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The cockroach genera *Anaplecta*, *Anaplectella*, *Anaplectoidea*, and *Malaccina* Blattaria, Blattellidae: Anaplectinae and Blattellinae)

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**THE COCKROACH GENERA *ANAPLECTA*,
ANAPLECTELLA, *ANAPLECTOIDEA*, AND *MALACCINA*
BLATTARIA, BLATTELLIDAE: ANAPLECTINAE
AND BLATTELLINAE)**

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ABSTRACT. The cockroach genera *Anaplecta* Burmeister, *Anaplectella* Shelford, *Anaplectoidea* Shelford and *Malaccina* Hebard are reviewed. Based on male genitalia, *Anaplecta* is retained in Blattellidae: Anaplectinae, and the other three genera are placed in Blattellidae: Blattellinae.

New combinations: *Anaplecta thwaitesi* Shelford, *Anaplecta martini* Fernando, *Anaplecta pilatus* Fernando, and *Anaplectoidea notata* Shelford are transferred to *Anaplectella*. The following are transferred to *Malaccina*: *Anaplectella discoidalis* Princis, *Anaplectella obscurata* Bey-Bienko, *Anaplectoidea saundersi* Hanitsch, *Anaplectoidea sinica* Bey-Bienko, and *Theganopteryx* (*Pseudoectobia*) *pallidula* Bolívar.

New synonym: *Anaplectella martini* is *Anaplectella thwaitesi*.

New species: *Anaplectella warreni*, *A. tibangensis* and *A. lompatensis*; *Malaccina guilinensis*, *M. schali* and *M. vickeryi*; *Anaplectoidea incognita* and *A. medanensis*.

Some of the known species are redescribed.

Keys to four genera and to species of *Anaplectella*, *Anaplectoidea*, and *Malaccina* are given.

Introduction

This paper is a study of four genera that some workers have placed in the Anaplectidae or Anaplectinae. The acronyms used for the museums and their curators or collection managers who kindly loaned me specimens are listed below:

- ANSP - Academy of Natural Sciences, Philadelphia, U.S.A.: Mr. Donald Azuma.
- BPBM - The Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A.; Dr. Scott Miller and Mr. John Strazanac.
- DEMZ - Deutsche Entomologischen Museum, Germany
- HECO - Hope Entomological Collections, University of Oxford, England; Dr. George C. McGavin and Mr. I. Lansbury.
- IZAC - Institute of Zoology, Academia Sinica, Beijing, China; through Dr. David Furth.
- MCGI - Museo Civico di Storia Naturale, Genoa, Italy.
- MCZ - Museum of Comparative Zoology, Harvard University, Cambridge, MA, U.S.A.

- NHML - The Natural History Museum, London. [Formerly British Museum (Natural History)].
- NRSS - Naturhistoriska Riksmuseet, Stockholm, Sweden. Dr. Bert Gustafsson.
- RNHL - Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands; Dr. J. van Tol.
- SMTD - Staatliches Museum für Tierkunde, Dresden, Germany; Dr. R. Krause.
- ZINL - Institute of Zoology (Acad. Sci. USSR), Leningrad, Russia.

Hebard (1929: 27) wrote a key to the following five genera which he placed in the Anaplectinae: *Anaplecta*, *Riatia* Walker (= *Lissoblatta* Hebard), *Anaplectella*, *Malaccina*, and *Anaplectoidea*. *Riatia* is a New World genus and is not considered here. According to Hebard, *Malaccina* (with two species) is annectant between *Anaplectella* and *Anaplectoidea*. He placed the genus in the Anaplectinae rather than an aberrant group of the Ectobiinae. Princis (1965: 360, 383) considered it to be in the Anaplectidae, subfamily Plectopterinae, and placed 11 genera in this subfamily (including *Anaplecta*). McKittrick (1964) had only *Anaplecta* in Anaplectinae, family Blattellidae, and placed *Plectoptera* Saussure and *Riatia* in Blattellidae: Plectopterinae (now Pseudophyllodromiinae), two genera which Princis included in the Anaplectidae: Plectopterinae.

In his discussion of the "Anaplectinae", Hebard (1929: 29) wrote "In the past literature the characters shown by the genitalia and limb armament have been much too lightly treated and those of the pulvilli, tarsal claws and arolia wholly omitted. In such minute insects where often widely distinct insects superficially resemble each other closely, these characters must all be given with particular care for new species, or recognition of such by subsequent students is sure to become increasingly difficult instead of constantly easier." Needless to say that Hebard was correct in his statement, even though he rarely, if ever, dissected specimens to examine the genital phallobromeres (in his day, most curators abhorred mutilating a specimen, particularly a type, in order to study the genitalia); it is probable that Hebard considered the subgenital plate and styli as "genitalia".

The internal male genitalia of *Anaplecta* strongly resemble those of the Polyphagidae (pl. 45, fig. 112 in McKittrick, 1964) and McKittrick had the Anaplectinae as the first subfamily of the Blattellidae, after the Polyphagidae, and I follow her system. McKittrick placed *Plectoptera* and *Riatia* in the Pseudophyllodromiinae (= Plectopterinae). The male genitalia which I have examined of species of *Malaccina*, *Anaplectella*, and *Anaplectoidea* have three principal phallobromeres (left, right, and median) which are typical of the Blattellidae, and since the retractable hook is on the left side they belong in the Blattellinae of McKittrick's system; I suggest that they be placed in the tribe Anaplectoideini. Rehn (1951) placed *Anaplecta* in the Anaplectinae, one of four subfamilies in the pseudomopoid complex; he used tribes extensively in

his study of cockroach wing venation but he did not study the other three genera discussed here.

The cubitus vein (Cu1) of the hind wing of most species of Blattaria has two kinds of branches: those that reach the apical margin of the wing are called complete whereas those that do not are incomplete. In the species discussed in this paper the cubitus vein has branches that do not reach the apical margin of the wing but reach the margin of the appendicular field (e.g., Fig. 4F); I call these "pseudocomplete", and those that do not reach the basal margin of the field are incomplete (e.g., Fig. 16B) and are similar to incomplete branches in other genera. The appendicular field varies in length and when at rest the wing is folded longitudinally along the plical fold and the appendicular field is reflexed (e.g., Fig. 15E). The relative length of the appendicular field to the length of the wing is determined from a fully extended wing as follows: the length of the field is measured from its base to apex and this is divided by the total length of the wing measured from the point of attachment to the mesonotum to the apex of the appendicular field giving a percentage of wing length occupied by the appendicular field.

Key to *Anaplecta*, *Anaplectella*, *Anaplectoidea*, and *Malaccina*

1. Tarsal claws usually simple, symmetrical. Tegmina with three longitudinal discoidal sectors (Fig. 1A). Cubitus vein of hind wing simple (Fig. 1C). Front femur Type B₂. Male seventh abdominal tergum unspecialized; supraanal plate specialized (see fig. 30C in Roth, 1990); genitalia polyphagoid type (see figs. 31A, D in Roth, 1990). Female subgenital plate valvular (Fig. 1D). *Anaplecta*
- Tarsal claws strongly dentate. Tegmina usually with three or more oblique discoidal sectors (Figs. 2B, 3B,D). Cubitus vein of hind wing branched. Male seventh abdominal tergum usually specialized (Fig. 2D); genitalia blattellid-like (Fig. 2F). Female subgenital plate not valvular.2
2. Supraanal plate excised forming a pair of asymmetrical (Figs. 2E, 4B,C, 5B) or symmetrical lobes (Figs. 8D, 9B, 11B,D). Front femur Type B (Fig. 6E). Hind wing with cubitus vein usually with a single pseudocomplete branch (Fig. 6A); appendicular field about as long as or longer than broad, occupying about 40% the length of the wing (Figs. 2C, 4F). Male seventh abdominal tergum usually specialized (Figs. 2D, 6F). *Anaplectella*
- Supraanal plate entire, without symmetrical or asymmetrical lobes (Figs. 13C, 14C). Appendicular field usually broader than long, about 30% or less the length of the hind wing (Figs. 14E, 15F, 16B). Front femur usually with a row of heavy spines which gradually decrease in size, terminating in three large spines (Type A₃); rarely with a few piliform spinules interspersed among the stout spines, or Type B. Male seventh abdominal tergum specialized (Figs. 10D, 16C, 17G, 19C, 23D).3

3. Cubitus vein of hind wing with a total of one to three (rarely four) pseudocomplete and incomplete, usually longitudinal branches (Figs. 14E, 16B, 18B). *Malaccina*
- Cubitus vein of hind wings usually with four to eight (rarely three), usually oblique branches (Figs. 20A-C, 21A, 22A). *Anaplectoidea*

Family Blattellidae
Subfamily Anaplectinae

Genus *Anaplecta* Burmeister

Anaplecta Burmeister, 1838: 494; Princis, 1965: 367; Roth, 1990: 645). Type species: *Anaplecta lateralis* Burmeister, selected by Kirby, 1904.

Rediagnosis (after Roth, 1990): Tegmina and wings usually fully developed, rarely reduced. Hind wing with simple cubitus vein; when in repose the wing is folded longitudinally along the plical fold and the appendicular field is reflexed. Front femur Type B₂; pulvilli absent or apparent on the fourth proximal tarsomere only, tarsal claws usually simple, rarely serrated, symmetrical, arolia present. Male: genital phallomeres complex, polyphagid-like, hook on the left side. Supraanal plate with a setose medial specialization.

Female: Subgenital plate valvular.

This is a widely distributed genus (Central and South America, Asia, Africa) with more than 80 species (Princis, 1965: 367-380; 1971: 1144). The genus needs revision because many of the species are described from females, and the characters that were stressed were color markings and wing venation.

1. *Anaplecta calosoma* Shelford

Anaplecta calosoma Shelford: Roth 1990: 648, figs. 30A-K, 31A, 34 (redescription of male and female).

Specimen examined: IRIAN JAYA: Neth. New Guinea: Waris, S. of Hollandia, 450-500m, 1♂, 16-23.viii.1959, T.C. Maa; in BPBM.

Comments: The species was previously known from Papua New Guinea (holotype) and Queensland.

2. *Anaplecta australiensis* Roth

Anaplecta australiensis Roth, 1990: 649, figs. 32A-F, 34 (male and female).

Specimen examined: IRIAN JAYA: New Guinea (NW): Wisselmeren: Enarotadi, 1860m, 1♂, 9-11.viii.1962, J. Sedlacek; in BPBM.

Comments: This species was previously known from Australia (Queensland and Northern Territory). The above specimen is larger than the type specimens and its measurements (mm) are: Length, 6.0; pronotum length x width, 1.6 x 2.0; tegmen length, 6.3.

3. *Anaplecta maculata* Shelford (Figs. 1A-C)

Anaplecta maculata Shelford, 1906: 240, pl. XV, fig. 7 (female); Princis, 1965: 375.

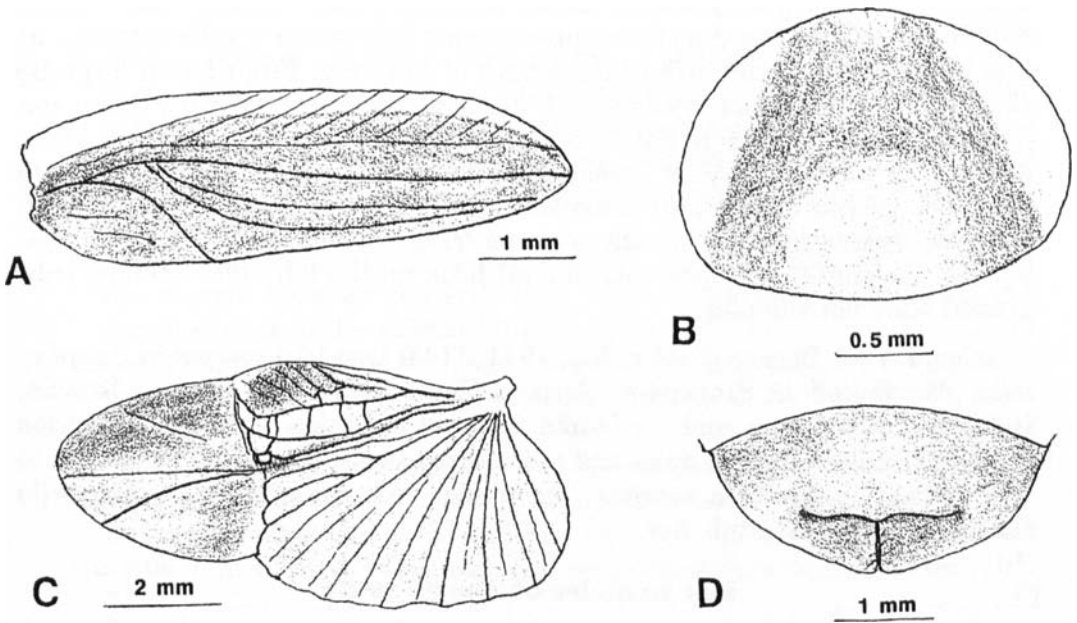
?*Anaplectella maculata* (Shelford): Hebard, 1929: 31.

Anaplectella maculata (Shelford): Princis, 1971: 1144.

Specimen examined: Ceylon [SRI LANKA]: Pundaloya, 1 ♀ (designated here as *lectotype*), ii.1897, E. E. Green; Type Orth. 23¹/₂; in HECO.

Comments: Hebard (1929: 31) stated that *Anaplecta maculata* Shelford probably belonged in *Anaplectella*. Apparently accepting Hebard's statement, Princis (1971: 1144) listed the species under *Anaplectella*. *Anaplecta maculata* should remain in *Anaplecta* for the following reasons: The tegminal cubitus vein has only two longitudinal branches; hind wing with simple media and cubitus veins and the posterior half of the appendiculate field has an oblique vein. The subgenital plate is valvular. The front femur is Type B₂; only one front tarsus was intact and its tarsal claws are simple and dentate. The serrated tarsal claws are atypical since the genus usually has simple claws. However, I believe that because of the wing venation and female valvular subgenital plate the species should remain in *Anaplecta* until the male is discovered (its specialized supraanal plate and polyphagid-like genitalia readily separates *Anaplecta* from *Anaplectella*).

Measurements (mm) (female lectotype): Length, ca 5.5; pronotum length x width, 1.5 x 2.1; tegmen length, 5.2; interocular width, 0.8.



Figs. 1. *Anaplecta* spp. A-C. A. *maculata* Shelford, ♀, lectotype: A, tegmen; B, pronotum; C, hind wing. D, A. *ochronotum* Hebard, ♀, holotype: subgenital plate.

4. *Anaplecta ochronotum* Hebard (Fig. 1D)

Anaplecta ochronotum Hebard, 1929: 30, pl. 1, fig. 3 (female).

Anaplecta fulvicollis Hanitsch, 1929b: 267, fig. 1 (male); 1932: 56; Bruijning, 1948: 48.

Specimen examined: INDONESIA: SUMATRA: Fort de Kock, 920m, ♀ (holotype), xii.1921, E. Jacobson (with an additional label *Anaplecta gyrinoides*); Type no. 1133; in ANSP.

Comments: The female valvular subgenital plate figure is characteristic of the genus. Bruijning synonymized *fulvicollis* (also from Fort de Kock) with *ochronotum*. Princis (1959: 144; 1965: 376) synonymized *ochronotum* with *Blatta gyrinoides* Walker claiming that the holotype female (not male as Walker indicated) of that species could not be separated from Hebard's taxon. Although I have not seen Walker's type, I am considering his species separately because it is from the Sulawesi, and females are difficult to separate in many of the species.

Family Blattellidae Subfamily Blattellinae

Genus *Anaplectella* Hanitsch

Anaplectella Hanitsch, 1928: 6; Hebard, 1929: 31. Type species: *Anaplectella smedleyi* Hanitsch, by monotypy.

Rediagnosis: Tegmina and wings fully developed, rarely reduced (*ruficollis*), the former with oblique discoidal sectors. Cubitus vein of hind wing usually with one (rarely two or three) pseudocomplete branch that reaches only to the oblique margin of the appendicular field which is reflexed when at rest and occupies about 40% of the length of the wing. Front femur Type B₂ (Fig. 12G); tarsal claws symmetrical, distinctly dentate, pulvilli present (on fourth proximal tarsomere only?), or apparently absent, arolia present. Male: seventh abdominal tergum specialized. Hind margin of supraanal plate deeply excised forming a pair of asymmetrical or symmetrical lobes. Subgenital plate symmetrical or weakly asymmetrical, two similar or slightly dissimilar (in length) styli present. Genital hook on the left side. Female: subgenital plate not valvular.

Comments: Princis (1965a: 382; 1971: 1144) listed 16 species in *Anaplectella*, distributed in Singapore, Borneo, China, Sumatra, Burma, Taiwan, India, Sulawesi, Java, and Sri Lanka. Below I have described a new species of *Anaplectella* from Sri Lanka and transferred two species from *Anaplecta* to this genus. *Anaplectella martini* (Fernando) is a synonym of *Anaplectella thwaitesi* (Shelford) comb. nov.

Key to males of *Anaplectella*

[The males of *indica*, *ornata*, *beccarii*, and *aurea*, are unknown.]

1. Left side of subgenital plate shallowly concave (interstyler margin) with a pair of widely separated similar styli, one at each end of the excavation (Fig. 3G). *subrotundata*

- Subgenital plate not as above.....2
- 2. Head dark brown with groups of black dots on vertex, face, and labrum (Fig. 3E)..... *pilatus*
- Head not as above.3
- 3. Supraanal plate hind margin with a pair of distinctly asymmetrical lobes (Figs. 2E, 4B, C, 5B, 6B, 7B, E).....4
- Supraanal plate hind margin poorly or distinctly divided medially, if the latter the lobes are essentially similar or symmetrical (Figs. 8D, 9B, 10B, 11B,D, 12C).....8
- 4. Interstyler margin distinctly greater than length of right style (Fig. 2F). Supraanal plate as in Fig. 2E. Pronotal disk reddish brown completely surrounded by hyaline area (Fig. 2A). Tip of the tegmina with a small dark dot (Figs. 2B, 3D)..... *thwaitesi*
- Interstyler width about the same or less than the length of right style. Pronotal disk not as above.....5
- 5. Left side of supraanal plate produced as a large swollen process, terminating in a spine reaching the right cercus (Fig. 5B)..... *mjoebergi*
- Supraanal plate not as above.6
- 6. Supraanal plate as in Figs. 4B, C. Pronotal disk dark brown with symmetrical white and reddish markings (Fig. 4A). *warreni*
- Supraanal plate with right lobe apically acute, left lobe rounded apically (Figs. 6B, 7E).....7
- 7. Styli elongate, each terminating in a small spine (Fig. 6C).... *samarindae*
- Styli short, bulbous, apex rounded without terminal spines (Fig. 7F). *notata*
- 8. Medial excision of supraanal plate relatively shallow, apexes of the lobes close together, rounded (Fig. 12C). Styli close together, interstyler margin a convexly rounded lobe, hardly produced (Fig. 12B). . *ruficollis*
- Medial excision of supraanal plate deeper, lobes well divided.9
- 9. Interstyler margin without a long process between the styli or anterior to them on the subgenital plate.....10
- Interstyler margin with a long sclerotized, spinelike process arising on the margin between the styli (Fig. 10C), or anterior to them on the dorsal surface of the subgenital plate (Figs. 11C, F).....13
- 10. Lobes of supraanal plate with some dark spines (Fig. 7B). Styli very close together, interstyler margin distinctly less than the length of a style (fig. 31b in Bruijning, 1948; Fig. 7C). *vanheurni*
- Lobes of supraanal plate without dark spines (Figs. 8D, 10B).11
- 11. Cubitus vein of hind wing with three pseudocomplete branches (Fig. 8G). Subgenital plate and styli as in Fig. 8E. *tibangensis*
- Cubitus vein of hind wing with one pseudocomplete branch (Figs. 10F, 11E).....12
- 12. Styli dissimilar, right one curved, interstyler margin oblique (Fig. 9C). *simalur*
- Styli similar, interstyler margin truncate (Fig. 9F). *jacobsoni*

13. Styli dissimilar, the left one about 2X length of right one (Fig. 10C). Ventral margins of supraanal plate lobes without stout dark spines (Fig. 10B)..... *lompatensis*
- Styli similar, both about equal in length (Figs. 11C, F). Outer ventral margins of supraanal plate lobes with stout dark spines (Figs. 11B, D).
..... *smedleyi*

Key to females of *Anaplectella*

[The females of the following species are unknown or I have not seen them and are not included in the key: *mjoebergi*; *notata*; *samarindae*; *simalur*; *subrotundata*; *warreni*]

1. Tegmina not quite reaching end of abdomen. Hind wings smaller, appendicular field greatly reduced occupying about 17% length of wing (Fig. 12F). *ruficollis*
- Tegmina reaching beyond end of abdomen. Hind wing not reduced, appendicular field occupying more than 30% length of wing (usually about 40%).....2
2. Head dark brown with groups of black dots on vertex, face, and labrum (Fig. 3E). *pilatus*
- Head not as above.3
3. Tegmina with a dark apical spot (Figs. 2B, 3D). *thwaitesi* & *indica*
- Tegmina without a dark apical spot.4
4. Tegmina yellowish with minute nodes along oblique veins (Fig. 3B). Pronotum with a reddish brown symmetrical pattern (Fig. 3A). *ornata*
- Tegmina and pronotum not as above.5
5. Tegmina brownish yellow, hyaline, mottled with translucent chestnut brown flecks along veins. *vanheurni*
- Tegmina not as above.6
6. Pronotum shiny black, narrow lateral margins dull, hyaline. *beccarii*
- Pronotum not as above.7
7. Supraanal plate subtrapezoidal, deflexed, hind margin truncate, corners rounded. Hind wing unevenly infuscated as in Fig. 11E. *smedleyi*
- Supraanal plate subtrigonal, apex rounded. *lompatensis*

5. *Anaplectella thwaitesi* (Shelford), comb. nov. (Figs. 2A-F)

Anaplecta thwaitesi Shelford, 1906: 241, pl. 15, fig. 9 (female); Princis, 1965: 375.

Anaplecta martini Fernando, 1957: 12, pl. 7, figs. 22-24 (male); Princis, 1965: 375. syn. nov.

Redescription. Male: Interocular space less than the distance between antennal sockets. Pronotum subelliptical (Fig. 2A). Tegmina and wings fully and equally developed, the former with oblique discoidal sectors (Fig. 2B). Hind wings with straight, simple radial vein, media and cubitus veins curved, fusing proximally, the latter with a single pseudocomplete and no incomplete branches, appendicular field large, about 41% the length of the wing (Fig. 2C). Front femur Type B₂ with three large proximal spines;

pulvilli on fourth tarsomere of hind legs, appear to be absent on front and mid legs, tarsal claws symmetrical, distinctly toothed, arolia large. Seventh abdominal tergum with a medial elliptical depression divided in half by flat longitudinal ridge densely setose along the edges (Fig. 2D). Supraanal plate asymmetrical, deeply divided forming a large apically rounded lobe, paraprocts dissimilar (Fig. 2E). Subgenital plate practically symmetrical, with pair of small, similar, cylindrical styli separated by more than their length, interstyler margin not produced (Fig. 2F). Genitalia as in Fig. 2F. hook small, on left side with preapical incision, lateral margins of distal region of median phallomere with row of dark setae along edges, right phallomere consisting of several sclerites; also on right side, small densely setose membrane and elongated sclerotization attached to dorsal surface of plate terminating in setal brush.

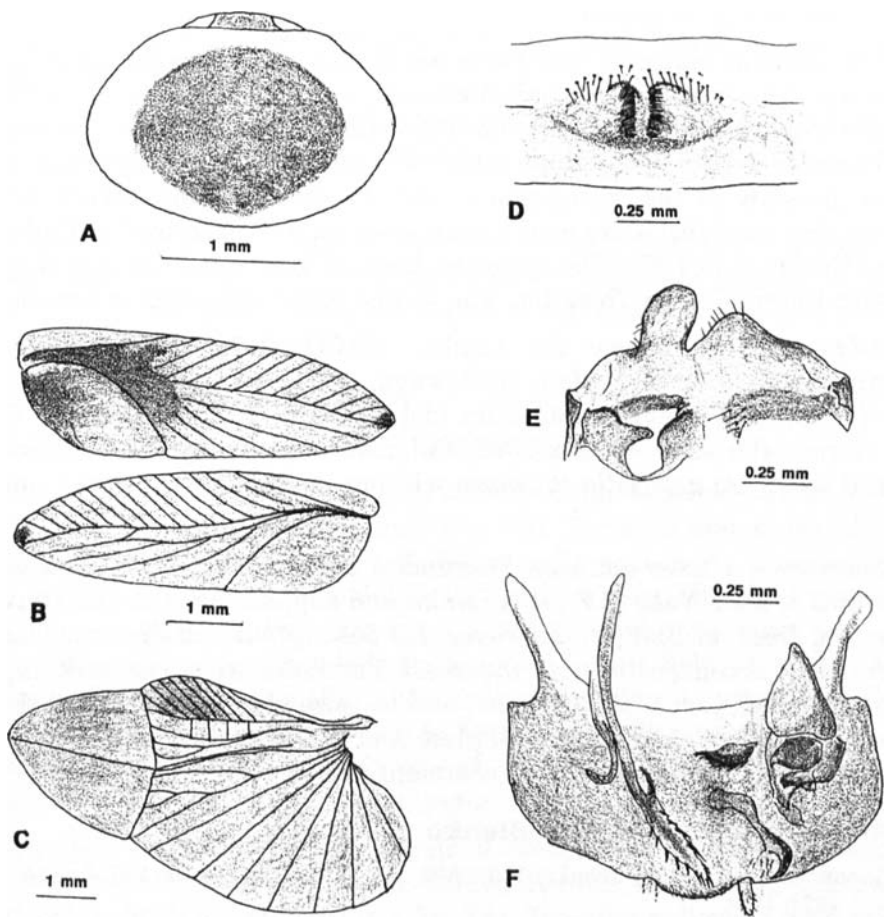


Fig. 2. *Anaplectella thwaitesi* (Shelford), males from Bintenne, Sri Lanka: A, pronotum; B, tegmina (top: dark form; bottom: pale form); C, hind wing; D, tergal gland on seventh abdominal segment; E, supraanal plate and paraprocts (ventral); F, subgenital plate and genitalia (dorsal).

