilated and with 2 short teeth. Galea has a large distal lobe bearing short cilia. From labial palpus (FIG. 10*C*) γ is close to *b*; δ on same level with *h*; *f* posterior to level of *e*. Glossa (FIG. 10*D*) characteristically with a pair of setae near apex. Median area of prementum smooth and converging behind. Anterior real pore of lateral area small and mingled with some 8 pseudopores. Setula *v* of mentum (FIG. 10*E*) long and close to level of *u*; anteroexternal corner protruded and seta *u* remote from it. Pronotum normal in form and with arcuate lateral margins whose basal ½ is nearly straight; lateral erect setae subequal in length; secondary setae of middle directed anteriorly. Prosternum normal; mesosternum pointed behind. Elytron not emarginate behind and with a long humeral seta. Flabellum of hind wing composed of 4 long setae. Macrochaetal arrangement of abdomen as 01-02-12-12-13-34. Posterior margins of abdominal tergites smooth. Terg. VIII (FIG. 10*F*) truncate behind and bilaterally produced, forming a short subtruncate process. Margin subcrenulate between the processes, separated from the processes by a shallow incision. Among 4+4 major setae *a-2* remotest from stigma and distal row much shorter than proximal row. Microsculpture of middle imbricate. Median lobe of aedeagus (FIG. 10*G, H*) 0.28 mm long, narrowly ovate and with acuminate apical lobe in ventral view. In lateral view apical lobe gently sinuate and fairly uncinate at apex. Costa *ar. c.* entire; *v. ap.* not developed, distally with a fine sclerite. Copulatory piece (FIG. 10*I*) narrowly elongate, with long apical process and with distinctly serrulate lateral margin (*s*) on each side. Annellus is at middle of corpus. Suspensoria retarded but distal apodemes well developed; a pair of unciform distal sclerites (*u*) with long stalks and fairly barbed median foldings (*f*) present. Lateral lobe (FIG. 10*J*) not dilated behind; vellum normal in size. Middle apodeme (*m*) pointed and with an accessory apodeme (*a*). Distal segment long, over ½ the length of medial segment; seta *a, b* strongly reduced; *c, d* similarly long; basal inner corner of the segment (*c*) not pointed, but totally rounded. Median segment has the posterior corner ending in an obtuse short process (*p*).

Length: 1.60 mm (head 0.25 mm long × 0.31 mm wide; pronotum 0.34 mm × 0.42 mm; elytra 0.30 mm × 0.53 mm).

♀. Tergite VIII not modified. Sternite VIII short and with entire hind margin. Spermatheca (FIG. 10*K*) completely coiled, with a robust bursa bearing a flat umbilicus within.

Material examined. Singapore: 1♂,1♀, 13.III.1929, C. J. Saunders (BMNH).

Remarks. The specimens identified as *putridula* Kr. by Cameron were examined. As the type-specimen of Kraatz is not available for study and since Cameron's identifications are always reliable, the Singapore examples are regarded as conspecific with the Ceylon species. The original description of Kraatz is well concordant with the present specimens. They are very close to *A.* (*Microdota*) *spiniventris* Bernhauer from Japan, except that the specimens each have a pair of large setae on the glossa, which may be regarded a specific character of this species. Shape of the inner armature of aedeagus of this species differs considerably from that of *A. bogorensis* (Sawada, 1971).