Female: Supraanal plate lateral margins weakly concave, apex shallowly indented. Legs and wings as in male.

Color: Head with broad reddish band on the vertex, rest of face pale. Pronotal disk dark reddish brown surrounded by hyaline area (Fig. 2A). Tegmina yellow hyaline with dark brown on proximal region and small dark spot at the apex, or with only apical dark spot (pale form, Fig. 2B). Hind wing infuscated (Fig. 2C). Abdominal terga light brown, darker laterally with yellowish posterior corners. Abdominal sterna dark brown, posterior lateral corners pale, last two segments with reddish tint. Legs brownish yellow.

Measurements (mm) (female in parentheses): Length, 5.5-6.0 (4.9); pronotum length x width, 1.3-1.4 x 2.0-2.3 (1.3 x 2.0); tegmen length, 4.5-4.7 (4.6); interocular width, 0.4 (0.6).

Specimen examined: Ceylon [SRI LANKA]: Thwaites, 1 ♀ (*holotype*), Type Orth. 25¹/₂; in HECO.

The fraction indicates that there are 2 type specimens but Shelford's paper states "One example (Oxford Museum)", and it is a female. According to I. Lansbury (personal communication, 1994) this specimen bears "...a red-edged label printed in the usual Hope style. I don't know when these labels were added, possibly at the instigation of E.P. Poulton. The handwritten female sign on the type label looks as if it may have been written by J.J. Collins who joined the Hope in 1905. The specimen bears a 'Westwood' lozenge shaped label with legend Ceylon Thwaites. The second "type" specimen is a male.

Additional specimens: Sri Lanka. HECO: 1 ♂, "Type Orth. 25²/₂" (terminalia slide 285), Ceylon, Wellawaya, xi.05. ANSP: Mihintale, Ceylon, 1 ♂, 7-9.vii.1927, Colombo Museum (det. Hebard, 1935); Bintenne, Ceylon, 1 ♂, (terminalia slide 446), x.1928, Colombo Museum (with a handwritten Hebard label, "*Anaplectella thwaitesi* without maculations?; spread and compare.").

Comments: I have not seen Fernando's male holotype of *Anaplecta martini* which is from Yala (S.P.), Sri Lanka and supposedly is in the University of Ceylon, Dept. of Biology. However, his description and drawings leave no doubt that it is conspecific with *thwaitesi*. The intensity of the dark markings on the proximal part of the tegmina, and the size of the dark spot at the apex is variable. The bilobed supraanal plate and the black dot at the apex of the tegmina should be diagnostic (see comments under *A. indica*, below).

6. *Anaplectella indica* Bey-Bienko (Fig. 3D)

Anaplectella indica Bey-Bienko, 1969: 839, fig. 19 (female); 1970: 533, fig. 19; Princis, 1971: 1144.

Description. Female (after Bey-Bienko): Interocular space slightly narrower than the distance between antennal sockets. Pronotum strongly transverse. Tegmina not extending beyond end of abdomen. Hind wings with ten

oblique costal veins, radio-median field with five cross veins, one third narrower than the costo-radial field; anterior cubitus vein with one posterior branch. Front femur Type B₂. Subgenital plate basally very broad, continuing as a triangular lobe, apically incised.

Color: Brownish yellow, space between eyes on vertex yellowish brown. Pronotum rusty brown, lighter medially, broad lateral zones hyaline. Tegmina brownish yellow, veins dark brown, with a dark basal band and apical spot (Fig. 3D). Wings slightly infusate, costal margin brownish. Legs light yellow, bases of coxae dark brown, tibiae with dark spots on outside at bases of spines. Abdominal terga darker, basal half black along middle, posterolateral angles with a light trigonal spot. Abdominal sterna with dark lateral border broken into small spots. Cerci yellowish, apical half dorsad with brown margins.

Male: Unknown.

Measurements (mm): Body length, 6.2; pronotum length x width, 1.5 x 2.6; tegmen length, 5.3.

Holotype data: ♀, S. INDIA: Haidarabad [=Hyderabad], 26.i.1964, N. Borkhsenius; in the Inst. of Zool. (Acad. Sci. USSR), Leningrad. Not examined.

Comments: Bey-Bienko stated that this species resembles *A. jacobsoni* from Sumatra. However, the color markings of *indica* are suggestive of the male of *A. thwaitesi* (particularly the tegminal markings) and it may prove to be the female of that species.

7. *Anaplectella ornata* Hanitsch (Figs. 3A-C)

Anaplectella ornata Hanitsch, 1929a: 7, fig. 2 (female); Princis, 1965: 382.

Redescription. Female: Head hidden, interocular space equal to one half width of head. Pronotum subelliptical (Fig. 3A). Tegmina and wings fully developed extending well beyond end of abdomen. Tegmina with 11 (one forked) costals, radial vein simple, discoidal sectors oblique (Fig. 3B). Hind wing with about seven costals, media vein curved, radiomedial field with five cross veins, cubitus vein with a single branch, appendicular field parabolic, about 34% the length of the wing (Fig. 3C). Only one midleg is intact and it has pulvilli on proximal tarsomeres two to four, tarsal claws symmetrical with subobsolete teeth, arolia well developed. Supraanal plate deflexed, hind margin convexly rounded. Subgenital plate not valvular.

Color: Head testaceous, with a pair of castaneous maculae between antennal sockets; antennae testaceous, darker distally. Pronotal disk brownish yellow with reddish brown pattern (Fig. 3A). Tegmina yellowish with minute "nodes" (each surrounding a minute seta) along many veins, and a dark brownish macula anterior to the anal sulcus (Fig. 3B). Hind wing infuscated as in Fig. 3C. Abdominal terga dark, sterna brownish yellow with dark blotches. Legs brownish yellow.

Male: Unknown.

Measurements (mm): Length, 5.0; pronotum length x width, 1.6 x 2.3; tegmen length, 5.2; interocular width, 0.6.

Specimen examined: [INDONESIA: SUMATRA]: Medan, ♀ (*holotype*), Mjög., 1919-1921; in NRSS.

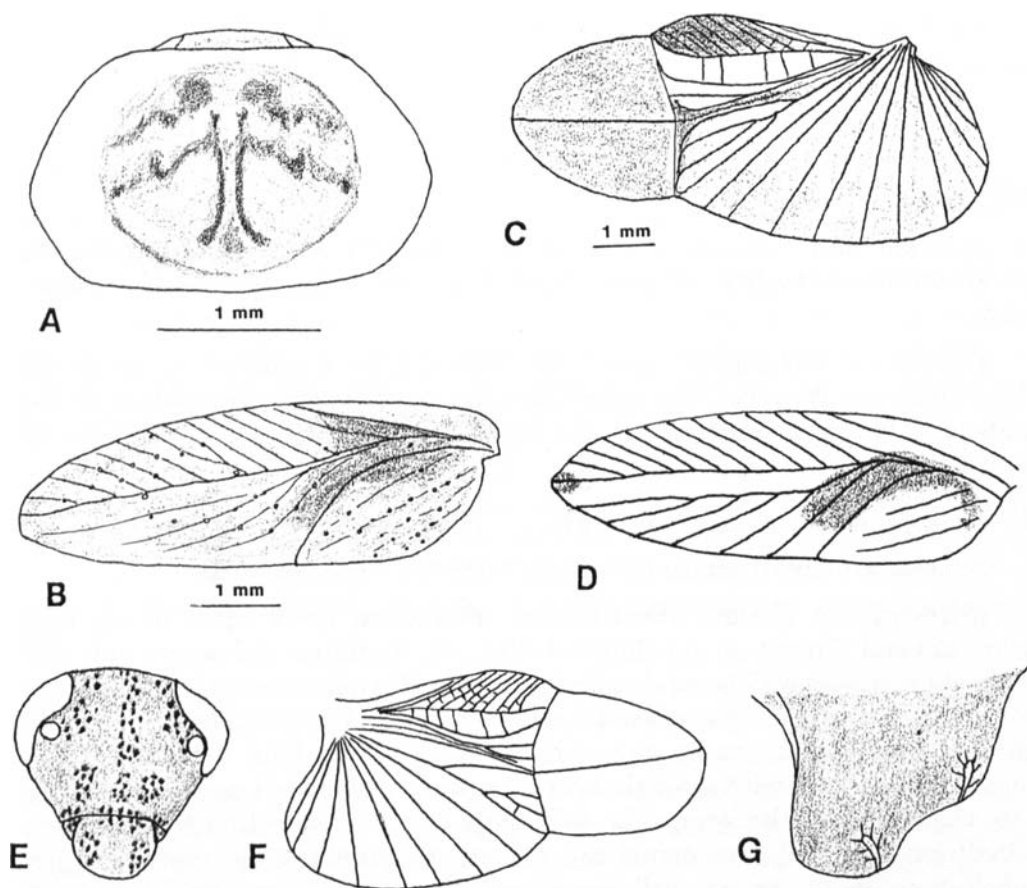


Fig. 3. *Anaplectella* spp. A-C, *A. ornata* Hanitsch, female holotype: A, pronotum; B, left tegmen; C, left hind wing. D, *A. indica* Bey-Bienko, male holotype, tegmen (from Bey-Bienko, 1970, fig. 19). E, F, *A. pilatus* (Fernando), female syntype, head and hind wing (from Fernando, 1959, pl. 6, figs. 22, 23). G, *A. subrotundata* (Walker), male holotype, subgenital plate (ventral) (from Princis, 1959, fig. 40)

8. *Anaplectella pilatus* (Fernando), comb. nov. (Figs. 3E, F)

Anaplecta pilatus Fernando, 1959: 92, pl.6, figs. 22, 23 (male and female); Princis, 1965: 378.

Description. *Female* (after Fernando): Head with interocular space less than distance between antennal sockets (Fig. 3E). Tegmina and wings fully developed, the former with 13 costal veins, the last two bifurcated, cubitus vein multi-ramose. Hind wing with nine costal veins, media and cubitus veins concave, radio-medial area with six cross veins, cubitus vein bifurcate, the single branch pseudocomplete, incomplete branches absent, appendicular field parabolic, about 40% of the wing length (Fig. 3F). Supraanal plate rounded, slightly emarginate, with long apical hairs.

Color: Fulvous. Head dark brown with black dots on the face and top of vertex (Fig. 3E); antennae yellow, darkening towards apex. Pronotum hyaline, creamy yellow along margins. Tegmina yellowish. Hind wing with marginal and appendicular fields grayish. Abdominal terga and sterna blackish. Legs yellowish. Cerci brownish yellow.

Male: Not described; slightly darker in color than female.

Measurements (mm) (female only): Body length, 7.0; tegmen length, 5.0.

Type data: Ceylon [Sri Lanka]: Colombo, University of Ceylon. Not examined.

Comments: Fernando stated that *pilatus* resembles *Anaplecta thwaitesi* but differs in size, coloration and wing venation. There is essentially no difference in wing venation between the two species. The hind wing with its one pseudocomplete branch places this species in *Anaplectella* rather than *Anaplecta*; leg armament was not mentioned. Unfortunately the description is based on the female and the male is simply described as "Slightly darker in colour." Whether or not the hind margin of the supraanal plate is excavated (bilobed) or incised, symmetrical or asymmetrical, is unknown.

9. *Anaplectella subrotundata* (Walker) (Fig. 3G)

Blatta subrotundata Walker, 1871: 26 (male not female as indicated).

Allacta subrotundata (Walker): Kirby, 1904: 99.

Anaplecta subrotundata (Walker): Shelford, 1907b: 9.

Anaplectella subrotundata (Walker): Princis, 1959: 145, fig. 40 (male); 1965: 383.

Description. *Male* (after Walker): Spindle shaped. Head hardly exposed, vertex moderately broad. Pronotum transverse, narrower in front, anterior and posterior margins nearly straight, sides rounded broadly transparent. Wings extending beyond end of abdomen.

Color: Brown, testaceous beneath. Palpi and antennae testaceous. Tegmina brown, with a transparent basal costal streak. Abdominal sterna brown, distal part and cerci testaceous.

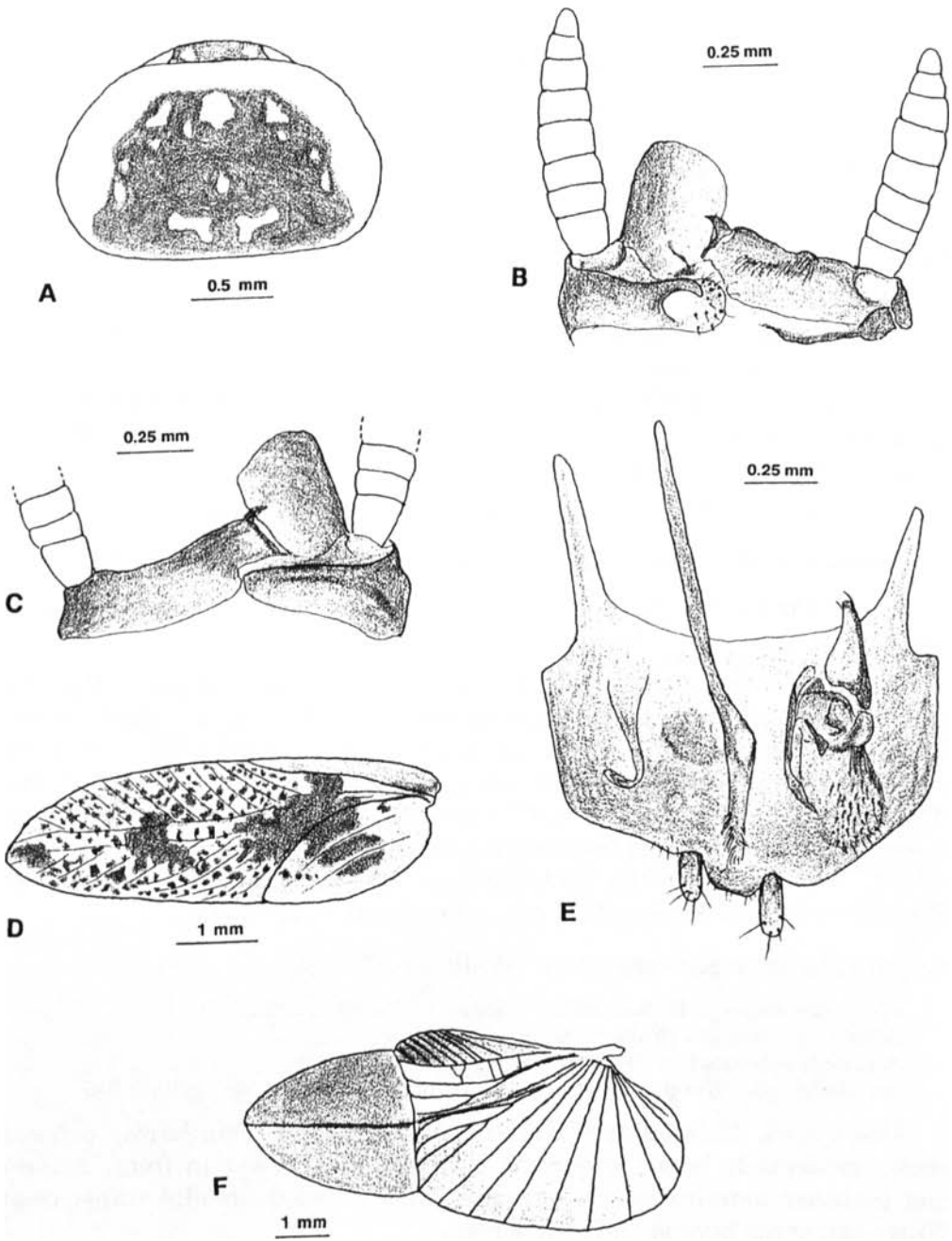


Fig. 4. *Anaplectella warreni*, sp. nov., male holotype: A, pronotum ; B, supraanal plate and paraprocts (ventral); C, supraanal plate (dorsal); D, left tegmen; E, subgenital plate and genitalia (dorsal); F, Left hind wing.

Measurements: Body length "3½ lines" (7.4 mm); expansion of tegmina, "7 lines" (14.8 mm).

Holotype data: [INDIA]: Bombay, ♂ (not female as indicated), pres. by Dr. Leith; in NHML. Not examined.

Comments: It is unfortunate that Princis (1959: 145) didn't redescribe this species when he examined it, but he did illustrate the subgenital plate which has a pair of similar, widely spaced styli, the interstyler margin weakly concave (Fig. 3G).

10. *Anaplectella warreni*, sp. nov. (Figs. 4A-F)

Description. Male: Head with interocular space less than the distance between antennal sockets. Pronotum subelliptical, widest behind the middle (Fig. 4A). Tegmina and wings fully developed, the former with about six oblique discoidal sectors (Fig. 4D). Hind wing with eight costal veins thickened distad, media and cubitus vein curved, the former simple, the cubitus with one pseudocomplete branch reaching the anterior margin of a large apical triangle that occupies about 42% length of wing (Fig. 4F). Front femur Type B₂ with two or four large proximal spines, pulvilli apparently absent, tarsal claws symmetrical, strongly toothed ventrad. Seventh abdominal tergum probably is specialized although I did not see it in the pinned specimen and the segment was lost in slide preparation. Supraanal plate asymmetrical; apparently the segment was split in half in the slide preparation and the left side is a large lobe and the right half has a spine near the middle and a dense group of setae along the ventral surface; paraprocts dissimilar, the left one broad with a small clear lacuna distad (Figs. 4B, C). Subgenital plate asymmetrical, with a pair of similar shaped cylindrical styles, the right one slightly longer, separated by about their length, interstyler margin slightly produced (Fig. 4E). Genitalia as in Fig. 4E: hook on the left side with a preapical incision, median phallomere with setae apically, right phallomere consisting of several sclerites.

Color: Head with occiput reddish brown and a pair of small yellowish-white maculae, remainder hyaline or yellowish; antennae with about a dozen pale proximal segments, remainder brown. Pronotal disk dark brown with a symmetrical pattern of yellowish white and smaller reddish markings surrounded by hyaline border areas (Fig. 4A); meso- and metanotum dark brown with a medial yellowish-white macula. Tegmina with yellow veins and a large dark brown area in the proximal half and two smaller ones on the distal half, with small dark spots of variable size between the veins giving a checkered appearance (Fig. 4D). Hind wing with thickened costal vein zone yellowish, the apical triangle darkly infuscated with the anterior half darker, rest of wing lightly infuscated. Abdominal terga brown, darker laterally with large yellow spots on the hind corners of segments four to seven. Abdominal sterna dark brown with yellow lateral edges and some yellowish areas on the distal segments. Cerci pale dorsally, dark brown ventrally.

Female: Unknown.

Measurements (mm): Length, 5.2; pronotum length x width, 1.4 x 2.1; tegmen length, 5.0; interocular width, 0.4.

Holotype: ♂ (terminalia slide 445), Ceylon [SRI LANKA]: Morningside: Rakwana, 4000ft., 8.v.1929, Colombo Museum; in ANSP.

Etymology: The species is dedicated to my good friend Tom Warren.

Comments: This species is readily identified by the pronotal and tegminal color patterns. The shape of the asymmetrical supraanal plate and the genital phallomeres places this new taxon close to *martini*.

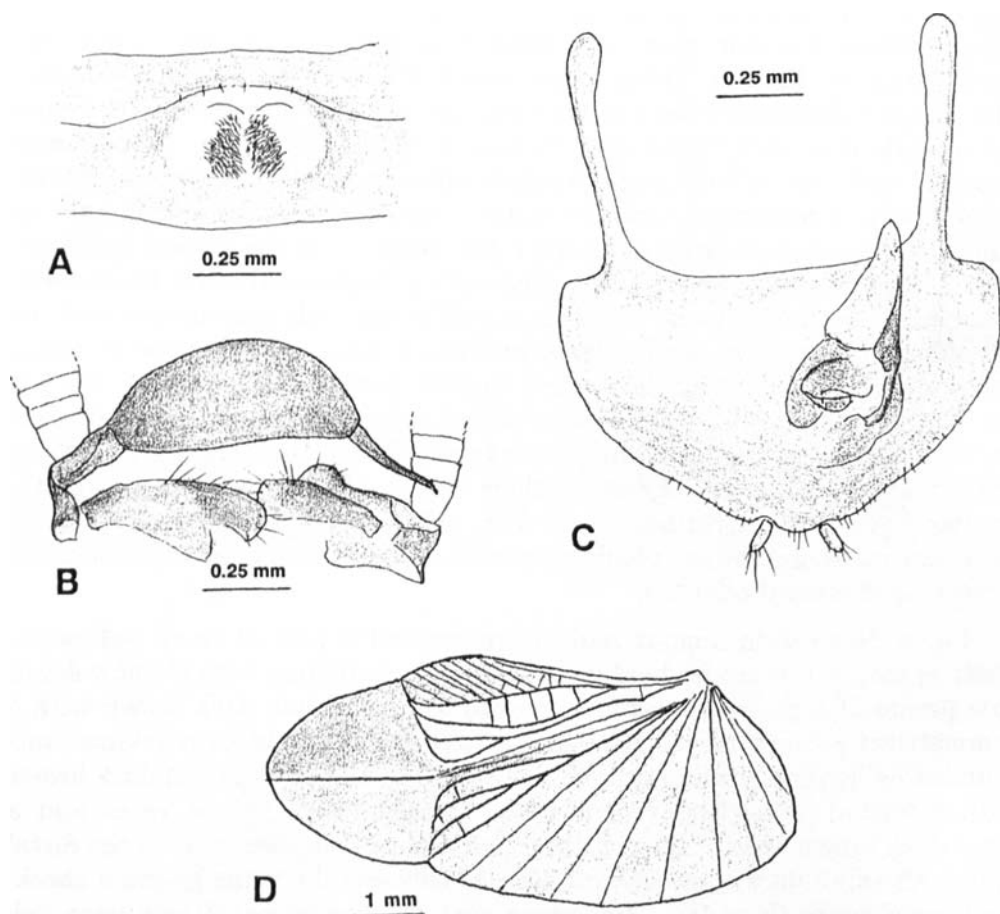


Fig. 5. *Anaplectella mjoebergi* Hanitsch, male holotype: A, gland on seventh abdominal tergum; B, supraanal plate and paraprocts (ventral); C, subgenital plate and right genital phallomere (dorsal; the hook and median phallomeres were probably lost during slide preparation); D, hind wing.

11. *Anaplectella mjobergi* Hanitsch (Figs. 5A-D)

Anaplectella mjobergi Hanitsch, 1929a: 7 (male).

Anaplectella mjobergi Hanitsch: Princis, 1965: 382.

Redescription. Male: Head exposed, interocular space less than the distance between antennal sockets. Pronotum subelliptical, anterior and posterior margins almost parallel. Tegmina and wings fully developed extending beyond end of abdomen, the former with simple radial vein, 13 costals, and five oblique poorly defined discoidal sectors, anal sulcus sharply defined, anal veins obsolete. Wings with six costals, radial vein simple, straight, media and cubitus veins curved, the former simple, the latter with a single pseudocomplete branch, appendicular field parabolic about 39% of the wing length (Fig. 5D). Front femur Type B₂ with three large proximal spines; midtarsus with pulvilli on tarsomeres two to four, hind tarsus apparently with a pulvillus on the fourth segment; tarsal claws distinctly toothed, symmetrical. Seventh abdominal tergum with a fossa containing two large clumps of setae (Fig. 5A). Supraanal plate strongly asymmetrical, the left side produced as a large swollen lobe terminating in a long spine that reaches the right cercus; the right side has a very small rounded lobe; right and left paraprocts similar (Fig. 5B). Subgenital plate symmetrical, convex, trigonal, with a pair of very small, closely spaced, similar, cylindrical styli, interstyler margin not produced (Fig. 5C). Genitalia as in Fig. 5C: the genital hook and median phallomere are absent (probably lost in slide preparation); right phallomere consisting of nonsetose sclerites.

Female: Unknown.

Color: Vertex of head light brown with three longitudinal brownish lines, face brownish yellow, antennae brownish yellow. Pronotal disk reddish brown, broad lateral borders grayish hyaline. Tegmina pale straw-colored. Wings light brown, costal and appendicular fields darker. Abdominal terga dark brown; abdominal sterna black anteriorly, subgenital plate and two penultimate segments brownish yellow. Cerci brownish yellow with black tips.

Measurements (mm): Length, 5.0; pronotum length x width, 1.2 x 2.0; tegmen length, 5.0; interocular width, 0.5.

Specimen examined: [INDONESIA: SUMATRA]: Medan, ♂ (*holotype*) (terminalia slide 75), Mjörb.; in NRSS.

12. *Anaplectella samarindae* Hanitsch (Figs. 6A-F)

Anaplectella samarindae Hanitsch, 1930: 179 (male); Bruijning, 1948: 52; Princis, 1965: 382.

Redescription. Male: Head hardly exposed, interocular space less than the distance between antennal sockets. Pronotum subelliptical (Fig. 6D). Tegmina and wings fully developed extending beyond end of the abdomen. Tegmen with 11 costals (three of them branched), about four discoidal sectors longitudinal and suboblique. Hind wing with eight clubbed costal veins, rad-

ial vein simple straight, median vein curved, simple, with six cross veinlets in the radiomedial field, cubitus vein with one pseudocomplete and no incomplete branches, appendicular field parabolic, about 40% the length of the wing (Fig. 6A). Front femur Type B₂ with three large proximal spines succeeded by nine piliform spinules and terminating in two large subequal spines (Fig. 6E; Hanitsch stated incorrectly that there is only a single large terminal spine); pulvilli present on the fourth tarsal segment (at least on the mid and hind legs), tarsal claws symmetrical, strongly dentate, arolia well developed. Seventh abdominal tergum with a large medial, densely setose fossa (Fig. 6F). Supraanal plate transverse, asymmetrical, with a pair of elongated dissimilar medial lobes, the right one spinelike, the left one cylindrical; paraprocts weakly dissimilar (Fig. 6B). Subgenital plate weakly asymmetrical with a pair of large, similar, close styli, interstyler margin not produced (Fig. 6C). Genitalia as in Fig. 6C: hook on the left side, slender with a preapical incision, median phallomere bifurcate on distal half, densely setose apically.

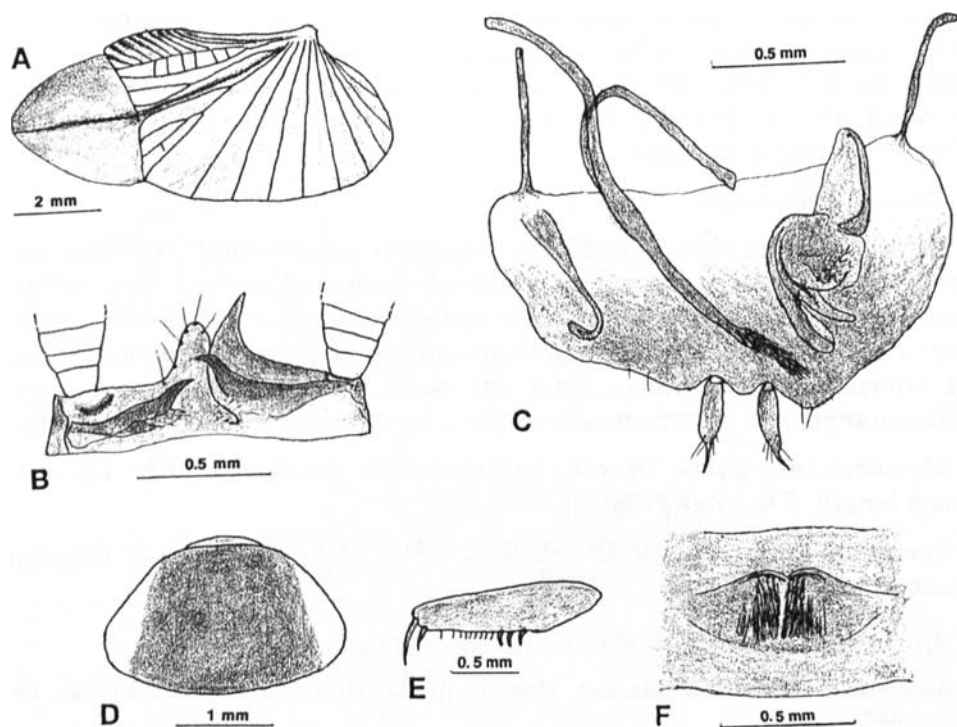


Fig. 6. *Anaplectella samarindae* Hanitsch, male holotype: A, hind wing; B, supraanal plate and paraprocts (ventral); C, subgenital plate and genitalia (dorsal); D, pronotum; E, front femur (anterior view); F, tergal gland on seventh segment.

Color: Head with a yellowish face, occiput darker, a pair of dark maculae on the vertex just anterior to the antennal sockets. Pronotal disk reddish brown, lateral zones clear hyaline (Fig. 6D). Tegmina light reddish-brown-hyaline, darker basad, anterior region (costal vein zone) pale yellowish-hyaline. Abdominal terga brown with small yellowish lateral spots, supraanal plate yellowish. Abdominal sterna light brown, proximal segments dark brown. Cerci yellow dorsad, brown ventrally, apex yellow. Legs with coxae mostly dark brown, remainder pale.

Female: Unknown.

Measurements (mm): Length, 5.4; pronotum length x width, 1.6 x 2.5; tegmen length, 5.4; interocular width, 0.4.

Specimen examined: [INDONESIA: KALIMANTAN]: Samarinda, ♂ (*holotype*) (terminalia slide 2); in SMTD.

13. *Anaplectella vanheurni* Bruijning (Figs. 7A-C)

Anaplectella vanheurni Bruijning, 1948: 52, figs. 19, 31 (male and female); Princis, 1950: 186; 1965: 383.

Redescription. Male: Head with interocular width less than the distance between antennal sockets; maxillary palpomeres four and five almost equal in length. Pronotum transverse. Tegmina and wings fully developed extending beyond end of abdomen, the former with oblique discoidal sectors. Hind wing with costal veins clubbed distad; medioradial field with five or six cross veins, cubitus vein with a single complete and no incomplete branches; appendicular field about 40% as long as the wing, the basal margin obtuse angulate. Front femur Type B₂, with five large proximal spines; pulvilli on the fourth proximal tarsomere only, tarsal claws symmetrical, serrated, arolia well developed. Seventh abdominal tergum (Bruijning's sixth) with a pair of setose fossae (Fig. 7A). Supraanal plate deeply excised forming a pair of large rounded lobes, each with some dark spines (Fig. 7B; Bruijning described the supraanal plate as having "a medial furrow which runs to the base of the plate."; in the pinned specimen the supraanal plate does appear to have a longitudinal furrow because the lobes are contiguous, but in the slide preparation the lobes are distinctly separate). Subgenital plate weakly asymmetrical with a pair of small cylindrical, symmetrical styli (Fig. 7C; the left style is missing, but Bruijning shows it in his fig. 31b; apparently the style was missing when he drew the supraanal and subgenital plates (his fig. 31a). Genitalia as in Fig. 7C: hook on left side with a preapical incision; median phallomere distally setose along one margin; right phallomere consisting of several, nonsetose sclerites.

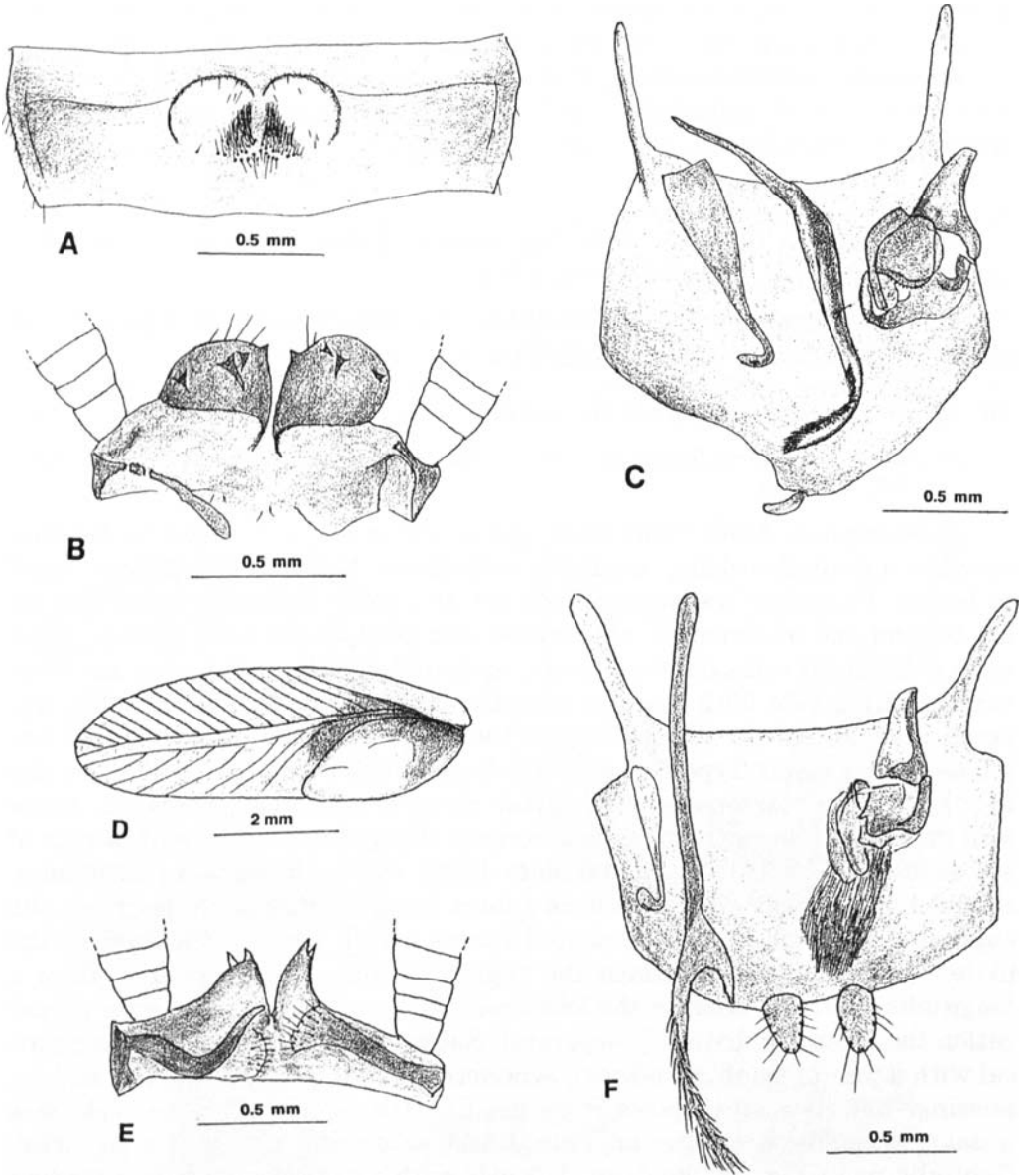


Fig. 7. *Anaplectella* spp. A-C, *A. vanheurni* Bruijning, male holotype: A, seventh abdominal tergum; B, supraanal plate and paraprocts (ventral); C, subgenital plate and genitalia (dorsal). D-F, *A. notata* Shelford, male holotype: D, left tegmen; E, supraanal plate and paraprocts (ventral); F, subgenital plate and genitalia (dorsal).

Color (from Bruijning): Head brownish yellow with reddish brown flecks between the eyes and below the antennal sockets; antennae dull brownish yellow. Pronotal disk with dark reddish brown spots, lateral areas hyaline. Tegmina brownish yellow hyaline, mottled with many translucent chestnut brown flecks along the veins; Subcostal-costal field transparent. Wings weakly suffused with brown, subcosta, radial field and anterior part of appendicular field brownish, posterior part of the field lighter. Meso- and metathoracic terga with a whitish median field, the rest dark reddish brown. Abdominal terga brownish yellow suffused with reddish brown. First abdominal sternum reddish brown, the others brownish yellow spotted with reddish brown. Coxae brownish yellow suffused with brown, rest of legs brownish yellow, the tibiae with brown spots at base of the spines.

Female: According to Bruijning, the lateral margins of the supraanal plate are strongly sinuate, converging to the rounded, slightly emarginate apex. Subgenital plate slightly asymmetrical.

Measurements (mm) (female in parentheses, from Bruijning): Length, 6.4 (6.6); pronotum length x width, 1.5 x 2.3 (1.7 x 2.6); tegmen length, 6.4 (7.0); interocular width, 0.4.

Specimen examined: [INDONESIA]: W. JAVA: Ardjung, S. of Gunung Papandajan, ♂ (*holotype*) (terminalia slide 209), 6.xii.1931, C. van Heurn; in RNHL.

14. *Anaplectella notata* (Shelford), comb. nov. (Figs. 7D-F)

Anaplectoidea notata Shelford, 1909: 612 (male); Princis, 1965: 385.

Redescription. Male: Head hardly exposed interocular space less than the distance between antennal sockets. Pronotum subelliptical, widest behind the middle. Tegmina and wings fully developed, the former with 16 costals and about ten oblique discoidal sectors, veins in anal field subobsolete (Fig. 7D). Hind wing with about 14 costals, apically thickened, radial vein straight, simple, medio-radial region with nine or ten cross veins, media and cubitus veins curved, the latter (left wing) with one forked pseudocomplete and no incomplete branches, or (right wing) with two pseudocomplete and one incomplete branch. Front femur Type B₂; pulvilli on the fourth proximal tarsomere only, tarsal claws dentate, symmetrical, arolia well developed. Seventh abdominal tergum weakly specialized, consisting of a pair of shallow depressions with few dispersed setae (determined by slide preparation and examined under high magnification of a compound microscope). Supraanal plate deeply, asymmetrically excavated, each lobe with a pair of small apical spines; paraprocts strongly dissimilar, the left one with a large, curved, spinelike sclerite (Fig. 7E). Subgenital plate symmetrical, styli similar, short, bulbous (Fig. 7F). Genitalia as in Fig. 7F: hook small, on the left side close to the median phallomere whose distal region is covered with stout setae (the setose region extends beyond the hind margin of the subgenital plate and is visible in the pinned specimen); right phallomere large consisting of several sclerites, and a setose membrane associated with it.

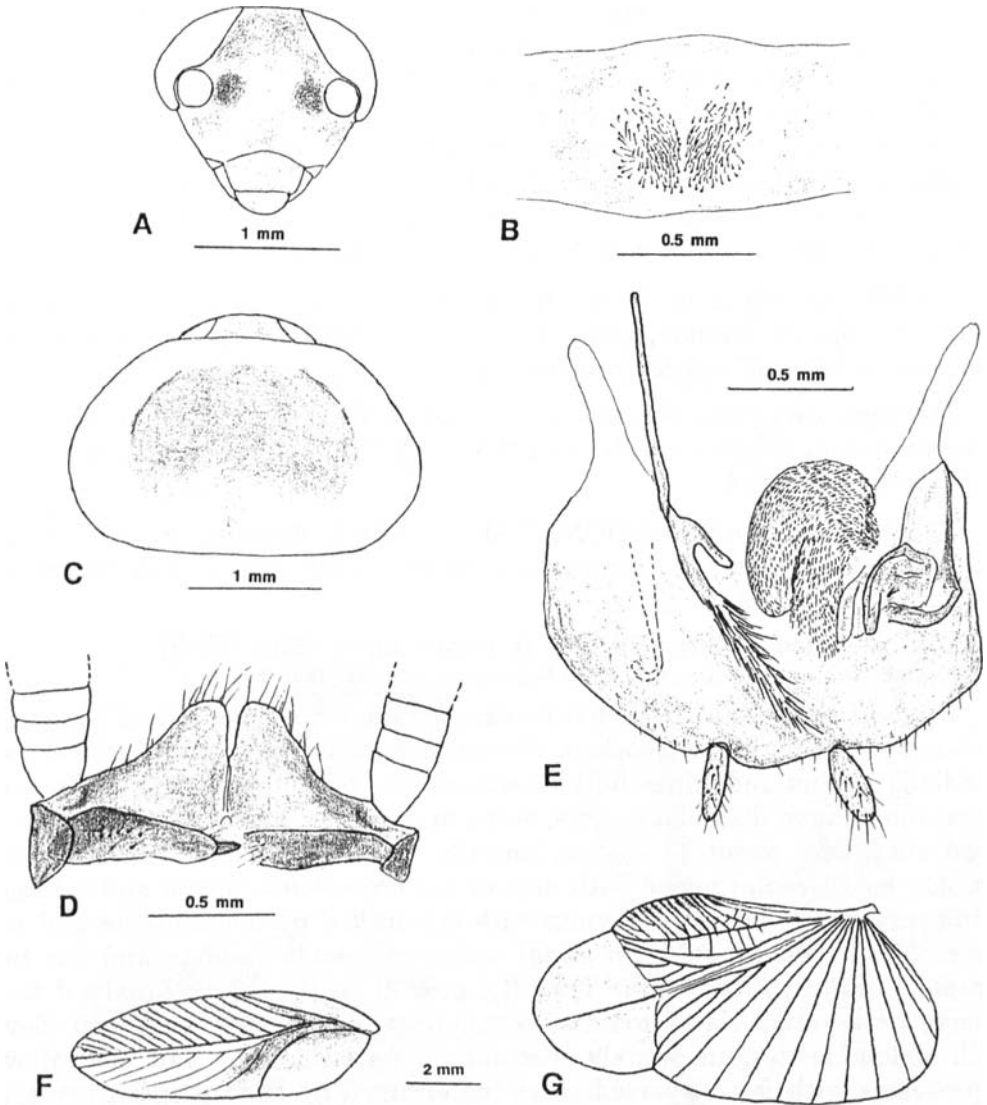


Fig. 8. *Anaplectella tibangensis*, sp. nov., ♂, holotype: A, head; B, gland on seventh abdominal tergum; C, pronotum; D, supraanal plate and paraprocts (ventral); E, subgenital plate and genitalia (dorsal); F, left tegmen; G, left hind wing.

Female: Unknown.

Color: Brownish yellow. Pronotal disk reddish brown lateral regions hyaline. Tegmina yellowish hyaline with a dark brown region at the base, the distal half of the anal field very pale (Fig. 7D).

Measurements (mm): Length, 6.5; pronotum length x width, 1.7 x 2.6; tegmen length, 6.0; interocular width, 0.4.

Specimen examined: [NORTH VIETNAM]: Annam: Phuc Son, ♂ (*holotype*) (terminalia slide 283), xi.xii, bought from H. Rolle, Berlin, and pres. 1907 by R. Shelford; Type Orth. 40; in HECO. (The specimen is very badly damaged).

15. *Anaplectella tibangensis*, sp. nov. (Figs. 8A-G)

Description. Male: Interocular space less than the distance between antennal sockets. Pronotum subelliptical, widest behind the middle (Fig. 8C). Tegmina and wings fully developed, the former with 16 oblique costal veins, radial vein straight, simple, six oblique discoidal sectors (Fig. 8F). Hind wing with about 11 clubbed costal veins, radial vein straight, simple, median vein deeply concave, with about six cross veinlets in the radiomedial field, cubitus vein weakly sigmoid, with three pseudocomplete branches, two of them longitudinal, one obliquely directed anteriorly, appendicular field about 34% the length of the wing (Fig. 8G). Front femur Type B₂ with five large proximal spines succeeded by a row of about eight piliform spinules; pulvilli present on some of the tarsomeres (appear to vary on the different tarsal segments), tarsal claws serrated, symmetrical, arolia well developed. Seventh abdominal tergum with a medial shallow depression containing two large groups of setae (Fig. 8B). Supraanal plate deeply divided medially forming a pair of symmetrical lobes, right and left paraprocts dissimilar, the left one bearing a stout terminal spine (Fig. 8D). Subgenital plate with a pair of styli, the right one slightly stouter, interstyler margin not produced (Fig. 8E). Genitalia as in Fig. 8E: hook on the left side, very slender (this phallomere was lost in slide preparation and is shown in the figure by broken lines); median phallomere with a small lobe medially, the distal half densely setose; associated with the right phallomere is a well defined setose membranous structure.

Color: Head yellowish with a large brown blotch on the vertex and a large, round, darker brown macula touching the antennal sockets (Fig. 8A). Pronotal disk reddish brown, the distal part becoming brownish yellow, lateral zones hyaline (Fig. 8C). Tegmina amber-hyaline with a brown blotch basad (Fig. 8F). Hind wing with costal vein zone darkened, appendicular field tinted yellowish, rest of wing almost colorless. Abdominal terga brownish yellow, laterally dark brown, with pale spots along the edges. Abdominal sterna dark brown on basal segments.

Female: Unknown.

Measurements (mm): Length, 7.5; pronotum length x width, 1.7 x 2.7; tegmen length, 7.0; interocular width, 0.5.

Holotype: ♂ (terminalia slide 77), [SARAWAK]: Mt. Tibang, 1400m, Mjöberg (labelled *Anaplectoidea notata* Shelford); in NRSS.

Comments: This species, which was labelled *Anaplectoidea notata* Shelford (possibly by Princis), has a median genital phallomere that is similar to that of *notata* (cp. Figs. 7F and 8E). Both species have similarly marked tegmina (which may have influenced the individual who misidentified the specimen). However, the shapes of their supraanal plates and paraprocts are distinctly different (cp. Figs. 7E and 8D). Also, whereas the single branched cubitus vein of *notata* is typical of *Anaplectella*, in *tibangensis* it has three small branches (Fig. 8G); the shape of the appendicular field of *tibangensis*, and the three branches of the cubitus vein of the hind wing resemble those found in some species of *Malaccina*.

16. *Anaplectella simalur* Hebard (Figs. 9A-C)

Anaplectella simalur Hebard, 1929: 34, pl. 1, figs. 10, 11 (male); Hanitsch, 1930: 180; Bruijning, 1948: 52; Princis, 1957: 151; 1965: 383.

Redescription. Male: Head with interocular space slightly less than the distance between antennal sockets; fifth maxillary palpomere longer than the fourth. Pronotum transverse. Tegmina and wings fully developed, the former with 12 oblique costal veins (one or two of them branched, four discoidal sectors oblique. Wings with nine distally clubbed costal veins, medioradial area with six cross veins, cubitus vein with a single pseudocomplete branch; appendicular field slightly longer than broad, about 40% the length of the wing, its basal margin weakly obtuse-angulate. Front femur Type B₂, with four large proximal spines; pulvilli on the fourth proximal tarsomere only, tarsal claws symmetrical, distinctly dentate, arolia present. Tergal gland on the seventh abdominal segment consisting of a pair of fossae containing several groups of setae (Fig. 9A). Supraanal plate deeply divided forming a pair of similar rounded lobes; paraprocts weakly dissimilar (Fig. 9B). Subgenital plate asymmetrical, left side shallowly excavated; styli dissimilar, large, sclerotized, right one curved, both with small stout apical spines (Fig. 9C). Genitalia as in Fig. 9C: hook on the left side with a preapical incision; median phallomere becoming broad and flattened about one third the distance from the proximal end, lateral margins in the distal region densely setose; right phallomere consisting of several dark sclerites.

Color: The specimen is discolored from alcoholic preservation. According to Hebard, its color was probably much like that of *smedleyi* but paler, the tegmina transparent fuscous tinged with darker brown at the humeral trunk and following along the mediastine vein and anal sulcus. The abdominal terga resemble those of *jacobsoni*.

Female: Unknown.