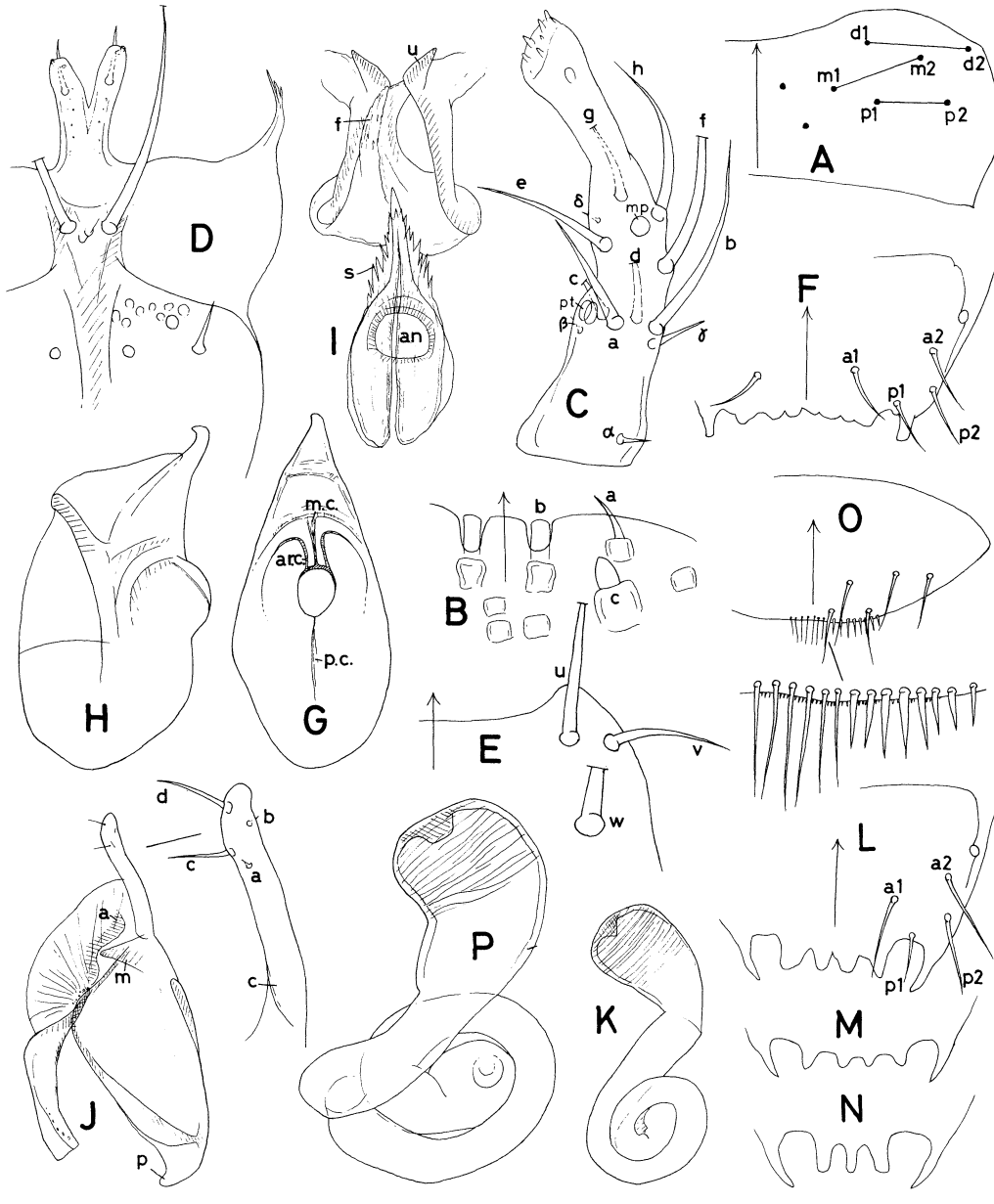

FIG. 10. *A–K. Atheta* (*Microdota*) *putridula* (specimens from Singapore): *A*, labral chaetotaxy; *B*, labral margin, *C*, labial palpus; *D*, glossa and prementum; *E*, mentum; *F*, ♂ tergite VIII; *G–H*, median lobe; *I*, inner armature of aedeagus; *J*, lateral lobe; *K*, spermatheca. *L–P. Atheta* (*Microdota*) *bogorensis* (specimens from Sabah); *L–N*, ♂ terg. VIII; *O*, ♀ sternite VIII; P, spermatheca. a, pigmented portion on vellum; f, foldings of distal apodeme; m, middle apodeme of medial segment; s, serrulated expansion of copulatory piece; other abbreviations, see FIG. 1.

Distribution. Ceylon, Malaysia.

Atheta (Microdota) bogorensis (K. Sawada) FIG. 10*L–P*

Ischnopoda (Microdota) bogorensis K. Sawada, 1971: 72–75.
Atheta (Amidobia) bogorensis: Sawada, 1974: 154–55.

Additional notes

♂. Flabellum of hind wing with 4 long and short setae. Macrochaetal arrangement as 01-02-12-12-13-34. Terg. VIII (FIG. 10*L, M, N*) varies considerably in form as in other congeners.

♀. Terg. VIII is not modified but entirely truncate in the posterior margin. Stern. VIII (FIG. 10*O*) fairly short and with broadly rounded hind margin, faintly emarginate at middle and with a row of long and short marginal setae. Spermatheca (FIG. 10*P*) coiled and with robust bursa bearing a flat umbilicus within.

Specimens examined. MALAYSIA: Borneo: Sabah: Ranau, 10♂, 12♀, 23.VIII.1976, R. Yosii (K. Sawada Coll.).

Remarks. The Bornean specimens coincide well with the type (♂) from Java. As the median lobe of the aedeagus is apically uncinate, this species is close to *A. putridula,* but it may be distinguished by the glossa and by the inner armature of the aedeagus.

Distribution. Java, Borneo.

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