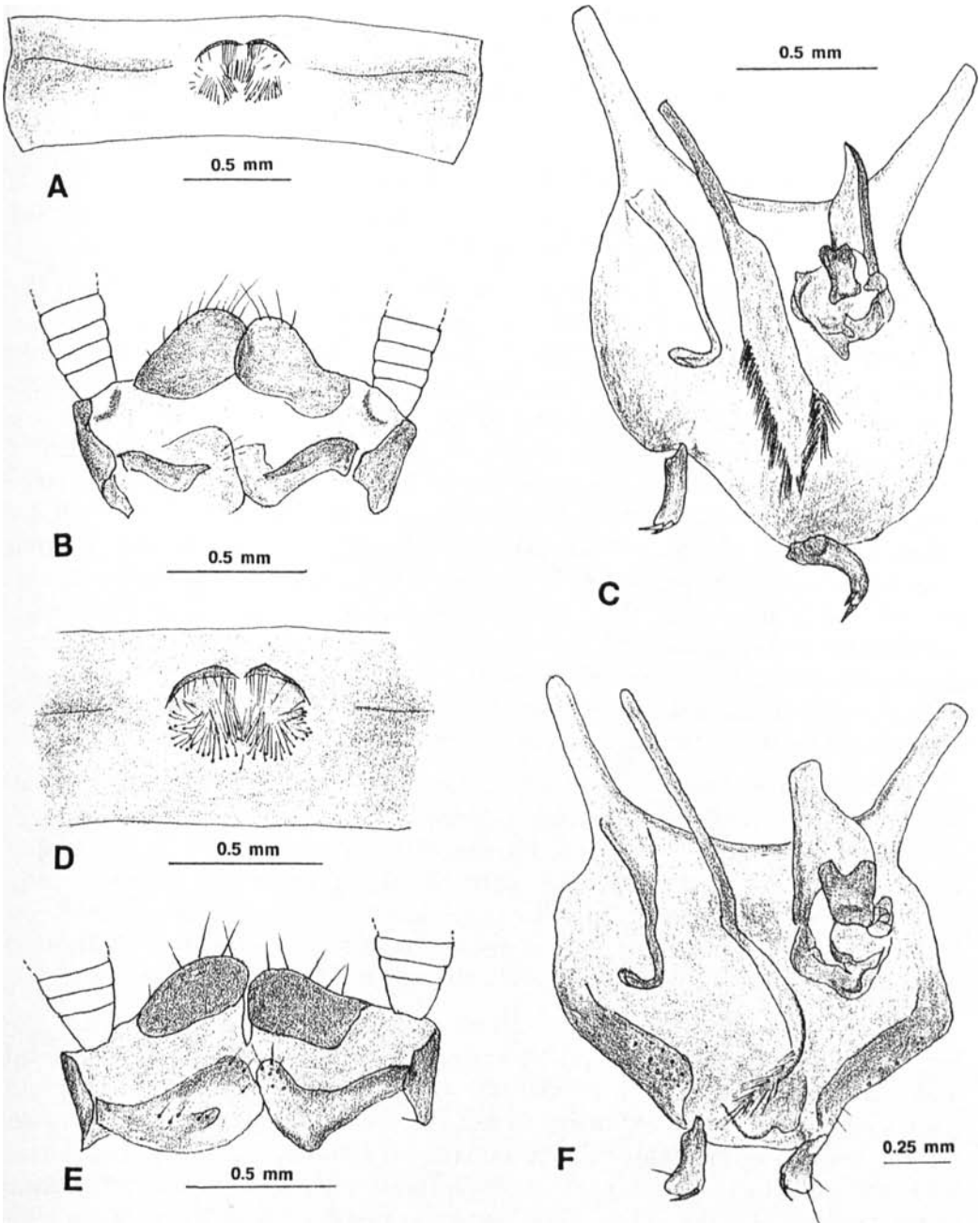


Fig. 9. *Anaplectella* spp. A-C, *A. simalur* Hebard, ♂ holotype: A, seventh abdominal tergum; B, supraanal plate and paraprocts (ventral); C, subgenital plate and genitalia (dorsal). D-F, *A. jacobsoni* Hebard, ♂ holotype: D, gland on seventh abdominal tergum; E, supraanal plate and paraprocts (ventral); F, subgenital plate and genitalia (dorsal).

Measurements (mm): Length, about 5.5; pronotum length x width, 1.9 x ?2.4 [shriveled]; tegmen length, 6.0.

Specimen examined: [INDONESIA]: SUMATRA: Simalur Island: Sinabang, ♂ (*holotype*) (terminalia slide 456), iv.1913, E. Jacobson; Type no. 1132; in ANSP.

17. *Anaplectella jacobsoni* Hebard (Figs. 9D-F)

Anaplectella jacobsoni Hebard, 1929: 33, pl. 1, figs. 7-9 (male); Hanitsch, 1930: 180; Bruijning, 1948: 52 (female); Princis, 1965: 382.

Redescription. Male: Head with interocular space distinctly less than the width between antennal sockets; fifth maxillary palpomere longer than the fourth. Pronotum transverse. Tegmina and wings fully developed, the former with 12 or 13 costal veins, and five oblique discoidal sectors, anal sulcus impressed. Wings with nine thickened costal veins, radiomedial area with five cross veins, cubitus vein with a single pseudocomplete branch, appendicular field about 40% as long as the wing. Front femur Type B₂, with three large proximal spines, tarsal claws symmetrical, distinctly serrated, arolia well developed. Seventh abdominal tergum with a large medial setose modification (Fig. 9D). Supraanal plate deeply divided into 2 large rounded lobes; paraprocts weakly dissimilar (Fig. 9E). Subgenital plate weakly asymmetrical, right and left styli similar, distal region enlarged, with a small spine on the inner posterior corner (Fig. 9F). Genitalia as in Fig. 9F: hook on the left side with a preapical incision; median phallomere slender, distal region with some setae; right phallomere consisting of several nonsetose sclerites.

Redescription. Female: Head with interocular space less than distance between antennal sockets. Pronotum subelliptical, widest behind middle. Tegmina and wings fully developed, former with 13 costals, and three oblique discoidal sectors. Hind wing with eight costal veins, cubitus vein with one branch. Front femur Type B₂ with three large proximal spines; pulvilli on fourth proximal tarsomere, tarsal claws symmetrical, dentate. Supraanal plate hind margin with sides concavely oblique, distally weakly convex.

Color: Head brownish yellow with a reddish brown area between and below eyes; antennae brownish yellow becoming darker brown distad. Pronotal disk mottled light and dark reddish brown with some small yellowish spots (yellowish pattern more extensive in female). Tegmina brownish yellow with a large dark macula (lighter in the female) on the humeral trunk, subcostal vein, and into the proximal part of the discoidal vein area (somewhat similar to the tegmen of *notata*, Fig. 7D). Wings suffused with reddish brown. Abdominal terga brownish yellow with reddish or reddish brown areas, heaviest laterally, lateral corners in female yellow. Abdominal sterna reddish brown becoming brownish yellow distad.

Measurements (mm) (female in parentheses): Length, 6.4 (6.0); pronotum length x width, 1.5 x 2.4 (1.5 x 2.4); tegmen length, 6.1 (5.6); interocular width, 0.4 (0.6).

Specimen examined: [INDONESIA]: SUMATRA: Fort de Kock, ♂ (*holotype*) (terminalia slide 457), i.1921, E. Jacobson; Type no. 1131; in ANSP.

Additional specimen: SUMATRA: Kalung, 1♀, 1913, E. Jacobson (reported by Bruijning, 1948: 52); in RNHL.

18. *Anaplectella lompatensis*, sp. nov. (Figs. 10A-F)

Description. Male: Head vertex exposed, eyes widely separated, interocular width about same as distance between ocellar spots, slightly less than space between antennal sockets. Pronotum with anterior margin straight hind margin weakly curved, lateral margins oblique, widest behind middle (Fig. 10A). Tegmina and wings fully developed extending beyond end of abdomen; tegmina lanceolate with three oblique discoidal sectors, anal veins absent (Fig. 10E). Hind wing with about eight or nine costal veins, radial vein straight, simple, media vein curved with three dark cross veins in the radiomedial field, cubitus vein weakly curved with one pseudocomplete branch and no incomplete branches, appendicular field longer than broad, subparabolic, occupying about 43% of length of wing (Fig. 10F). Front femur Type B₂, with three large proximal spines, pulvilli on four proximal tarsomeres of front and mid legs, only on fourth proximal tarsomere of hind legs, tarsal claws symmetrical, distinctly dentate, arolia well developed. Seventh abdominal tergum with well developed medial gland (Fig. 10D). Supraanal plate hind margin with broad V-shaped excavation forming pair of similar, apically rounded lobes lacking dark spines along the ventral margins; the lobes appear equal in pinned specimen (Fig. 10D), but the right one is slightly smaller in the slide preparation (Fig. 10B); paraprocts dissimilar both with stout spines (Fig. 10B). Subgenital plate with a pair of similar shaped styli, left one about two times longer than the right one, both with two or three stout spines; arising between the styli a long, tapering, spinelike process that extends anterodorsad into the genital cavity (Fig. 10C). Genitalia as in Fig. 10C: hook on the left side with a preapical incision, median phallomere terminating in group of setae; right phallomere distinctly larger than the genital hook.

Color: Head light reddish brown without markings; maxillary palpomeres four and five partly infuscated; antennae yellowish. Pronotal disk darker reddish brown, broad lateral zones yellowish. Tegmina hyaline reddish brown, humeral field yellowish. Hind wing with radiomedial and mediocubital fields pale, remainder blackish, costal vein zone and appendicular field darker than the posterior field (Fig. 10F). Abdominal terga dark brown, gland on seventh tergum whitish. Abdominal sterna black, posterolateral corners pale, subgenital plate with large yellowish macula. Cerci light brown. Coxae mostly black, distal region pale, rest of legs straw colored.

Female: Habitus similar to male. Supraanal plate with oblique sides, apex rounded not extending beyond margin of subgenital plate. Head reddish

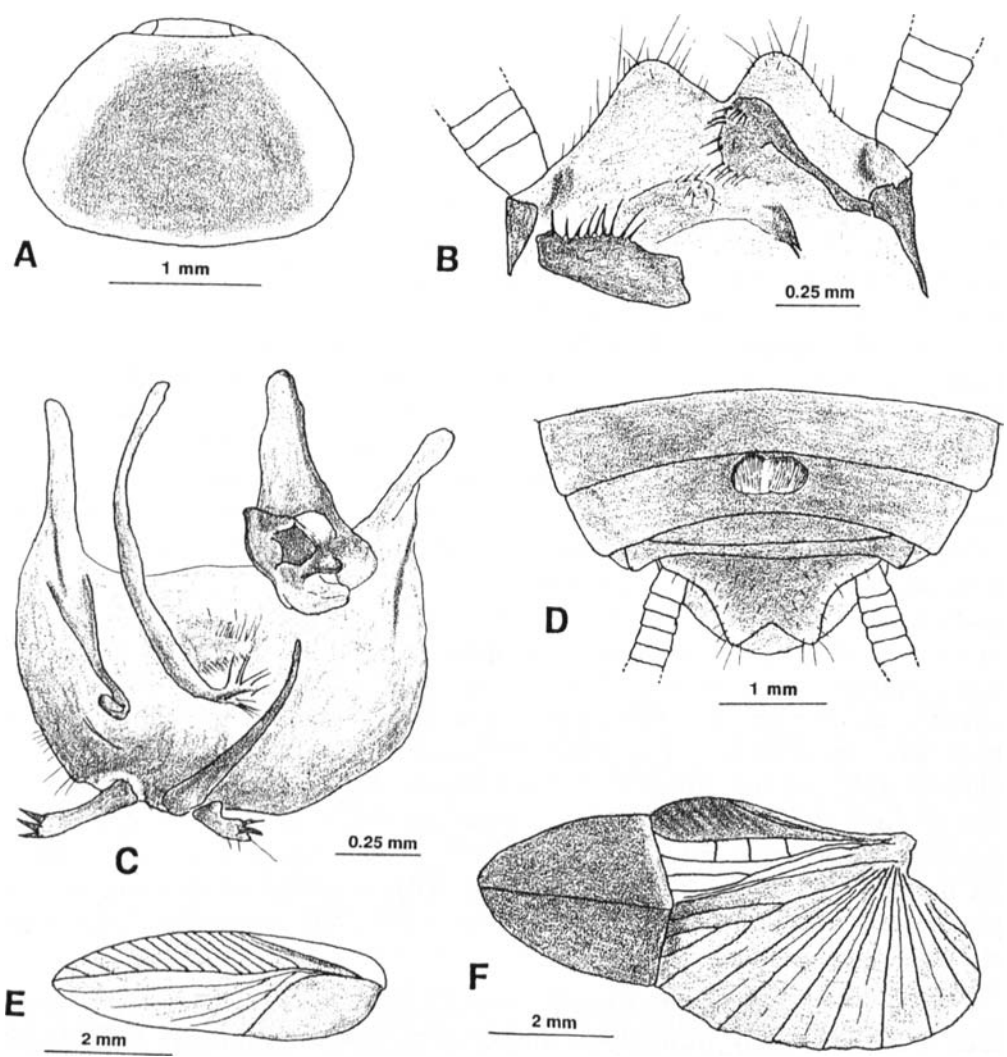


Fig. 10. *Anaplectella lompatensis*, sp. nov., ♂ holotype: A, pronotum; B, supraanal plate and paraprocts (ventral); C, subgenital plate and genitalia (dorsal); D, terminal abdominal segments (dorsal); E, tegmen; F, hind wing.

brown on vertex becoming yellowish below antennal sockets, postclypeus whitish. Pale areas on pronotum and tegmina humeral zones whitish. Abdominal sterna dark brown with yellowish spots in posterolateral corners.

Measurements (mm) (♀ in parentheses): Length, 4.5 (4.9); pronotum length x width, 1.4 x 2.1 (1.5 x 2.4); tegmen length, 4.9 (4.9); interocular width, 0.6 (0.6).

Etymology: The species is named after Lompat National Park.

Holotype: ♂ (terminalia slide 126), MALAYSIA: Pehong Kuala, Lompat National Park, MV Lite, 25-27.viii.1992, D. Furth; Type no. 34126; in MCZ.

Paratype: 1 ♀, same data as holotype; in MCZ..

Comments: This species is clearly closely related to *Anaplectella smedleyi* from which it can be separated by differences in styli length, and the absence of dark spines along margins of supraanal plate lobes. The process between the styli is much larger in *lompatensis* (Fig. 10C) than the one occurring in the *smedleyi* holotype, but the size of this structure in the latter apparently varies (Figs. 11C, F). It is possible that *lompatensis* will prove to be a variant of *smedleyi*.

19. *Anaplectella smedleyi* Hanitsch (Figs. 11A-F)

Anaplectella smedleyi Hanitsch, 1928: 12, pl.1, fig. 2 (male); 1929a: 6; 1930: 180; 1932: 56; Hebard, 1929: 32, pl. 1, figs. 4-6 (redescription); Bruijning, 1948: 51; Princis, 1965: 383.

Redescription. Male: Interocular space slightly less than the distance between antennal sockets; fifth maxillary palpomere distinctly longer than the fourth. Pronotum transverse. Tegmina and wings fully developed, the former with 12 costal veins and four or five oblique discoidal sectors. Hind wing with four or five distinct subcostal veins (some distal subcostals are difficult to discern because of the dark brown color); radio-medial region with four cross veinlets, cubitus vein with a single branch, appendicular field trigonal-parabolic, about 45% the length of the wing (Fig. 11E). Front femur Type B₂ with one large proximal spine; pulvilli on fourth proximal tarsomere, tarsal claws symmetrical, serrated, arolia well developed. Seventh (Hebard's sixth) abdominal tergum with a fossa bearing small setae (Fig. 11A). Supraanal plate deeply excised forming a pair of large apically rounded symmetrical lobes with small dark spines along their outer margins; paraprocts strongly dissimilar, the right one a large lobe with a row of small, dark setae. (Figs. 11B, D). Subgenital plate weakly asymmetrical, distal margin curved dorsad and bearing a pair of large, closely spaced, similar styli mesad, these bearing dark spines on their distal halves; a large dark spine (variable in length) arises on the dorsal surface of the plate near and between the bases of the styli and is directed dorsad or anterodorsad (Figs. 11C, F). Genitalia as in Figs. 11C, F: hook on the left side with a preapical incision, median phallosomere with proximal part uniformly slender then suddenly becoming uniformly broad, apex with a few or numerous setae; right phallosomere consisting of several large sclerites.

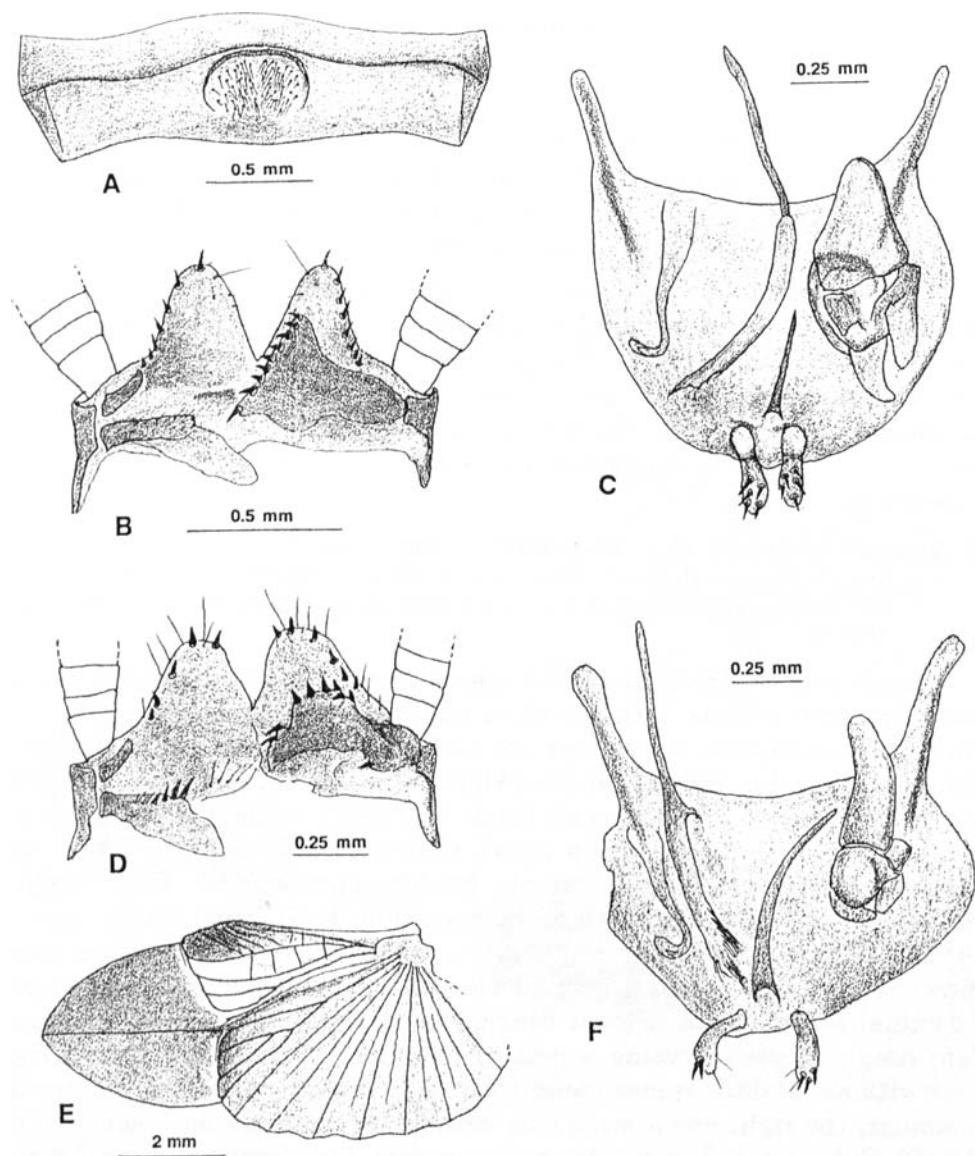


Fig. 11. *Anaplectella smedleyi* Hanitsch, males: A-C, from Simalur Island; D-F, from holotype: A, tergal gland on seventh abdominal segment; B, D, supraanal plate and paraprocts (ventral); C, F, subgenital plate and genitalia (dorsal); E, hind wing.

Color: Head and pronotal disk reddish brown, lateral regions of pronotum hyaline. Tegmina with mediastine field yellowish, remainder yellowish brown-hyaline. Hind wing unevenly infuscated (Fig. 11E).

Female: Supraanal plate subtrapezoidal, hind margin truncate, corners rounded. The characteristic infuscation of the hind wing similar to the male's (as in Fig. 11E). Abdominal terga reddish brown, lateral corners whitish.

Measurements (mm) (male from Hebard; female in parentheses): Length, 5.5-7.0; pronotum length x width, 1.5-1.8 x 2.1-2.2 (1.5 x 2.4); tegmen length, 5.3-5.5 (5.1); interocular width, 0.6 (0.7).

Specimen examined: [INDONESIA]: WEST SUMATRA: Sipora Island [2°12'S 99°40'E], ♂ (*holotype*) (terminalia slide 286), x.1924, C.B.K. & N.S.; Type Orth. 257; in HECO.

Additional Specimens: SUMATRA: Simalur Island: Lasikin [2°22'S 96°20'E], 1♂ (terminalia slide 444), iv.1913, E. Jacobson (this specimen was used by Hebard in his redescription); in ANSP. Sumatra: Kota Tjane, 1♀ (fragmented, parts mounted on cards), Mjöberg; in NRSS.

Comments: There are some differences between the median genital phal-
lomes and the size of the long spine anterior to and between the styles, in
the holotype (Fig. 11C) and other specimens from Simalur Island (Fig. 11F).
Additional specimens will determine if two species are represented.

20. *Anaplectella beccarii* Hanitsch

Anaplectella beccarii Hanitsch, 1933: 120, 125; Bruijning, 1947: 208, 215; Princis, 1965: 383.

Description. Female (after Hanitsch, 1933): Head slightly exposed. Tegmina just exceeding end of abdomen. Hind wings with forked mediastinal vein; 6 costals, medio-discal field with 6 venules; media vein simple, cubitus vein bifurcate; first axillary 4-ramose, apical area parabolic, base only slightly angled; apical vein lying within apical fold.

Color: Head reddish castaneous, antennae pale testaceous. Pronotum shiny black, narrow lateral margins dull hyaline. Tegmina uniformly dark castaneous. Wings pale yellowish brown.

Male: Unknown.

Measurements (mm): Total length, 7.0.

Holotype specimen: ♀, Celebes [INDONESIA: SULAWESI]: Kandari, iii.1874, O. Beccari; in MCGI. Not examined.

Comments: According to Hanitsch this species is similar to *A. smedleyi* Hanitsch from Mentawai Is. but can be separated from it by the narrow lighter pronotal margin and by the uniformly dark castaneous tegmina, whereas *smedleyi* has broad hyaline pronotal margins and the mediastinal area of the tegmina is distinctly hyaline.

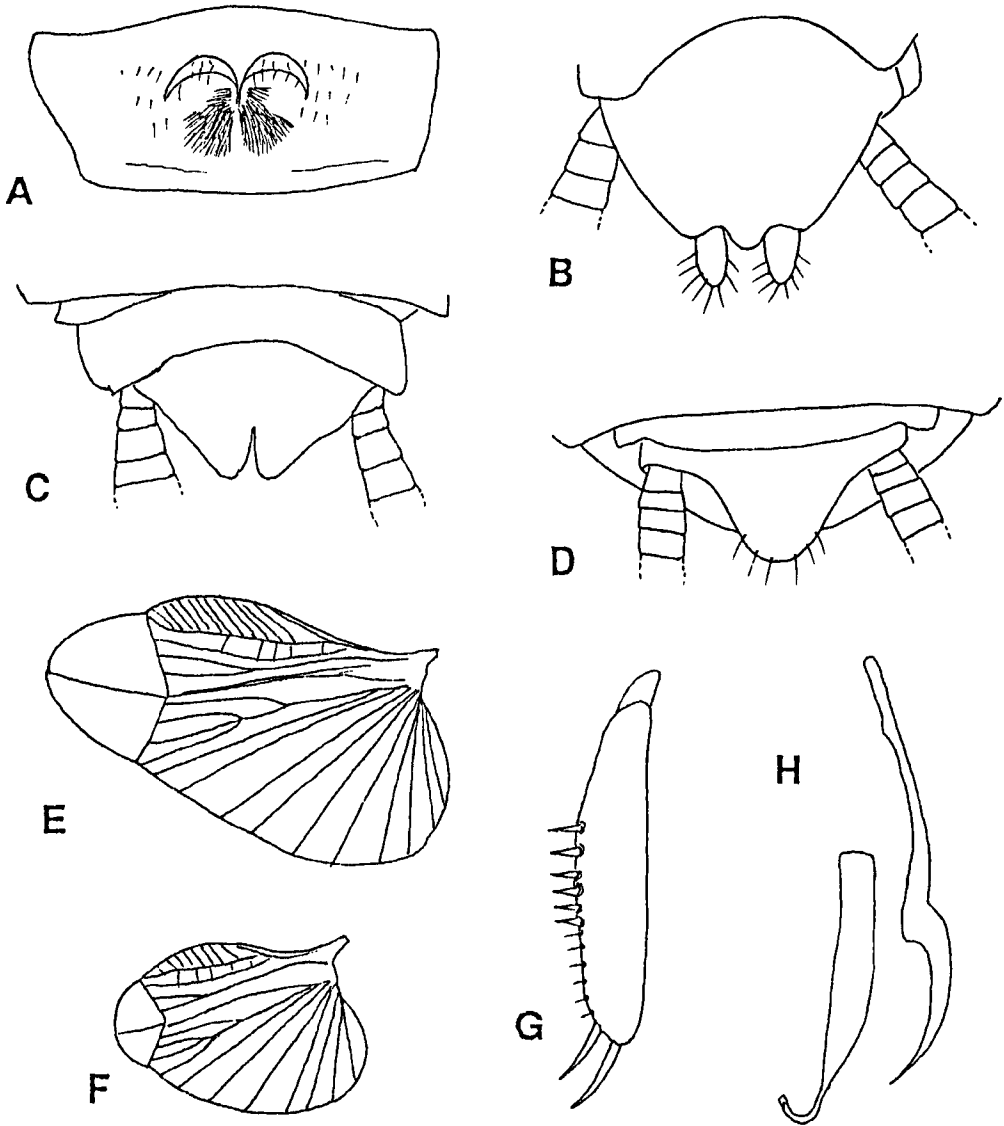


Fig. 12. *Anaplectella ruficollis* (Karny): A-C, E, H, male, D, F, female. A, seventh abdominal tergum; B, subgenital plate and styli (ventral); C, D, supraanal plate (dorsal); E, F, left hind wings; G, front femur (Type B₂; anterior surface); H, genital phallomeres L₃ (hook) and L₂vm (median phallomere). (from Asahina, 1977).

21. *Anaplectella ruficollis* (Karny) (Figs. 12A-H)

Theganopteryx ruficollis Karny, 1915: 104 (female).

Anaplecta ruficollis (Karny): Shiraki, 1931: 206 (male); 1932: 2048; Princis, 1965: 383.

Anaplectella ruficollis (Karny): Asahina, 1977: 272, figs. 1-3, 12-14, 19-26 (male and female); 1991: 65, figs. 38a-j, pl. IV, fig. 13 (redescriptions, and synonymy).

Description. *Male* (from an interpretation of Asahina's illustrations): Tegmina and wings fully developed, reaching a little beyond end of abdomen, the former with 15 or 16 costals, and seven or eight oblique discoidal sectors. Hind wing with straight, simple radial vein, cubitus and media veins curved, the former with one pseudocomplete branch and no incomplete rami, appendicular field 31-32% the length of the wing (Fig. 12E). Front femur Type B₂ with six large proximal spines succeeded by a row of six piliform spinules (Fig. 12G), tarsal claws symmetrical, toothed, arolia present. Seventh abdominal tergum with a pair of contiguous fossae medially and two dense groups of setae (Fig. 12A). Supraanal plate symmetrical with a deep incision forming a pair of apically rounded lobes (Fig. 12C). Subgenital plate symmetrical, with a pair of short, robust, similar styli, narrowly separated by a small trigonal interstyler lobe (Fig. 12B). Genital hook (L3) on the left side, rounded hook portion uniformly slender, with a preapical incision; median genital phallomere (L2vm) with distal region curved and apically acute (Fig. 12H).

Female: Tegmina not quite reaching end of abdomen. Hind wings shorter, veins normal, appendicular field reduced to about 17% of the length of the wing (Fig. 12F). Supraanal plate with sides of hind margin concavely oblique, apex rounded, extending slightly beyond hind margin of subgenital plate (Fig. 12D).

Color: Pronotum with dark disk, lateral zones hyaline. Male tegmina pale yellowish with darker areas in the proximal region anterior to the anal sulcus, and in the distal part. Female darker, tegmen with pale humeral zone, the remainder dark.

Holotype specimen: ♀, TAIWAN: Fuhosho, 1901; in DEMG. Not examined.

Comments: *Anaplectella ruficollis* has an unusually small appendicular field (in both sexes but particularly in the female which has a reduced hind wing). The species is found in Taiwan and islands of the Ryukyu chain. Asahina suggested that *Anaplecta arisanica* Shiraki may be a nymph of *ruficollis*.

22. *Anaplectella aurea* Hanitsch

Anaplectella aurea Hanitsch, 1931: 387 (female); Princis, 1965: 382.

Female (after Hanitsch): Oval, body convex. Head barely exposed, interocular space equal to width between antennal sockets. Pronotum suboval,

anterior and posterior margins straight, lateral margins obtusely produced. Tegmina as long as body, with 11 costal veins, six oblique discoidal sectors. Hind wing with eight costals, radial and media veins simple, cubitus vein bifurcate, medio-discal field with four cross venules; first axillary four branched; apical area [appendicular field] about 40% of total wing length, parabolic, base obtusely angled, apical vein lying within the apical fold.

Color: Deep orange. Head dull orange, antennae testaceous to orange. Pronotum dull orange. Tegmina uniform dark orange. Wings golden orange, shading to fuscous towards the posterior margin of axillary area. Abdominal terga and sterna deep orange. Cerci orange. Legs dark orange.

Measurements (mm): Total length, 6.0.

Male: Unknown.

Holotype specimen: ♀, SINGAPORE, H. N. Ridley, 1897; in NHML. Not examined.

Comments: Recognized by its orange color and golden orange wings.

Genus *Malaccina* Hebard

Malaccina Hebard, 1929: 35. Type species: *Malaccina rufella* Hebard, by selection.

Rediagnosis: Tegmina and wings usually fully developed (rarely reduced in female), the former with four to seven oblique discoidal sectors. Hind wing cubitus vein usually with one or two pseudocomplete and zero or one or two incomplete branches, these usually longitudinal (especially the pseudocomplete ones) Fig. 14E); appendicular field, reduced, convexly rounded, occupying about 26-31% of wing length (e.g., Figs. 14E, 18B, 19B). Front femur usually Type A₃, a very few preterminal setae may be piliiform spinules interspersed between the small stout spines, rarely with a distinct row of piliiform spinules succeeding several long, stout proximal spines (Type B); distinct pulvilli present only on the fourth proximal tarsomere, tarsal claws symmetrical, distinctly dentate, arolia well developed.

Male: Seventh abdominal tergum usually specialized (e.g., Figs. 13B, E), rarely unspecialized. Supraanal plate symmetrical, hind margin entire. Subgenital plate essentially symmetrical or asymmetrical, with two styli that are equal (Figs. 17C, 18C), or distinctly (Figs. 13D, 15G) or slightly unequal (Figs. 16E, F, 17F). Genital hook on the left side (Figs. 13D, 14F).

Female: Subgenital plate not valvular. Ootheca rotated with keel in lateral position, prior to oviposition, in *M. saundersi* (Hanitsch, 1928), which is characteristic of the Blattellinae, and presumably occurs in other species in this genus.

Hebard had only two species (*imitans* and *rufella*) when he described the genus. I recognize ten species. I have transferred the following to *Malaccina*: *Anaplectoidea sinica*; *Anaplectella discoidalis*; *Anaplectella obscurata*; *Anaplectoidea saundersi*, and *Theganopteryx (Pseudectobia) pallidula* Bolívar.

Three new species of *Malaccina* are described, namely *guilinensis*, *schali*, and *vickeryi*.

Key to males of *Malaccina*
[based only on males I have seen]

- 1. Seventh abdominal tergum unspecialized.2
- Seventh abdominal tergum with a medial gland (e.g. Figs. 13B, E).3
- 2. Styli contiguous, without a small lobe between them (Fig. 17C).
.....*saundersi*
- Styli almost contiguous, with a small lobe between their bases (Figs. 18C, D).*vickeryi*
- 3. Front femur with some large proximal spines succeeded by a row of few piliform spinules, terminating in two large terminal spines (Type B₂) (e.g., Fig. 12G). Styles short.4
- Front femur with a row of large spines that decrease in length distad, terminating in 3 larger spines (Type A₃).5
- 4. Left style stouter than the right one, apexes of both rounded, interstyler margin broadly, convexly rounded (Figs. 16F, G).
.....*discoidalis* & *obscurata*
- Left style cylindrical, apex rounded, right style slightly longer, apex acute. Interstyler margin not convexly round.*sinica*
- 5. Styli about the same length, very close together, with a distinct lobe between their bases (Figs. 14B, F).*rufella*
- Interstyler lobe absent.6
- 6. Right style distinctly larger than the left one (Figs. 13D, 15G).7
- Right style not distinctly longer than the left one.8
- 7. Hind margin of subgenital plate asymmetrical, concavely excavated to the right of the right style (Figs. 15D, G).*guilinensis*
- Hind margin of subgenital plate symmetrical, not asymmetrically excavated (Fig. 13D).*imitans*
- 8. Interstyler margin less than the length of a style (Fig. 17F). Tergal gland on seventh segment without thickened sclerotized margins (Fig. 17G).
.....*schali*
- Interstyler margin about twice the length of a style (Fig. 19F). Margins of tergal gland on seventh segment broadly, darkly sclerotized (Fig. 19C).
.....*pallidula*

22. *Malaccina sinica* (Bey-Bienko), comb. nov.

Anaplectoidea sinica Bey-Bienko, 1954: 18; (male & female); 1957: 900; Princis, 1957: 157; 1965: 382.

Description. Female (after Bey-Bienko): Medium sized (for genus). Interocular space on vertex equal to the width between antennae; maxillary palpi elongated, fifth segment slightly shorter than the fourth. Pronotum with lateral zones transparent. Tegmina with 11-13 oblique branches (some may be forked) of the radial vein, apex of subcostal vein almost reaches the

middle of the anterior margin, with five or six branches of the anterior cubitus (CuA) distinctly oblique. Hind wings with nine or ten oblique costal veins near the anterior margin, the majority of them moderately thickened apically.; space between the radius and median veins with ten to 13 partly incomplete transverse veins; maximum width almost two times longer than the space between M and CuA; anterior CuA with two branches, the major branch incomplete; apical cell (appendicular field) small almost rectangular basally, its length about 25% of the wing length. Front femur with four to six spines, and several short not hair-shaped ones [piliform spinules?], terminating in two spines (Type A₂); tarsal claws with inner margins toothed. Supraanal plate rounded-triangular. Last abdominal sternum simple, its posterior margin medially emarginated.

Male (after Bey-Bienko): Similar to female. Tegmina with 11-14 oblique branches of R, CuA with five to seven branches. Seventh abdominal tergum specialized, with a transverse, oval, weakly impressed area medially, sparsely covered with setae. Supraanal plate symmetrical, trapezoidal, corners rounded. Subgenital plate slightly asymmetrical, with a pair of short asymmetrical styli, the left one cylindrical its apex rounded, the right one slightly longer, its apex acute.

Color: Pale yellow to pale brownish, almost unicolorous. Apical segment of maxillary palpi brownish; antennae darkened apically.

Measurements (mm) (♀ in parentheses): Length, 6.6-7.0 (6.8-7.8); pronotum length, 1.6-1.7 (1.6-1.7); tegmen length, 6.8-7.1 (5.5-6.0); total length, 8.0-9.1 (7.2-7.8).

Type specimens: *Holotype* and *paratypes*: ♂♂, ♀♀, P. R. CHINA: Futzian', Shaou; in ZINL. Not examined.

Comments: The small number of branches of the hind wing cubitus vein, and the relatively small appendicular field (about 25% the length of the wing) places this species in *Malaccina*. Its front femur appears to be Type A, like most *Malaccina*.

23. *Malaccina imitans* Hebard (Figs. 13A-F)

Malaccina imitans Hebard, 1929: 35, pl. 1, figs. 12, 13 (female).

Description. Male (previously unknown): Head with interocular space less than the distance between antennal sockets; fourth and fifth maxillary palpomeres the same length. Pronotum subelliptical widest behind the middle, posterior halves of lateral margin oblique (Fig. 13A). Tegmina and wings fully developed, the former with 12 costals, the preapical one branched, five oblique discoidal sectors (one branched vein on the left tegmen). Hind wing with subcostal vein clubbed, ten costal veins, the proximal five and last one simple, the others branched, with the first seven veins clubbed; radial vein straight, media vein curved, both simple, area between them with nine irregularly placed cross veinlets; cubitus vein curved with two pseudocomplete

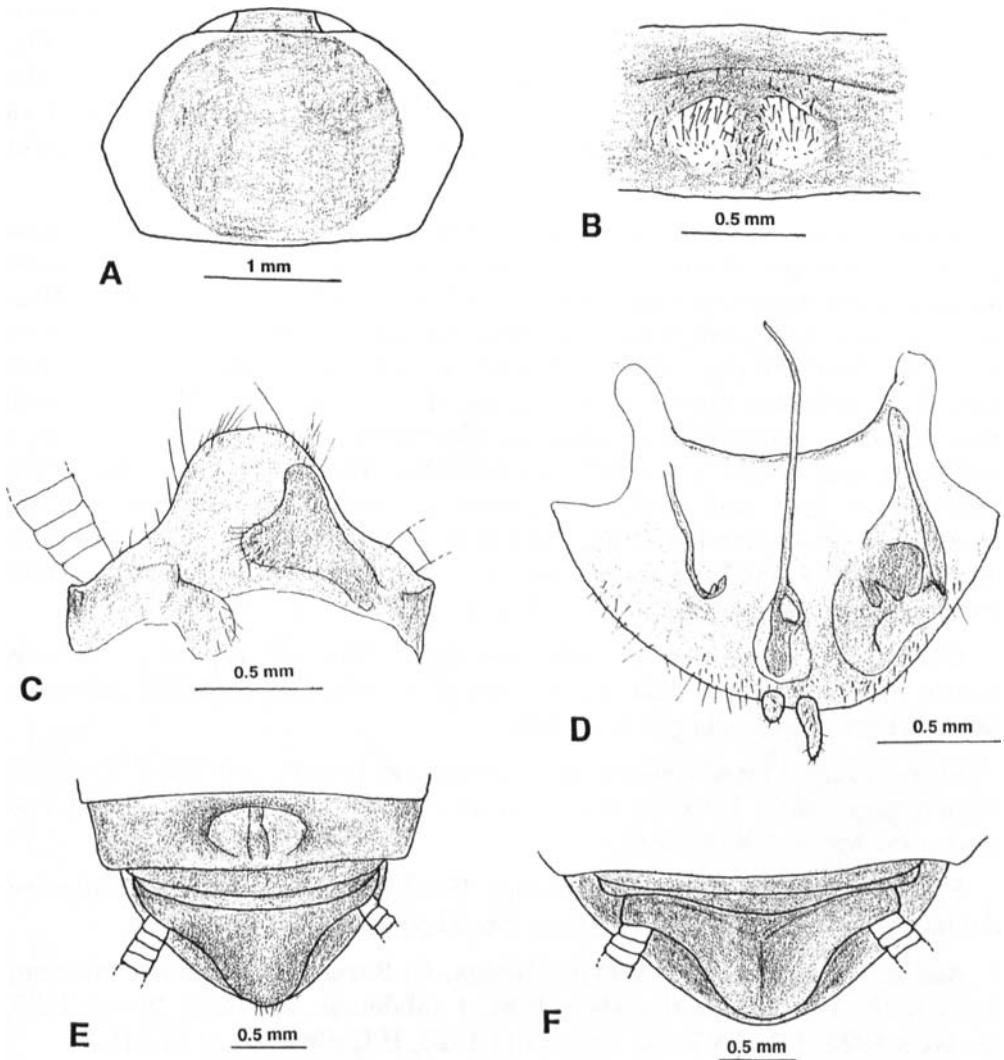


Fig. 13. *Malaccina imitans* Hebard, from Sabah: A-E, male; A, pronotum; B, tergal gland on seventh abdominal segment; C, Supraanal plate and paraprocts (ventral); D, subgenital plate and genitalia (dorsal); E, abdominal terga 7 to 10. F, female, terminal abdominal segments (dorsal).

branches and no incomplete rami; first axillary vein with two branches (the distal one forked) terminating at the base of the appendicular field which is about 28% the length of the wing. Front femur Type A₃; tarsal claws symmetrical, strongly toothed, arolia well developed. Seventh abdominal tergum medially specialized (Figs. 13B, E). Supraanal plate produced, sides con-

cave, distal end rounded, cucullate, covering the styli (Fig. 13E); paraprocts dissimilar, fleshy, unsclerotized, right one larger than the left (Fig. 13C). Subgenital plate convex, hind margin rounded with a pair of small, cylindrical, unsclerotized styli, the left one about one half the length of the right (Fig. 13D). Genitalia as in Fig. 13D: phallomeres lightly sclerotized; hook on the left side, uniformly slender throughout with a preapical incision; median phallomere enlarged at distal end, with a lacuna in the enlargement; right phallomere very large.

Redescription. Female: Left tegmen with 12 or 13 costals, the ultimate one forked, the penultimate one simple or with two branches; five simple, oblique discoidal sectors; right tegmen with 14 costals, the twelfth and thirteenth forked. Left hind wing with nine costals, the penultimate one with three branches, the one before it forked, the others simple, all but the last clubbed or thickened distad; or 12 costals, the eighth forked, the ninth with three branches; radial vein straight, simple; media and cubitus veins curved, the former simple, the latter with two branches that reach the margin of the appendicular field and with or without an additional small incomplete branch. The above numbers vary slightly from the holotype. Supraanal plate similar to male's, the hind margin not quite reaching the free, evenly convex hind margin of the subgenital plate (Fig. 13F).

Color: Head and pronotal disk brownish yellow, immaculate, the body slightly darker. Pronotal disk immaculate (Fig. 13A). Tegmina hyaline, without markings. Wings slightly brownish.

Measurements (mm) (female in parentheses): Length, 7.0 (6.8-7.5); pronotum length x width, 1.7 x 2.5 (1.6-1.7 x 2.6-2.7); tegmen length, 7.0 (6.7-7.0); interocular width, 0.4 (0.5-0.6).

Specimens examined: North Borneo [SABAH]: Sandakan, ♀ (*holotype*) (abdomen missing), C. F. Baker; Type No. 1136; in ANSP.

Additional specimens: SABAH: Midden, O. Borneo, 1 (abdomen missing), 23.viii.1925, 1♂ (terminalia slide 198), 1 (abdomen missing), 26.viii.1925, 1♀, 16.ix.1925, 1♀, 1.x.1925, 1♂, 27.xi.1925, H.C. Siebers; in RNHL.

24. *Malaccina rufella* Hebard (Figs. 14A-H)

Malaccina rufella Hebard, 1929: 36, pl. 1, figs. 14, 15 (female).

Description. Male (previously unknown): Head with interocular space less than the distance between antennal sockets; fourth and fifth maxillary palpomeres about the same length. Pronotum subelliptical widest about the middle (Fig. 14A). Tegmina and wings fully developed, the former with depressed anal sulcus, anal veins subobsolete; left tegmen with 14 costals, the penultimate one branched, four oblique discoidals (one branched); right tegmen with 13 costals, last two branched, five discoidals (one branched). Left hind wing with 11 costals, the sixth from the base, and penultimate one branched, the first nine thickened on distal halves; right wing with 11 costals

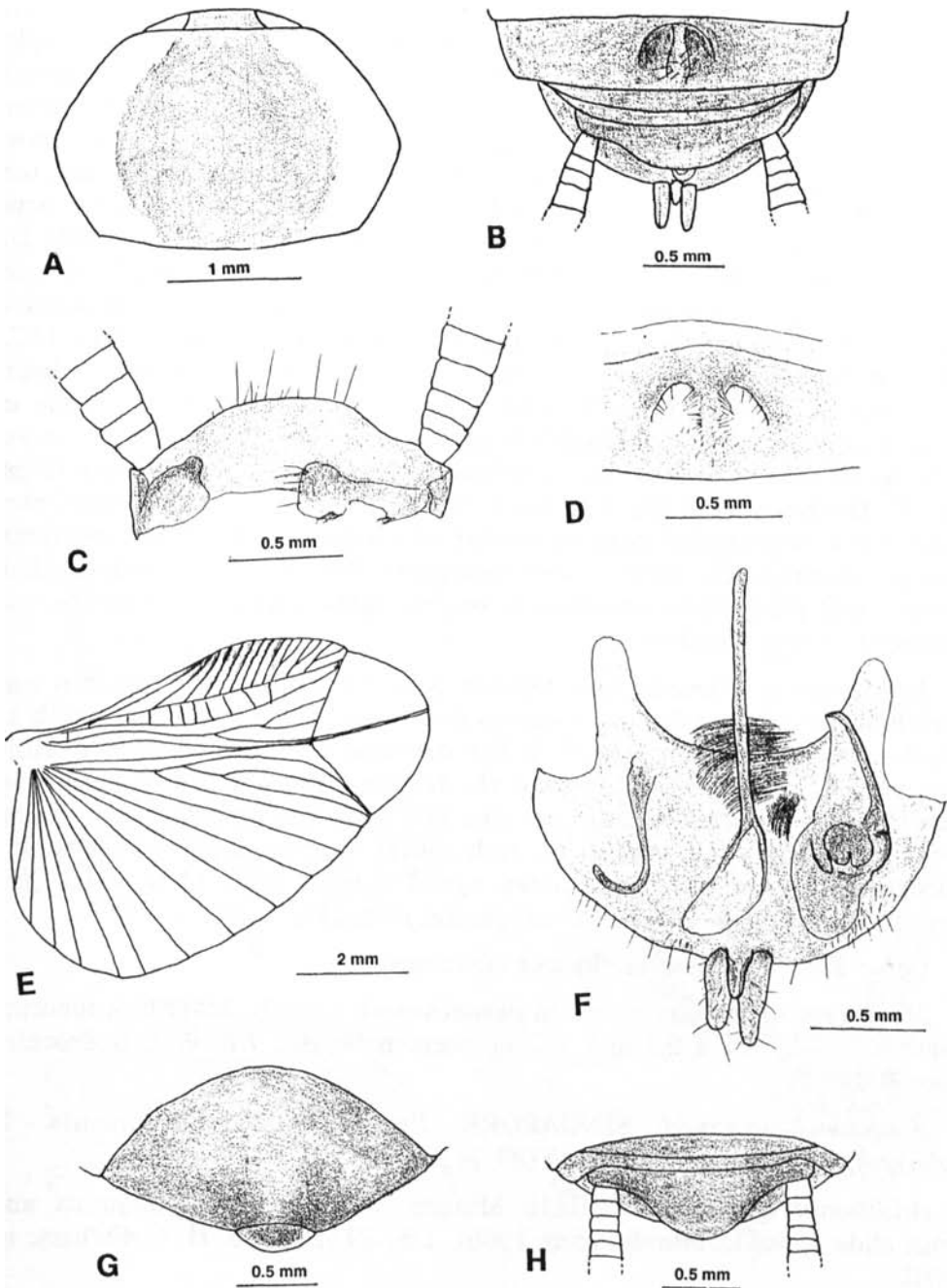


Fig. 14. *Malaccina rufella* Hebard, from Sabah: A-F, male; A, pronotum; B, abdominal terga 7-10 and subgenital plate (dorsal); C, supraanal plate and paraprocts (ventral); D, tergal gland on seventh abdominal segment; E, hind wing; F, subgenital plate and genitalia (dorsal). G, H, female, subgenital plate and tip of supraanal plate (ventral), and abdominal terga 8-10 (dorsal), respectively.

the three terminal ones branched, the eight unbranched veins thickened; radial vein straight, simple, media and cubitus veins curved, the former simple, the latter with two pseudocomplete branches, incomplete branches absent; first axillary vein with two branches (one forked), appendicular field about 28% the length of the wing (Fig. 14E). Front femur Type A₃; tarsal claws symmetrical, strongly toothed, arolia well developed. Seventh abdominal tergum with a pair of depressions divided by a longitudinal ridge with some small setae many of them along the margins of the elevation (Figs. 14B, D). Supraanal plate transverse, hind margin convex, not reaching the hind margin of the subgenital plate (Fig. 14B); paraprocts dissimilar, the left one distally rounded and sclerotized, the right one pale with some setae (Fig. 14C). Subgenital plate symmetrical with the hind margin convexly rounded, bearing a pair of cylindrical, unsclerotized, almost contiguous styles (visible in dorsal view), the left one only slightly shorter; arising between and in contact with the styles is a short cylindrical lobe that looks like a third style (Figs. 14B, F). Genitalia as in Fig. 14F: hook on the left side, the curved distal part slender, with a preapical incision; median phallomere with a clear zone in an enlarged distal end; a large setose membrane lies under the median phallomere; right phallomere consisting of several lightly pigmented sclerites, one of which is a cleft structure.

Redescription. Female: Left tegmen with 13 costals, the eleventh and twelfth branched, four discoidal sectors (one branched); right tegmen with 14 costals, penultimate one branched; five discoidal unbranched sectors. Hind wing with 11 simple costals, all but the terminal one clubbed; cubitus vein with two pseudocomplete branches (the left wing has an additional incomplete branch which is absent on the right wing). Supraanal plate with weakly concave sides, and broadly rounded apical margin (Fig. 14H) which just overlaps the truncate apex of the subgenital plate (Fig. 14G).

Color: Brown without distinctive markings.

Measurements (mm) (female in parentheses): Length, 7.2 (7.0); pronotum length x width, 1.7 x 2.5 (1.7 x 2.7); tegmen length, 7.2 (6.7); interocular space, 0.3 (0.5).

Specimen examined: SINGAPORE: British Straits Settlements, ♀ (holotype), C. F. Baker; Type No. 1137; in ANSP.

Additional specimens: SABAH: Midden, O. Borneo, 1♂ (tegmina and wings slide 196a, terminalia slide 196b), 1♀, 19.viii.1925, H. C. Siebers; in RNHL.

25. *Malaccina guilinensis*, sp. nov. (Figs. 15A-G)

Description. Male: Head hardly or not at all exposed, interocular space the same as the distance between the ocellar spots, less than the distance between antennal sockets. Pronotum subelliptical, widest behind the middle (Fig. 15A). Tegmina and wings fully developed extending to about the tips of

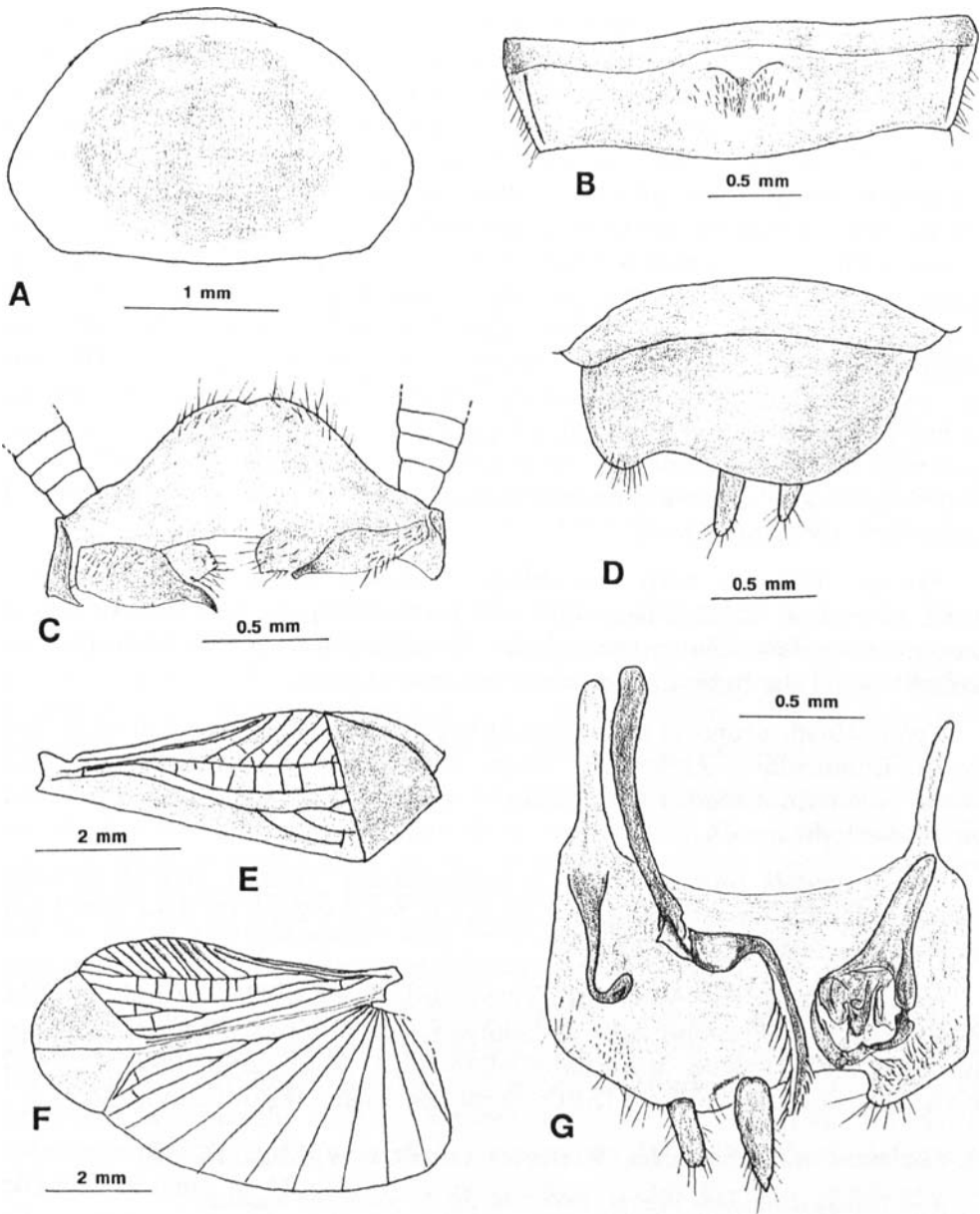


Fig. 15. *Malaccina guilinensis*, sp. nov., males: A, pronotum (holotype); B-G paratypes: B, seventh abdominal tergum; C, supraanal plate and paraprocts (ventral); D, subgenital plate (ventral); E, right hind wing (resting position showing the folded appendicular field); F, left hind wing (unfolded position); G, subgenital plate and genitalia (dorsal).

the cerci, the former with five oblique discoidal sectors. Hind wing with straight, simple radial vein, about ten or 11 costals most of them thickened distad; media and cubitus veins curved, the former simple, the latter with two pseudocomplete branches and zero to two incomplete rami; the anterior margin of the appendicular field is an oblique continuation of the postcubitus vein (Fig. 15F) and occupies about 30% the length of the wing; when at rest the wing is folded longitudinally along the plical fold and the appendicular field is reflexed (Fig. 15E). Front femur Type A₃, sometimes a few preterminal spines are piliform; pulvilli on four proximal tarsomeres, tarsal claws symmetrical, distinctly dentate, arolia well developed. Seventh abdominal tergum with a pair of shallow depressions containing minute setae (Fig. 15B). Supraanal plate hind margin convexly rounded, paraprocts almost similar (Fig. 15C). Subgenital plate asymmetrical, the hind margin to the right of the larger right style excavated, the rounded corner setose (Figs. 15D, G). Genitalia as in Fig. 15G: hook small, on the left side with a preapical incision; distal half of the median phallomere specialized with a row of spines (the spined apex may protrude beyond the subgenital plate margin and is visible in the pinned specimen); right phallomere consisting of several sclerites, distinctly larger than the genital hook.

Female: Tegmina with five oblique discoidal sectors. Hind wing with about 12 costals; cubitus vein with two pseudocomplete and zero or one incomplete branches. The supraanal plate is similar to the male's and does not extend beyond the hind margin of the subgenital plate.

Color: Head, pronotal disk (lateral borders hyaline), legs and cerci light brown, immaculate. Abdominal terga dark brown, supraanal plate light brown. Abdominal sterna with about three proximal segments dark brown, remainder light brown.

Measurements (mm) (female in parentheses): Length, 6.0-7.0 (5.0-6.2); pronotum length x width, 1.5-1.7 x 2.4-2.7 (1.5-1.6 x 2.4-2.6); 5.9-6.5 (5.1-5.4); interocular width, 0.5-0.6 (0.5-0.6).

Holotype: ♂, [CHINA]: Guilin, Yueya Hill, 12.vii.1992, D. Furth; in IZAC.

Paratypes: CHINA: Same data as holotype, 1♂, Guangxi Prov., Guilin, Qixing Park, 3♂ (1 with terminalia slide 276), 3♀, 12.vii.1992, 1♂, 2♀, 16.vii.1992; coll. D. Furth; in IZAC; three specimens retained in MCZ.

26. *Malaccina discoidalis* (Princis), comb. nov. (Figs. 16A-F)

Anaplectella discoidalis Princis, 1957: 156, fig. 19 (male and female).

Anaplectella simalur Princis (nec Hebard, 1929): 1950: 220.

Redescription. Male: Interocular space slightly less than the distance between antennal sockets. Pronotum suboval, widest behind the middle (Fig. 16A). Tegmina and wings fully developed extending slightly beyond end of the abdomen. Hind wing with nine or ten costal veins, cubitus vein with three branches (one pseudocomplete, two incomplete), appendicular field about 28% length of the wing (Fig. 16B). Front femur Type B₂ with about

seven large proximal spines and few piliform spinules; pulvilli on the fourth proximal tarsomere, tarsal claws symmetrical, toothed, arolia well developed. Seventh abdominal tergum weakly specialized, the median fossa very shallow and with scattered setae (Fig. 16C). Supraanal plate subtrapezoidal, hind margin entire; paraprocts weakly dissimilar (Fig. 16D). Subgenital plate weakly asymmetrical, right and left styli short, weakly dissimilar, interstyler margin convexly rounded; the round lateral corners of the plate, and the interstyler margin are pale and depressed (Figs. 16F). Genitalia as in Fig. 16E: hook on the left side, small, with a preapical incision; median phallomere with distal region strongly modified; right phallomere very large and consisting of several nonsetose sclerites.

Color: Head shiny black, antennae brownish yellow. Pronotum with shiny dark brown to black disk, lateral sides pale yellow (Fig. 16A). Tegmina blackish brown with pale yellow costal field. Hind wing brownish especially in the costal and appendicular fields, veins blackish brown (Fig. 16B). Abdomen black. Legs brownish yellow except for deep castaneous brown coxae.

Measurements (mm) (female in parentheses): Length, 5.5-6.8 (5.8-6.5); pronotum length x width, 1.6-1.7 x 2.6-2.7 (1.6-1.7 x 2.5); tegmen length, 5.1-5.4 (5.1-5.2); interocular width, 0.6 (0.7).

Specimens examined: N. E. BURMA: Sadon, 1200m, ♂ (*holotype*), 28.vi-5.vii.1934, Malaise; in NRSS. BURMA: 3 *paratypes* with same data as *holotype*, as follows: 1♂, 2♀; Nord East Burma: Punkaung, Road Sadon-Myitkyina, 1♀ (abdomen missing), 7.vii.1934, Malaise. (All of the above specimens were originally determined by Princis as *A. simalur*); in NRSS.

Comments: The undivided hind margin of the supraanal plate of *discoidalis* is typical of *Malaccina* rather than *Anaplectella*. However, its front femur is Type B, whereas most species of *Malaccina* have Type A; there are some species which have a few piliform spinules interspersed among, or succeed the large terminal spines and these are difficult to assign the Type of femur and they may be considered intermediate between Types A and B.

Princis (1957: 157) compared *discoidalis* with *simalur* which is clearly an *Anaplectella* (bilobed supraanal plate; Fig. 9B). He also compared his species with *Anaplectoidea sinica* Bey-Bienko, which he placed in *Anaplectella*. He stated that in *sinica* the styli are asymmetrical but equally thick and the interstyler part of the subgenital plate lacks a lobe. Actually, *Malaccina discoidalis* is very close to *M. obscurata* and they probably are synonyms (see below).

27. *Malaccina obscurata* (Bey-Bienko), comb. nov. (Fig. 16G)

Anaplectella obscurata Bey-Bienko, 1969: 840, fig. 20 (male and female); 1970: 533, fig. 20; Princis, 1971: 1144.

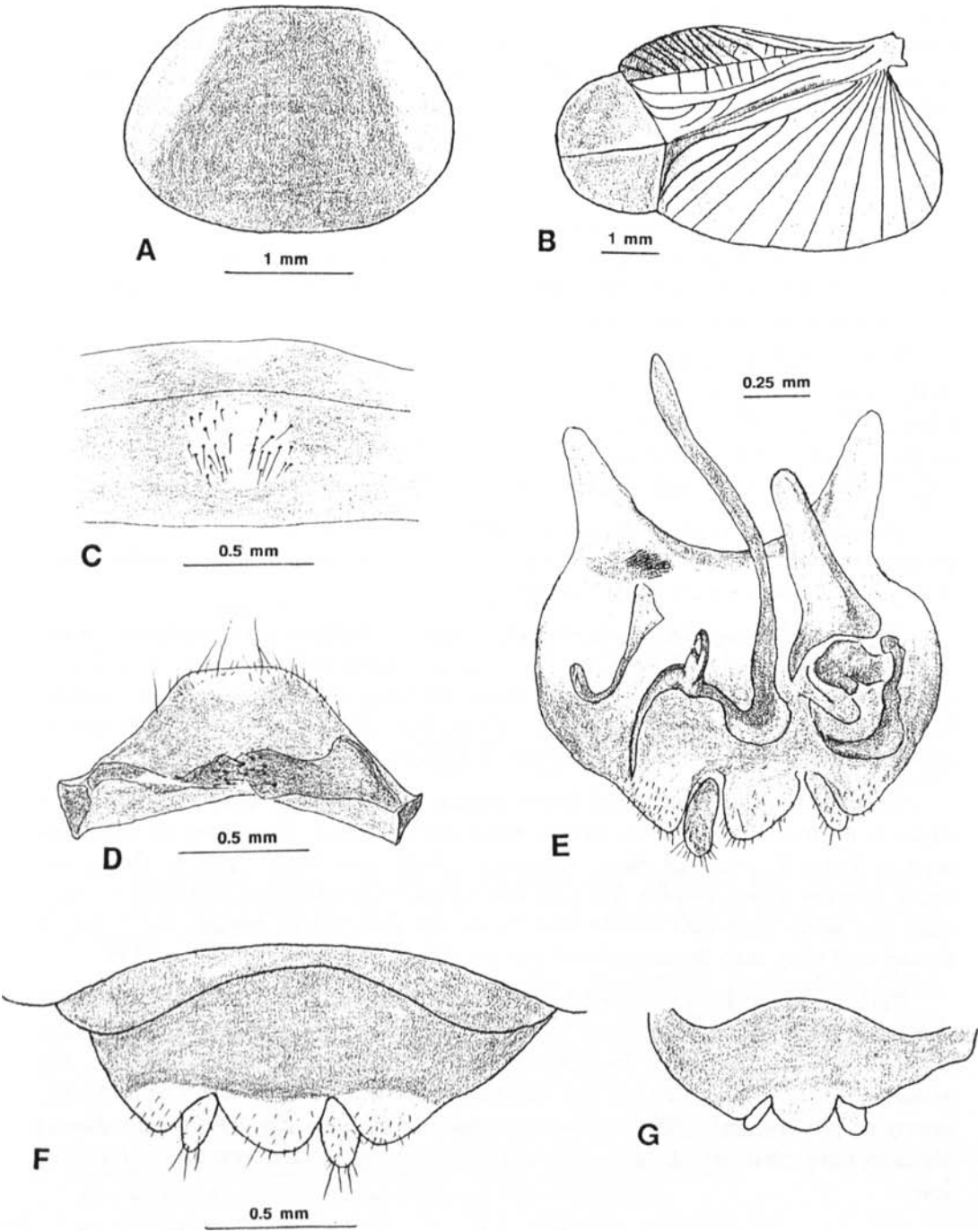


Fig. 16. *Malaccina* spp. A-F, *M. discoidalis* (Princis) males: A, B, F, from holotype; C-E, from paratype: A, pronotum; B, hind wing; C, gland on seventh abdominal tergum; D, supraanal plate and paraprocts (ventral); E, subgenital plate and genitalia (dorsal); F, subgenital plate and styli (ventral; pinned specimen). G, *M. obscurata* (Bey-Bienko), holotype male: subgenital plate and styli (ventral) (from Bey-Bienko, 1970, fig. 20).

Description. *Male* (from Bey-Bienko): Interocular space more than 1.5 times the vertical diameter of the eye. Tegmina extend slightly beyond end of abdomen with 13-15 oblique costal veins, six longitudinal veinlets in radio-cubital field, proximal ones distinctly oblique. Hind wing with nine oblique costal veins, radiomedial field with eight cross veins, more than half the width of costoradial field; cubitus vein strongly S-shaped, with three simple posterior branches of which the proximal two are incomplete, apical field less than one third wing length. Front femur Type B₂, distal piliform spinules few in number. Seventh abdominal tergum with a longitudinal ridge anteromedially, and a pit at the side. Supraanal plate transverse trapeziform, lateral sides strongly oblique and practically straight hind margin. Subgenital plate and styli as in Fig. 16G.

Color: Shiny brownish black. Head brownish chestnut. Pronotum blackish chestnut, lateral sides hyaline. Tegmina with costal field light, hyaline. Wings infusate, dark. Legs rusty reddish yellow, coxae dark. Abdomen black. Cerci reddish yellow.

Female: Interocular space two times the vertical diameter of the eye. Supranal plate with lateral margins concave, apex broadly rounded. Chestnut brown. Pronotum rusty-red-chestnut, lateral sides hyaline. Abdomen brownish black with a lighter background color and basal spot on the subgenital plate.

Measurements (mm) (female in parentheses): Body length, 6.2 (6.2); pronotum length x width, 1.8 x 2.6 (1.9 x 2.8); tegmen length, 6.7 (6.0); overall length, 9.0 (7.6).

Holotype specimen: S. CHINA: Yunnan, ♂, Juili, 1300m, 9.vi.1956, Ch'ou Pang-shou; in ZINL. Not examined.

Comments: This species is very similar to and probably a synonym of *M. discoidalis*. Bey-Bienko's illustration (Fig. 16G) of the subgenital plate and styli of *obscurata* is practically the same as that of *discoidalis* (Fig. 16F).

28. *Malaccina saundersi* (Hanitsch), comb. nov. (Figs. 17A-C)

Anaplectoidea saundersi Hanitsch, 1928: 12, pl. 1, figs. 3-5 (male and female); Siberut specimens only; Singapore specimens are *schali*, sp. nov.; Princis, 1965: 384 (literature).

Description. *Male:* Head almost completely hidden, interocular space less than the distance between antennal sockets. Pronotum subelliptical widest near the middle, the distal half an obtuse angle. Tegmina and wings extending beyond end of the abdomen, the former with 12 costal veins and four or five oblique discoidal sectors. Hind wing with 11 costals, the first eight of which are clubbed, radio-medial region with eight cross veinlets, media and cubitus veins curved with two pseudocomplete and one long incomplete branches, appendicular field about 31% the length of the wing (Fig. 17B). Front femur Type A₃, pulvilli on the fourth proximal tarsomere only, tarsal

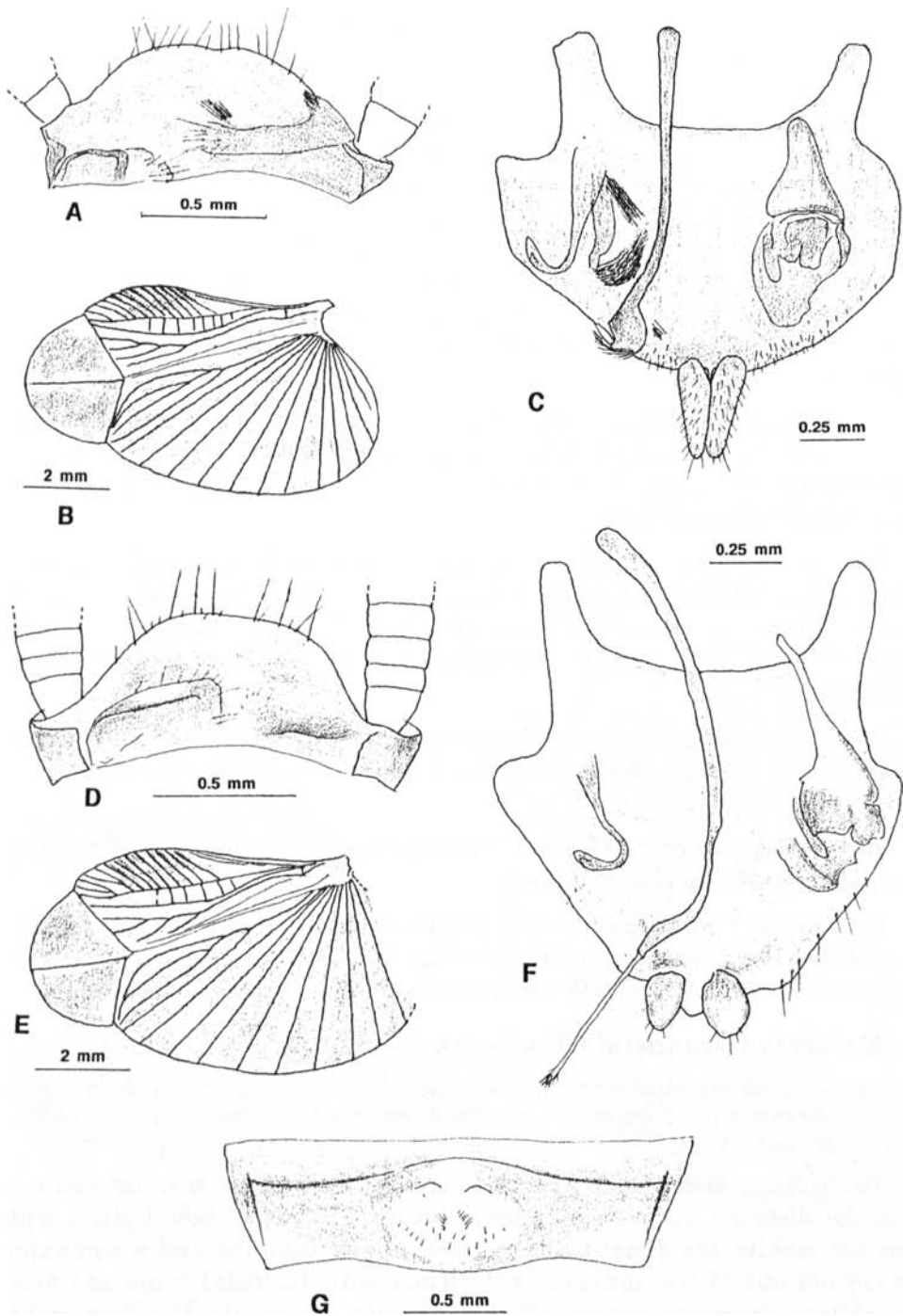


Fig. 17. *Malaccina* spp. A-C, *M. saundersi* (Hanitsch), male lectotype, from Siberut: A, supraanal plate and paraprocts (ventral); B, hind wing; C, subgenital plate and genitalia (dorsal). D-G, *M. schali*, sp. nov.: D, supraanal plate and paraprocts (ventral); E, hind wing; F, subgenital plate and genitalia (dorsal); G, seventh abdominal tergum. (D, F, G, from holotype; E from paralectotype of "*M. saundersi*" from Singapore).

claws dentate, arolia well developed. Seventh abdominal tergum unspecialized (based on slide preparation). Supraanal plate transverse, hind margin entire, convexly rounded, almost reaching the hind margin of the subgenital plate, paraprocts dissimilar (Fig. 17A). Subgenital plate weakly asymmetrical, styli similar, cylindrical, contiguous, interstyler lobe absent (Fig. 17C). Genitalia as in Fig. 17C: genital hook on the left side, with a preapical incision, median phallomere terminating in a setose enlargement; a couple of setose membranes are to the left of the median phallomere.

Female: Tegmen with ten costal veins and five oblique discoidal sectors. Hind wing with nine or ten costal veins, medio-radial region with 11 cross veinlets, cubitus vein with two pseudocomplete and no incomplete branches. According to Hanitsch, one female was carrying an ootheca, "placed horizontally, suture to the right" (i.e., rotated).

Color: Amber. Head uniformly pale. Pronotal disk pale with a pair of minute, widely separated dots, lateral borders hyaline. Tegmina amber-hyaline. Wings infuscated, costal and appendicular field areas darker (Fig. 17B).

Measurements (mm) (female in parentheses): Length, 7.6 (7.0); pronotum length x width, 1.7 x 2.5 (1.8 x 2.7); tegmen length, 6.0 (6.6); interocular width, 0.5 (0.6).

Specimens examined: SUMATRA: Mentawe[a]i: Siberut, ♂ (here designated as *lectotype*) (terminalia slide 284), 8.ix.1924, H.M. Karny; Type Orth. 323¹/₃; in HECO. W. SUMATRA: Siberut Island, 1 ♀ (*paralectotype*), ix.1924, C.B.K. & N.S., Type Orth. 323²/₃; in HECO.

Comments: Hanitsch (1928: 13) probably had two different taxa in his description of *saundersi*; the cubitus branches in the female do not agree with his drawings. The male has three branches, one of them incomplete (Fig. 17B); the female has two pseudocomplete branches but his description states "...the ulnar vein of the female wing bifurcates at about three-fifths from its origin, the anterior branch bifurcating once more, the final result thus being three, instead of the four branches in the male." Hebard (1929: 37, fig. 17) re-described what he thought was this species but it is a new taxon, *M. schali* (see below); the cubitus vein in his specimen has two pseudocomplete and two incomplete branches.

29. *Malaccina schali*, sp. nov. (Figs. 17D-G)

Anaplectoidea saundersi Hanitsch (in part, Singapore specimens only), 1928: 13.

Anaplectoidea saundersi (nec Hanitsch): Hebard, 1929: 37, pl. 1, figs. 16, 17.

Description. Male: Head with interocular space less than the width between antennal sockets. Tegmina with 12-14 mostly thickened costal veins, and six or seven oblique discoidal sectors. Hind wing with 10-12 costal veins, at least eight of them thickened distad, medio-radial field with four to six cross veinlets, cubitus vein with three (one pseudocomplete and two incomplete) or four

(two pseudocomplete and two incomplete) branches, appendicular field about 30% the length of the wing (Fig. 16E). Front femur Type A₃; tarsal claws symmetrical, toothed, arolia present. Seventh abdominal tergum with a large, shallow depression in which is a small mound bearing minute setae (Fig. 17G). Supraanal plate broadly convexly rounded, paraprocts simple, dissimilar, the left one larger (Fig. 17D). Subgenital plate weakly asymmetrical with a pair of short, bulbous, closely spaced styli mesad, the right one slightly stouter (Fig. 17F). Genitalia as in Fig. 17F: hook on the left side, with a preapical incision; median phallomere tapering distad, becoming very slender about one fourth the distance from the setose apex, this region protruding beyond the margin of the subgenital plate; right phallomere large, consisting of about two sclerites.

Color: Brownish yellow. Pronotal disk brownish yellow with or without two darker suffusions. Wings tinged with brown, darker in the costal vein area. Abdominal terga light brown with dark lateral spots. Basal two abdominal sterna dark brown.

Measurements (mm): Length, 6.8-7.0; pronotum length x width, 1.7 x 2.7; tegmen length, 6.5-6.8; interocular width, 0.4.

Holotype: ♂ [paralectotype of *Anaplectoidea saundersi* Hanitsch, Type Orth. 323³/₃], SINGAPORE: Reservoir Thompson Rd., 4.ii.1922, C.J. Saunders; in HECO. **Paratypes:** SINGAPORE, 2♂ (one with terminalia slide 443), C. F. Baker (labelled topotype of *Anaplectoidea saundersi* and redescribed as that species by Hebard, 1929: 37); in ANSP.

Etymology: The species is dedicated to Dr. Coby Schal of North Carolina State University, for his contributions to the biology of cockroaches.

Comments: Hebard misidentified his Singapore specimens; the styli, and genitalia clearly differ between *schali* and *saundersi*, and the latter lacks a tergal gland which is present in *schali*.

30. *Malaccina vickeryi*, sp. nov. (Figs. 18A-D)

Description. Male: Head slightly exposed, interocular space less than the distance between antennal sockets. Pronotum subelliptical, widest near the middle. Tegmina and wings fully developed, the former with five oblique discoidal sectors. Hind wing with 11 thickened costals, radial vein straight, simple, media vein curved, medio-radial field with about ten cross veinlets, cubitus vein curved with three branches (two pseudocomplete and one incomplete), appendicular field about 29% the length of the wing (Fig. 18B). Front femur Type A₃ (tarsi or more missing from all legs). Seventh abdominal tergum unspecialized (determined by slide preparation). Supraanal plate transverse, hind margin broadly convex, entire, not reaching hind margin of the subgenital plate; paraprocts similar (Fig. 18A). Subgenital plate weakly asymmetrical, right and left styli similar, elongate, cylindrical, almost contiguous, the interstyler margin produced as a long, narrow, apically rounded

process (Figs. 18C, D). Genitalia as in Fig. 18C: hook on the left side, with a preapical incision; median phallomere with an enlarged bifurcation near the apex; right phallomere consisting of several nonsetose sclerites.

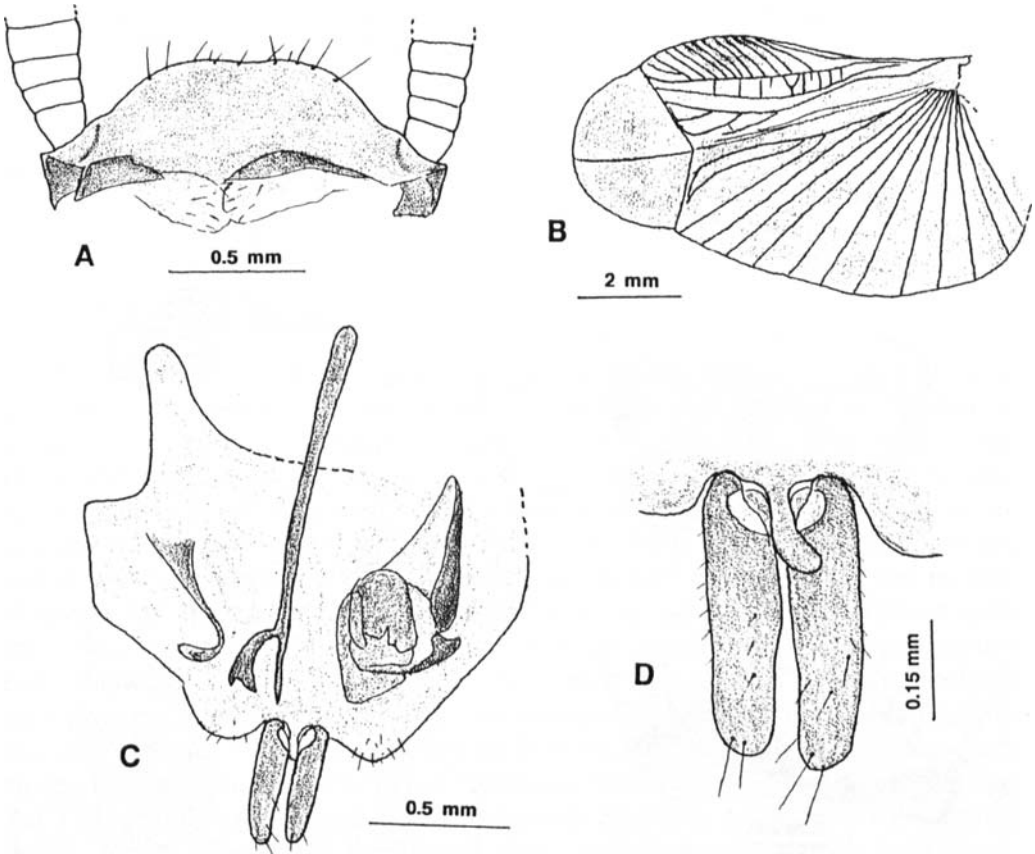


Fig. 18. *Malaccina vickeryi*, sp. nov., male holotype: A, supraanal plate and paraprocts (ventral); B, hind wing; C, subgenital plate and genitalia (dorsal); D, styli (ventral; note the interstylar lobe).

Female: Unknown.

Color: Pronotal disk yellowish brown with a few dark spots. Tegmen amber hyaline, humeral vein darker. Hind wing infuscated, costal field with a yellowish tinge.

Measurements (mm): Length, ca 7.5; pronotum length x width, 2.0 x 2.8; tegmen length, 7.0; interocular width, 0.5.

Holotype: ♂ (terminalia slide 279), [MALAYSIA]: Selangor, F.M.S. Kuala Lumpur, "Gombak" Valley, 14.x.1921, H. M. Pendlebury; in HECO.

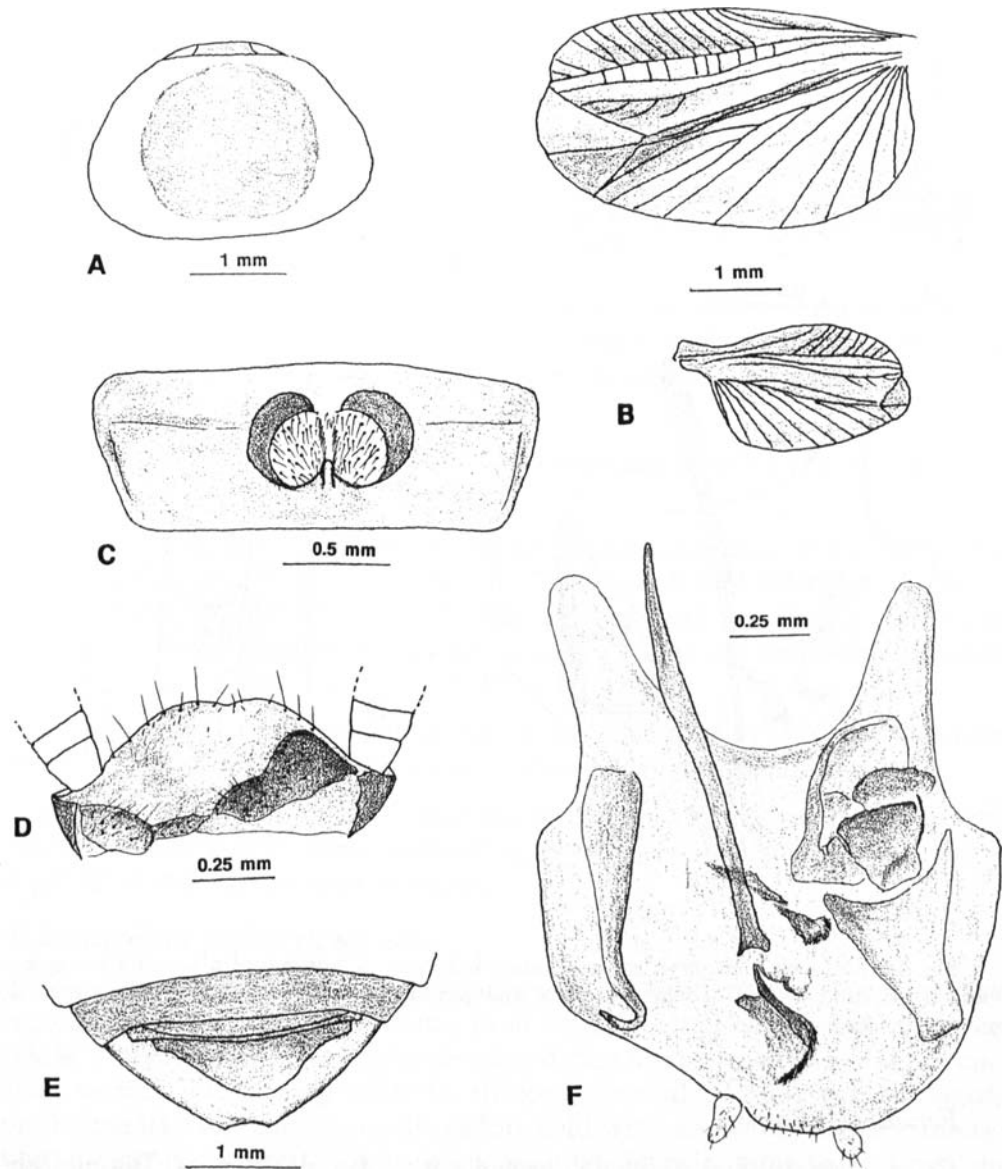


Fig. 19. *Malaccina pallidula* (Bolívar) from Kodai Kanal, India: A, B (top), C, D, F, males; A, pronotum; B (top), hind wing; C, seventh abdominal tergum; D, Supraanal plate and paraprocts (ventral); F, subgenital plate and genitalia (dorsal). B (bottom), E, female: B (bottom), right hind wing; E, abdominal terga 7-10 and subgenital plate.

Etymology: The species is dedicated to Dr. Vernon R. Vickery of the Lyman Entomological Museum and Research Laboratory, McGill University, who together with the late Dr. Keith Kevan, contributed much to our knowledge of cockroaches.

Comments: The styli and the process between them (Figs. 18C, D) are similar to those structures in *Malaccina rufella* (Figs. 14B, F); however, the shape of the subgenital plate, and the apical ends of the median phallomere are distinctly different.

31. *Malaccina pallidula* (Bolívar), comb. nov. (Figs. 19A-F)

Theganopteryx (*Pseudectobia*) *pallidula* Bolívar, 1897: 287, pl. 10, figs. 3, 3a-b (male and female).

Pseudectobia pallidula Bolívar: Kirby, 1904: 65.

Lupparia pallidula (Bolívar): Shelford, 1908a: 16.

?*Lupparia pallidula* (Bolívar): Princis, 1969: 962.

Redescription. Male: Head slightly exposed, interocular space less than the distance between antennal sockets. Pronotum with anterior and posterior margins straight, sides obliquely convex, widest posteriorly (Fig. 19A). Tegmina and wings fully developed, reaching to about the end of the abdomen, the former with five or six oblique discoidal sectors, hind wings as long as or slightly smaller than the tegmina. Hind wing with nine to 12 costal veins, radial vein straight, simple, media vein simple and may arise at the middle of the radial appearing as a branch of that vein; cubitus vein simple or with two or three short branches one or two of them pseudocomplete, appendicular field about 26% length of wing (Fig. 19B, top). Front femur Type Ag; pulvilli on 4 proximal tarsomeres, tarsal claws symmetrical, distinctly toothed, arolia present. Abdominal segment seven with a pair of deep setose fossae mesad, their margins thickly sclerotized, between them a longitudinal ridge (Fig. 19C). Supraanal plate transverse, convexly rounded, paraprocts dissimilar simple plates (Fig. 19D). Subgenital plate weakly asymmetrical, styli short, cylindrical, the left one slightly longer (Fig. 19F). Genitalia as in Fig. 19F: hook on the left side with a preapical incision; median phallomere slender, apex subtruncate with a slender, setose L2d; right phallomere large, consisting of several sclerotized plates.

Female: Interocular width the same as distance between antennal sockets. Tegmina fully developed almost reaching the end of the abdomen. Hind wing reduced reaching to the fourth abdominal segment, veins prominent, cubitus vein with three branches or with two incomplete rami, appendicular field very small (Fig. 19B, bottom) but folded when at rest. Hind margin of supraanal plate convexly rounded, not reaching the hind margin of the subgenital plate which is very shallowly concave medially (Fig. 19E).

Color: Head yellowish, vertex hyaline or light reddish brown; maxillary palpi brown. Pronotal disk brownish yellow, unicolorous or with a pair of light reddish brown blotches, lateral border regions hyaline. Tegmina yellowish hyaline. Hind wings infuscated. Abdominal terga reddish brown with

yellowish lateral borders. Abdominal sterna with distal four segments brownish yellow, proximal segments dark brown (female mostly reddish brown). Cerci yellowish dorsad, brown ventrad. Legs brownish yellow.

Measurements (mm) (female in parentheses): Length, 6.5-7.2 (6.6-7.0); pronotum length x width, 1.6-2.0 x 2.7-3.1 (1.9 x 3.1); tegmen length, 5.2-5.8 (5.0-5.2); interocular width, 0.7-0.8 (0.8-0.9).

Type specimens: Syntypes: ♂ ♀, [INDIA]: Kodaikanal. Not examined.

Specimens examined: INDIA: Palnis: Kodai Kanal, Shola, 7000ft., 4♂, 7.ix.1921, 2♂, 2♀, 15.ix.1921, 2♂, Fletcher: [1♂ with terminalia slide 447; one with two labels: typed *pallidula* (Bolivar), and handwritten, "near or = *Anaplectoidea*"; one labelled *Pseudoectobia pallidula* Bol., by Hebard, 1928]; in ANSP. Two specimens retained in MCZ.

Comments: It is quite possible that this species contains macropterous and brachypterous morphs, but additional specimens are needed to determine this.

Genus *Anaplectoidea* Shelford

Anaplectoidea Shelford, 1906: 247; Hebard, 1929: 28; Princis, 1965: 384. Type species: *Anaplectoidea nitida* Shelford, by monotypy.

Rediagnosis (in part after Hebard): Tegmina and wings fully developed, former with seven to nine oblique discoidal sectors. Cubitus vein of hind wing usually with four to eight oblique pseudocomplete and incomplete branches; appendicular field occupying 25-31% (rarely as high as 38%) of wing length, reflexed at rest. Front femur Type A₃; tarsal claws symmetrical, strongly dentate, arolia present. Male: seventh abdominal tergum specialized. Genital hook on the left side. Female: subgenital plate simple.

Princis (1965: 384; 1971: 1144) listed ten species of *Anaplectoidea*, mostly from Asia and the Indomalayan region. I recognize 12 species. Princis considered *Anaplectoidea hyalina* Bruijning to be a synonym of *A. dohertyi* but I find them to be distinct species based on differences in their styli and genitalia. I have transferred two other species of *Anaplectoidea*: *saundersi* is a *Malaccina*, and *notata* belongs in *Anaplectella*.

Key to males of *Anaplectoidea*

(Males of *nitida* and *klossi* are unknown; I have not seen *modesta*, *varia*, and *popovi* but have included the last in the key, based on Bey-Bineko's description of the subgenital plate and styles.)

- 1. Hind margin of subgenital plate with a lobe between the styles.2
- Hind margin of subgenital plate without a lobe between the styles.4
- 2. Right posterolateral corner of the subgenital plate produced. Styles elongate, slender, separated by a small interstyler lobe (Figs. 21D, E).
..... *lampongensis*

- Right posterolateral corner of the subgenital plate not produced.3
- 3. Styles practically contiguous, the right one longer than the left, the lobe between them very small (Fig. 20D).*popovi*
- Styles not markedly different in length, more widely, separated, the interstyler lobe much larger and contiguous with the left style (Figs. 23D, E).*incognita*
- 4. Left style curved, apically acute, spinelike, right style elongate, cylindrical, with a minute terminal spine (Fig. 24C).*dohertyi*
- Left style not spinelike.5
- 5. Hind margin of subgenital plate with oblique sides (Fig. 25D). Genitalia as in Fig. 25D.*modiglianii*
- Hind margin of subgenital plate convexly rounded.6
- 6. Paraprocts as in Fig. 25F. Genitalia as in Fig. 25G.*hyalina*
- Paraprocts as in Fig. 22D. Genitalia as in Fig. 22E.*medanensis*

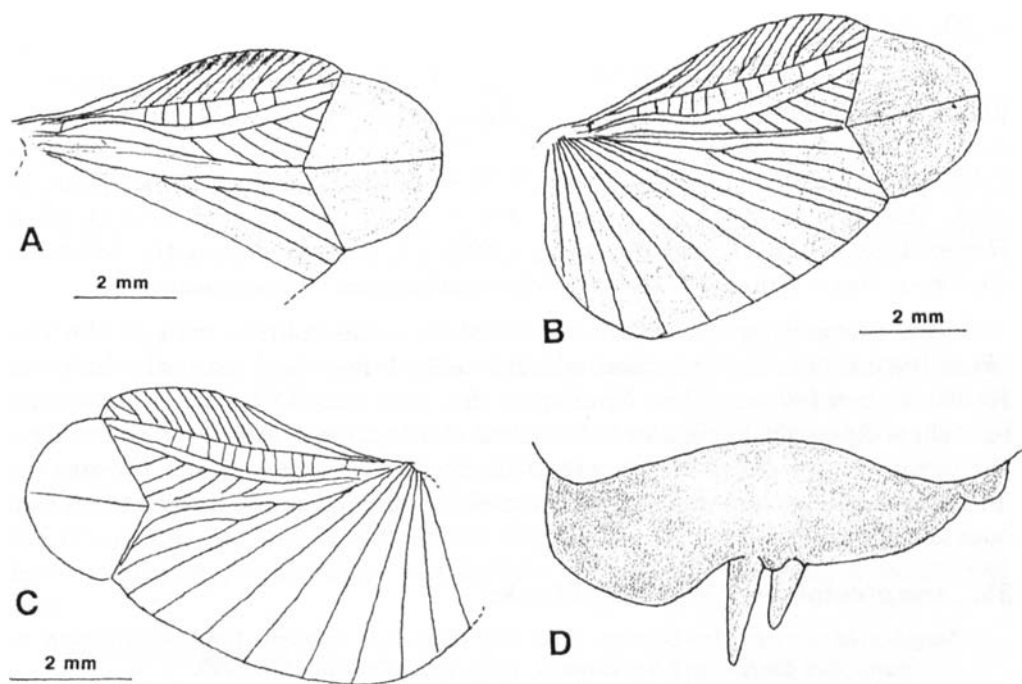


Fig. 20. *Anaplectoidea* spp. A, B, *A. nitida* Shelford: hind wings of female lectotype and ?male paralectotype respectively. C, *A. klossi* Hanitsch, female holotype: hind wing. D, *A. popovi* Bey-Bienko, male holotype, subgenital plate and styli (ventral; from Bey-Bienko, 1970, fig. 21).

32. *Anaplectoidea nitida* Shelford (Figs. 20A, B)

Anaplectoidea nitida Shelford, 1906: 248, pl.16, figs. 8, 9 (female); 1907b: 11; Hanitsch, 1928: 13; 1929a: 8; 1932: 58; 1933: 125; Bruijning, 1947: 215; 1948: 35, 55; Princis, 1950: 220; Princis, 1965: 384.

Redescription. Female: Interocular space less than the distance between antennal sockets. Pronotum subelliptical. Tegmina and wings fully developed

extending beyond end of abdomen, the former with 13 costals and seven or eight oblique discoidal sectors. Hind wing with 11 thickened costal veins, radial vein straight, simple, media vein curved, medioradial field with eight to 12 cross veinlets, cubitus vein curved with six to eight branches (three or four pseudocomplete and three or four incomplete branches), appendicular field about 30% the length of the wing (Fig. 20A, B). Front femur Type A₃, with two preterminal piliform spinules on one of the legs; pulvilli on fourth proximal tarsomere only, tarsal claws strongly dentate, arolia well developed. Supraanal plate transverse, hind margin convexly rounded, not reaching the hind margin of the trigonal-convex subgenital plate.

Color: Reddish brown. Antennae, tarsi and cerci brownish yellow. Lateral borders of pronotum transparent. Tegmina transparent. Wings infuscated.

Measurements (mm) (paralectotype in parentheses): Length, 8.5; pronotum length x width, 2.0 x 2.9 (1.9 x 3.0); tegmen length, 7.5 (7.4); interocular width, 0.6 (0.5).

Type specimens: [INDONESIA: MOLUCCAS]: Batchian [=Batjan Is.] [0°35'S 127°30'E], ♀ (*lectotype*, here designated), W. Doherty, M. Burr coll., pres. 1903 by M.B.; Type Orth. 38¹/₂; in HECO. *Paralectotypes.* [SULAWESI] CELEBES: Macassar [5°07'S 119°24'E], 1 ♀ (abdomen missing), 1896, Doherty, M. Burr coll., pres. 1903; Type Orth. 38²/₂; in HECO. M. B. Hanitsch (1933: 125), and Bruijning (1948: 55) indicated that the Macassar specimen was a female. Unfortunately its abdomen is now missing.

Comments: Hanitsch (1929: 8) stated that the cubitus vein of the type (from Batjan) has six branches, which Shelford described correctly; however, Hanitsch pointed out that Shelford's drawing (pl. XVI, fig. 8) has eight branches. Apparently Shelford described the *lectotype* but drew the wing of the *paralectotype* (from Macassar). It is possible that the types represent two different species which can be determined by examining topotypic males from both countries.

33. *Anaplectoidea varia* Bey-Bienko

Anaplectoidea varia Bey-Bienko, 1958: 689 (male and female); 1957: 900 (nomen nudum); Bey-Bienko and Andrianova, 1959: 1814; Princis, 1965: 385.

Description. Male and Female (after Bey-Bienko, 1958): Tegmina with 12-15 oblique costal veins, seven to nine veins in the mediocubital field. Wings with 10-12 oblique costal veins, radiomedial field gradually widens medially, with 11-12 cross veins; anterior cubitus vein strongly S-shaped, with three to six caudal branches (in male, three branches on left wing, of which one is bifurcated, five branches on the right wing; in female, five or six branches; base of appendicular field almost straight, about 25% the length of wing. Front femur with two or three distal spines (Type A₂ or A₃). Male seventh abdominal tergum with a medial semicircular indentation and tuft of long reddish agglutinated hairs. Supraanal plate in both sexes transverse, strongly narrowed from its base to center, and then emerging as a moderately transverse

flabellum whose caudal edge is rounded. Male subgenital plate moderately transverse, right edge from base to right style rounded, left edge strongly bevelled; right [style] located at apex of plate, thick and slightly bent, apically acute, its length somewhat shorter than the distance to the left style which is shorter, conical, with spine at tip, located on left bevelled edge of the plate.

Color: Brownish yellow. Pronotum brownish red, with pair of indistinct, widely spaced dots medially, lateral sides hyaline. Tegmina brownish yellow, costal field lighter. Wings slightly darker in color. Abdominal terga brown, sterna reddish proximally (in male, brownish black laterally).

Measurements (mm) (female in parentheses): Body length, 7.8 (7.6-7.8); pronotum length, 1.8 (1.8); tegmen length, 7.2 (6.8-7.0).

Type specimen: CHINA: Szechuan: Mt. Omeishan, 580-118m, ♂ (*holotype*), 25-27.vi.1955, T. Buschik, Se Ta-lai, Huang K'e-Jeng; in ZINL. Not examined.

Comments: Bey-Bienko stated that *varia* differed from *nitida* by its smaller size and almost straight-angulate appendicular field.

34. *Anaplectoidea klossi* Hanitsch (Fig. 20C)

Anaplectoidea klossi Hanitsch, 1927: 10, fig. 1 (female); Princis, 1965: 385 [incorrectly listed Hanitsch, 1928: 14 as referring to this species but that reference refers to *Sigmella klossi* (Hanitsch); see Roth, 1991: 10].

Redescription. Female: Head hidden, interocular space less than the distance between antennal sockets. Pronotum subparabolic. Tegmina and wings fully developed, the former with 14 costals and six discoidal sectors. Hind wing with 12 costals, hardly thickened, radial vein straight simple, media vein curved, medioradial field with 11 cross veinlets, cubitus vein curved with six branches (three pseudocomplete and three incomplete), appendicular field about 30% the length of the wing (Fig. 20C). All legs missing. Supraanal plate with convex, entire hind margin that reaches hind margin of subgenital plate.

Male: Unknown.

Color: Head and pronotal disk brownish yellow, the latter with hyaline lateral regions. Tegmina yellowish hyaline. Wings weakly yellowish.

Measurements (mm): Length, 6.0; pronotum length x width, 1.7 x 2.5; tegmen length, 6.5; interocular width 0.6.

Specimens examined: S. ANNAM [SOUTH VIETNAM]: Tour Cham, Phanrang, ♀ (*holotype*), iv-v.1918, C.B. Kloss; Type Orth. 304; in HECO.

Comments: The hind wing of *klossi* is similar to that of *nitida*.

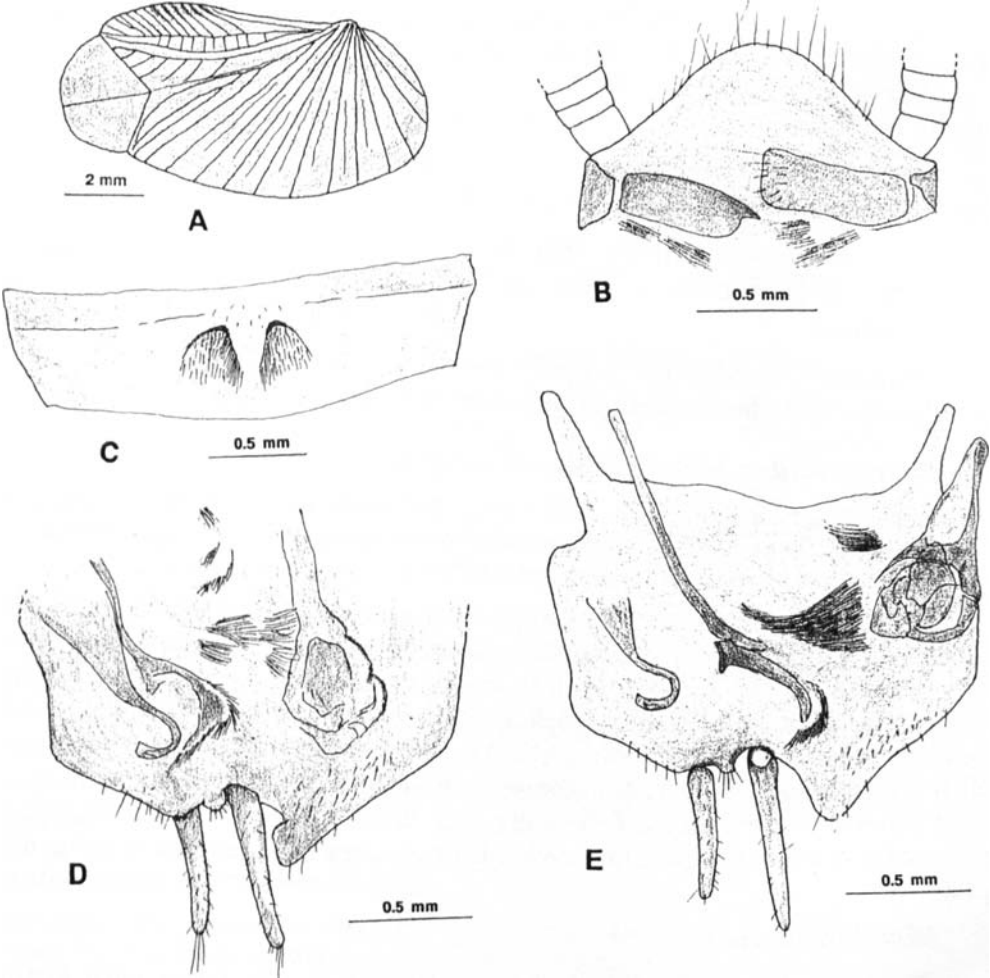


Fig. 21. *Anaplectoidea lampongensis* Hanitsch, males: A, from lectotype, and B-D from paralectotype, from Lampongs, Sumatra: A, hind wing; B, supraanal plate and paraprocts (ventral); C, seventh abdominal tergum; D, subgenital plate and genitalia (dorsal). E, subgenital plate and genitalia (dorsal), from Kedah, Malay Peninsula.

35. *Anaplectoidea popovi* Bey-Bienko (Fig. 20D)

Anaplectoidea popovi Bey-Bienko, 1969: 840, fig. 21 (male and female); 1970: 533, fig. 21; Princis, 1971:1144.

Description. *Male and female* (after Bey-Bienko): Small. Interocular distance (male) 1.5 times width of the eye at the vertex, in female nearly twice. Tegmina extending moderately beyond end of abdomen (male), or slightly or not at all in female; radial vein with 12-14 oblique branches, radiocubital field with six to eight oblique branches of the veins. Wings with ten oblique branches of the radial (costal veins), radiomedian field slightly more than half width of costoradial field, anterior cubitus vein with four branches (two pseudocomplete and two incomplete), apical field slightly less than 33% of wing length. Front femur Type A₃, but often with one or two hairlike [piliform] spinules on preapical region. Male supraanal plate transverse, rounded trigonal with strongly oblique lateral sides; in the female with broadly rounded apex and concave lateral sides. Male subgenital plate transverse, weakly asymmetrical, styli close together, the right one longer and tapering to an acute apex, with a small lobe between them (Fig. 20D).

Color: Yellow or rust-red-yellow. Antennae yellowish. Tegmina unicolorous. Wings hyaline.

Measurements (mm) (female in parentheses): Body length, 5.5-6.0 (6.0-7.0); pronotum length x width, 1.5 x 2.4 (1.6-1.8 x 2.5-2.8); tegmen length, 5.8 (5.6-6.5); overall length, 7.0 (6.3-7.7).

Type specimen: S. CHINA: Yunnan, mouth of the Nanchik'e R., 200m, ♂ (*holotype*), 8.vi.1956, V. Popov & Huan K'e-jen; in ZINL. Not examined.

Comments: A female of this species from Tungchiafeng was incorrectly recorded as *Anaplectella sinica* Bey-Bienko (Bey-Bienko, 1957) because they are superficially similar.

36. *Anaplectoidea lampongensis* Hanitsch (Figs. 21A-E)

Anaplectoidea lampongensis Hanitsch, 1932: 56, fig. 2 (male and female); Princis, 1965: 384 (literature).

Redescription. *Male:* Head hidden, with interocular space less than the distance between antennal sockets. Pronotum subelliptical, widest behind the middle. Tegmina and wings fully developed, the former with about 15 costals and seven oblique discoidal sectors. Hind wing with 11 costals (six proximal ones thickened distad) medio-radial field with nine or ten cross veinlets, cubitus vein with six or seven (three or four pseudocomplete and two to four incomplete) oblique branches, appendicular field about 25-30% the length of the wing (Fig. 21A). Front femur Type A₃; pulvilli on tarsomeres two to four, tarsal claws symmetrical, dentate, arolia well developed. Seventh abdominal tergum with a pair of setose fossae separated by a broad longitudinal nonsetose ridge (Fig. 21C). Supraanal plate trigonal, hind margin entire, apex rounded, extending beyond the apex of the subgenital plate, paraprocts dis-

similar (the setae near the paraprocts are probably from the region of the right genital phallomere but moved during the slide preparation) (Fig. 21B). Subgenital plate asymmetrical, the right posterolateral corner produced, styli elongated, cylindrical, the right one slightly longer, separated by a small rounded lobe (Figs. 21D, E). Genitalia as in Figs. 21D, E: hook on the left side, with a preapical incision, apex of hook truncate; median phallomere with apex modified; right phallomere with several sclerites (indistinct in lectotype: cp. Figs. 21D, E); at least two setal groups present on the right side.

Female: Cubitus vein of hind wing with five or six (three or four pseudo-complete and two or three incomplete) oblique branches. Hind margin of supraanal plate convexly rounded, the apex entire, reaching to or slightly beyond the tip of the subgenital plate.

Color: Head brownish yellow, frons and vertex with four fuscous areas formed by a pale cross (more distinct in the lectotype). Pronotal disk without markings or with a pair of widely separated dark dots (on one paralectotype). Tegmina pale amber, anal sulcus brown. Wings with costal area orangish or yellowish, appendicular field weak brown.

Measurements (mm) (female in parentheses): Length, 6.3-7.7 (6.8-7.1); pronotum length x width, 1.6-1.8 x 2.4-2.8 (1.6-1.8 x 2.5-2.6); tegmen length, 6.9-7.8 (6.9-7.0); interocular width, 0.3-0.4 (0.5-0.6).

Specimens examined: [INDONESIA]: SUMATRA: Wai Lima, Lampongs, ♂ (here designated *lectotype*), no. 394, xi,xii.1921, Karny & Siebers; Type Orth. 409¹/₄; in HECO. *Paralectotypes.* Same data as lectotype, 1♂ (terminalia slide 281), no. 134, Type Orth. 409⁴/₄, 1♂, no. 51, Type Orth. 409³/₄; in HECO.

Additional specimens: SUMATRA: Medan, 4♂ (1 with terminalia in vial), 4♀ Mjöb; in NRSS. MALAYSIA: Kedah NR., Jitra, Catchment area, 1♂ (terminalia slide 280), 1♀, 5.iv.1928, H.M. Pendlebury; Selangor, F.M.S., Kuala Lumpur, 1♂ (terminalia in vial), 21.i.1924 (labelled *Anaplectoidea nitida*, probably by Princis); in HECO. THAILAND: Peninsula Siam: Nakon Sri Tamarat, Khao Ram, at light, 750 ft., 1♀, 2.iii.1922, H.M. Pendlebury; in HECO.

37. *Anaplectoidea medanensis*, sp. nov. (Figs. 22A-E)

Description. Male: Head with interocular space less than the distance between antennal sockets; fourth and fifth maxillary palpomeres about equal in length. Pronotum suboval. Tegmina and wings fully developed extending beyond end of the abdomen, the former with oblique discoidal sectors. Hind wing with straight, simple, radial vein, media simple, curved, the radiomedial space with about eight cross veinlets; cubitus veins curved, with four or five, mostly oblique branches (three pseudocomplete and one or two incomplete), appendicular field about 28% the length of the wing (Fig. 22A). Front femur Type A₃; parts or all of the remaining legs are missing. Seventh abdo-

minal tergum with a pair of shallow depressions containing small, spaced setae (Fig. 22B). Supraanal plate with hind margin convexly rounded, entire; paraprocts distinctly dissimilar, the left one consisting of two sclerites one of which terminates in a group of dark setae; the right paraproct is a large, irregular plate (Fig. 22D). Subgenital plate symmetrical, hind margin rounded, right and left styles similar, cylindrical, separated by less than their lengths, interstyler margin not distinctly produced (Fig. 22E). Genitalia as in Fig. 22E: hook on the left side with an apical incision; median phallomere is a slender rod whose distal end (?L2d) is modified and terminates in a group of dark setae (Fig. 22C).

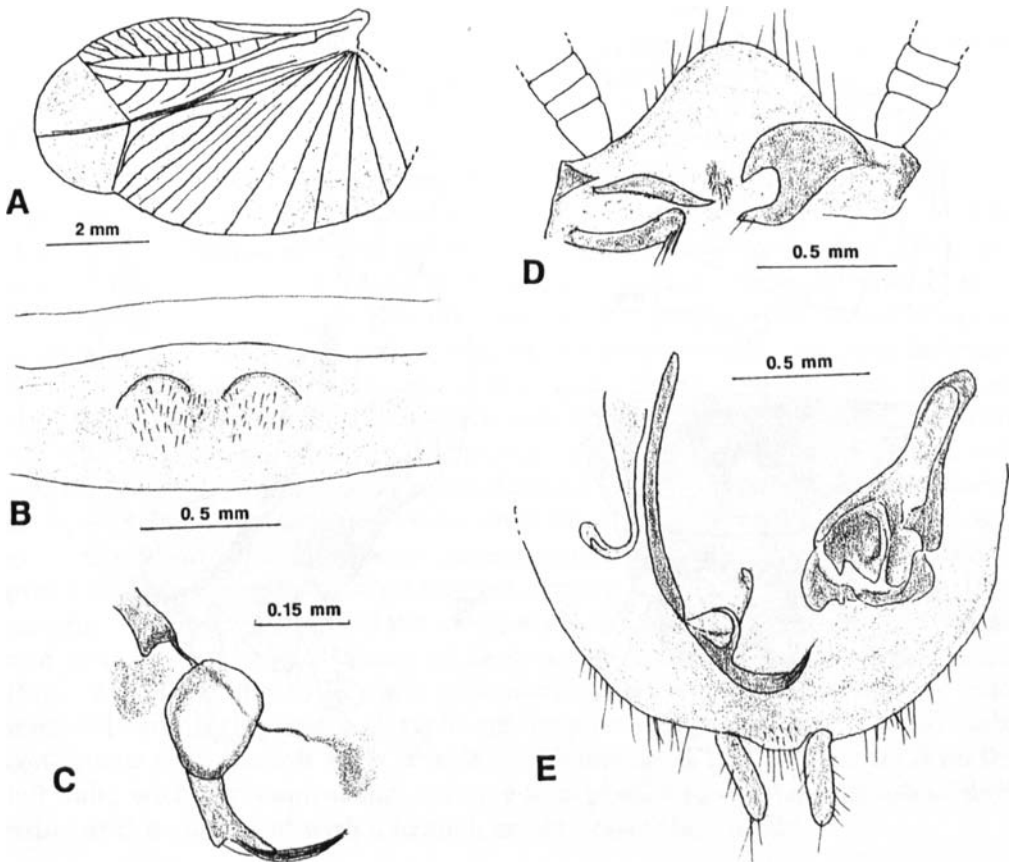


Fig. 22. *Anaplectoidea medianensis*, sp. nov., male types: A, hind wing; B, Gland area on seventh abdominal tergum; C, apex of median genital phallomere; D, supraanal plate and paraprocts (ventral); E, subgenital plate and genitalia (dorsal).

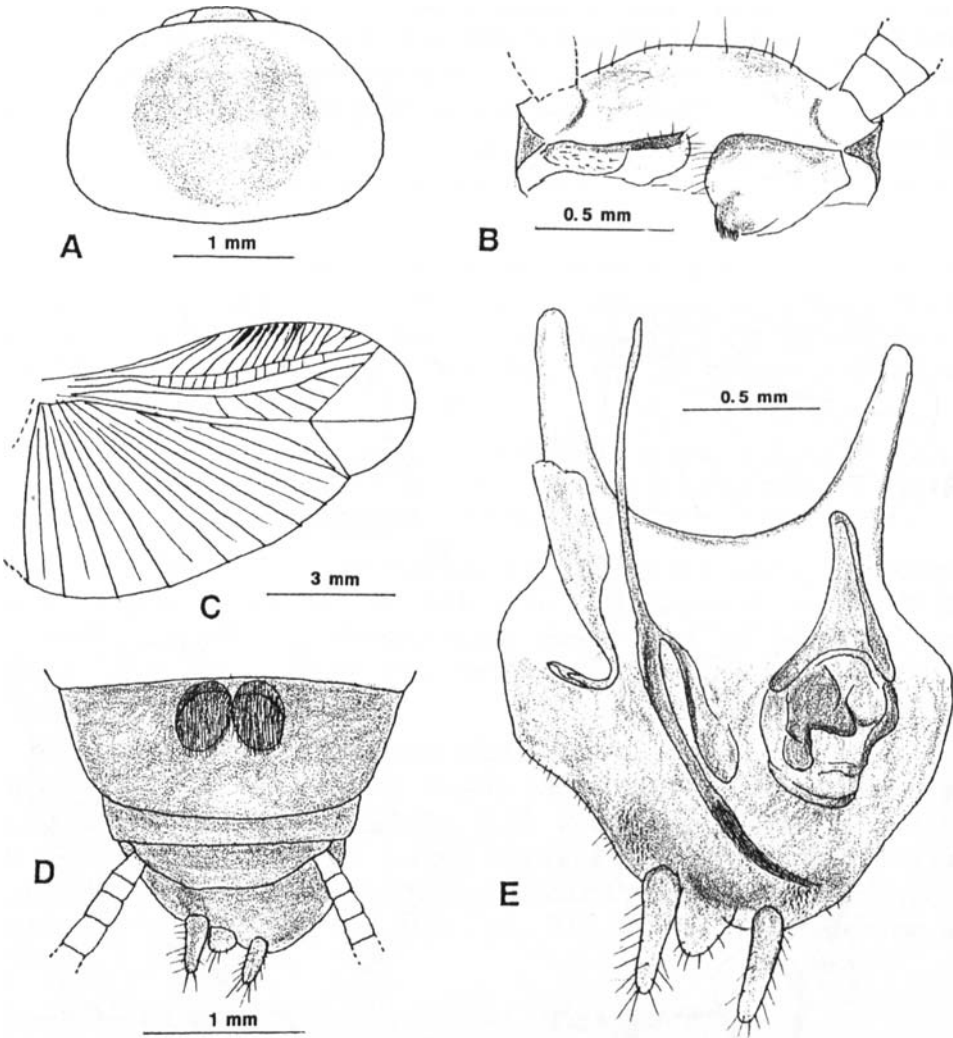


Fig. 23. *Anaplectoidea incognita*, sp. nov., male holotype: A, pronotum; B, supraanal plate and paraprocts (ventral); C, hind wing; D, abdominal terga seven to ten (supraanal plate), and subgenital plate and styles (dorsal); E, subgenital plate and genitalia (dorsal).

Female: Supraanal plate as in male. Cubitus vein of hind wing with three pseudocomplete and one incomplete branch.

Color: Brownish yellow. Pronotal disk yellowish, lateral border regions transparent. Hind wings weakly infuscated.

Measurements (mm) (female in parentheses): Pronotum length x width, 1.6 x 2.1-2.2 (1.6 x 2.4-2.6); tegmen length, ca 6.6 (6.0-6.6); interocular width, 0.5 (0.5-0.6).

Holotype: ♂ (terminalia slide 76), [INDONESIA]: SUMATRA: Medan, Mjöberg; in NRSS. *Paratypes:* SUMATRA: Same data as for holotype, 1♂ (terminalia slide 79), 2♀; in NRSS. (All specimens are in poor condition).

Etymology: The species is named for the type locality.

Comments: This species was sent to me as *Anaplectoidea lampongensis* (which also occurs in Medan), but the male styles and median genital phallobromeres show them to be distinct species.

38. *Anaplectoidea incognita*, sp. nov. (Figs. 23A-E)

Description. Male: Head with interocular space less than the distance between antennal sockets. Pronotum subelliptical, widest behind the middle (Fig. 23A). Tegmina and wings fully developed extending beyond end of abdomen, the former with 14 costal veins, the terminal ones branched, with four (one branched) oblique discoidal sectors. Hind wing with 13 costal veins, several thickened distally, radial and media veins simple, the area between them with 14 veinlets, cubitus vein with three pseudocomplete and three incomplete oblique branches, apical triangle about 28% the length of the wing (Fig. 23C). Front femur Type A₃, pulvilli on four proximal tarsomeres; mid and hind legs apparently with a pulvillus only on the fourth tarsomere; tarsal claws symmetrical, dentate, arolia well developed. Seventh abdominal tergum with a pair of deep suboval depressions filled with setae (Fig. 23D). Supraanal plate transverse, hind margin convex, entire, not reaching the hind margin of the subgenital plate; paraprocts dissimilar, the right one larger and with a small dense group of dark setae on the posterior distal corner (Figs. 23B, D). Subgenital plate asymmetrical with a pair of elongated, symmetrical, similar cylindrical styli, interstyler margin with a distinct lobe contiguous with the left style (Fig. 23E). Genitalia as in Fig. 23E: hook on the left side, with a preapical incision; median phallobromere with a group of dark setae at the apex, and with a branch arising near the middle.

Color: Straw colored, practically unicolorous. Head brownish yellow, slightly darker on the vertex; maxillary palpi pale. Pronotal disk brownish yellow, lateral areas broadly transparent. Tegmina yellowish hyaline without dark markings. Wings with yellowish tinge. Abdomen, cerci, and legs pale.

Female: Unknown.

Measurements (mm): Length, 8.7; pronotum length x width, 1.7 x 2.7; tegmen length, 8.8; interocular width, 0.4.

Holotype: ♂ (terminalia slide 463), no locality data; in ANSP.

Etymology: The specific name denotes the absence of locality data for the unique holotype.

Comments: The median phallomere of *Anaplectoidea incognita* (Fig. 23E) resembles that found in *Anaplectella notata* (Fig. 7F) and *Anaplectella tibangensis* (Fig. 8E)

39. *Anaplectoidea dohertyi* Shelford (Figs. 24A-D)

Anaplectoidea dohertyi Shelford, 1907a: 25 (female); 1907b: 11; Hanitsch, 1928: 13; 1932: 58 (not *dohertyi*); 1933: 135; Bruijning, 1947: 215; Princis, 1957: 1965: 385 (literature).

Description. *Male* (previously unknown): Head with interocular space less than the distance between antennal sockets. Pronotum subelliptical, widest behind the middle. Tegmina and wings fully developed extending beyond the end of the abdomen, the former with seven oblique discoidal sectors. Hind wing with five to seven oblique cubitus vein branches (three or four pseudo-complete and one to three incomplete), appendicular field about 30% the length of the wing (Fig. 24A). Front femur Type A₃ (there may be a couple of piliform spinules preceding the large terminal spines); pulvilli on the fourth proximal tarsomere, tarsal claws symmetrical, toothed, arolia well developed. Seventh abdominal tergum with a pair of medial fossae containing relatively few setae that are restricted to the medial margins of the depressions (Fig. 24B). Supraanal plate hind margin convexly rounded, entire, paraprocts strongly dissimilar, the right one consisting of a long spinelike sclerite (Fig. 24D; the setose membrane near the right paraproct is probably part of the genitalia). Subgenital plate strongly asymmetrical, right side of hind margin with dark setae; styli dissimilar, the left one spinelike, the right one cylindrical with a small apical spine (Fig. 24C). Genitalia as in Fig. 24C: hook on the left side, with a preapical incision; median phallomere a simple rod with a small apical L2d sclerite; right phallomere large consisting of several sclerites, some of them setose.

Female: Head hidden, interocular space less than the distance between antennal sockets. Pronotum subelliptical widest behind the middle. Tegmina and wings fully developed, the former with 14-15 costal veins and six to eight oblique discoidal sectors. Hind wing with straight radial vein and 11 costals thickened distad, media curved, medioradial field with nine to 11 cross veinlets, cubitus vein with five or six branches (three or four pseudocomplete) (Fig. 24A). Front femur Type A₃, with two piliform spinules preceding the first large preterminal spine; pulvilli mostly absent, tarsal claws dentate, arolia present. Supraanal plate hind margin convexly rounded reaching the hind margin of the subgenital plate.

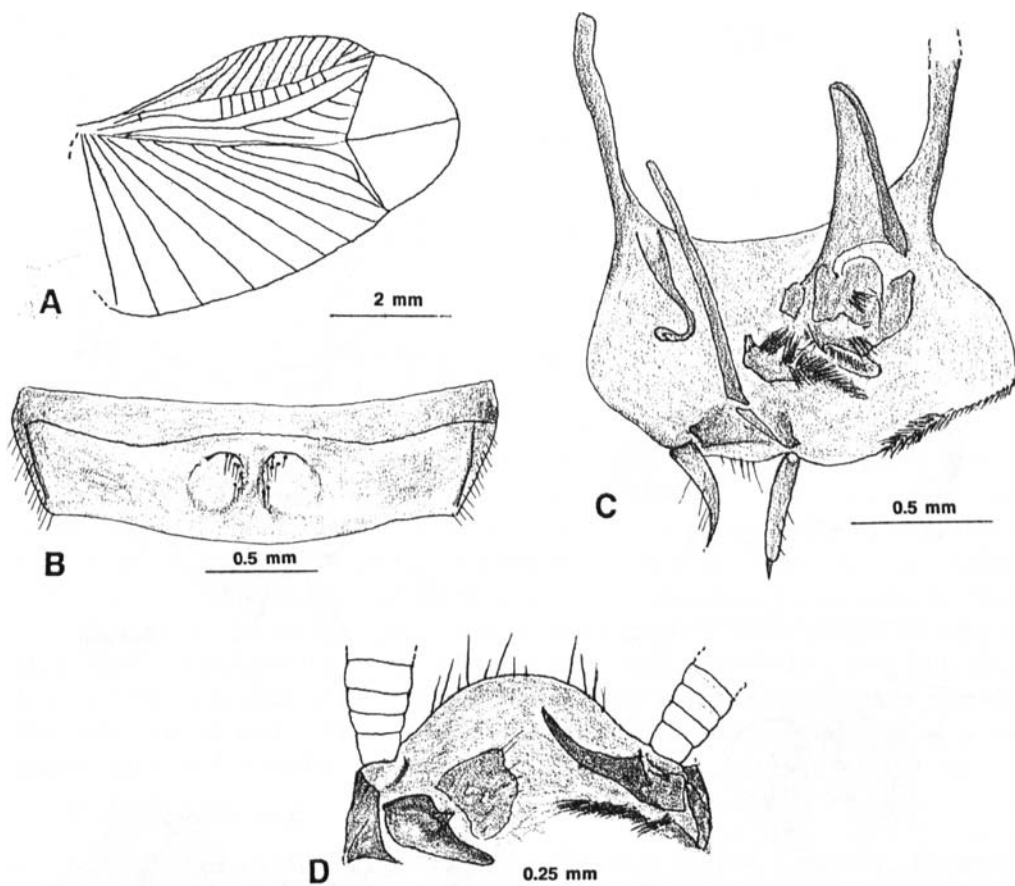


Fig. 24. *Anaplectoidea dohertyi* Shelford: A, female holotype, hind wing; B-D, male from Karimon, Java: B, seventh abdominal tergum; C, subgenital plate and genitalia (dorsal); D, supraanal plate and paraprocts (ventral).

Color: Brownish yellow, without dark maculae. Hind wing with costal vein area, and veins yellowish.

Measurements (mm): Length, 6.4 (6.1-6.6); pronotum length x width, 1.5-1.7 x 2.3-2.4 (1.5-1.7 x 2.2-2.4), tegmen length, 6.0-6.8 (5.9-6.2); interocular width, 0.4 (0.4-0.5).

Specimens examined: [INDONESIA: JAVA]: Sangir, ♀ (holotype), W. Doherty; Type Orth. 39; in HECO.

Additional specimens: JAVA: Samarang, 1♂ (terminalia slide 211), x.1909, E. Jacobson; Karimon, Dwaja, 1♂ (terminalia slide 212), 4♀, v. 1926, Dammerman; Banjuwangi, 1♂ (terminalia slide 213), 1911, Mac Gillyavry (incorrectly reported as *lampongensis*, by Bruijning, 1948: 55); in HECO.

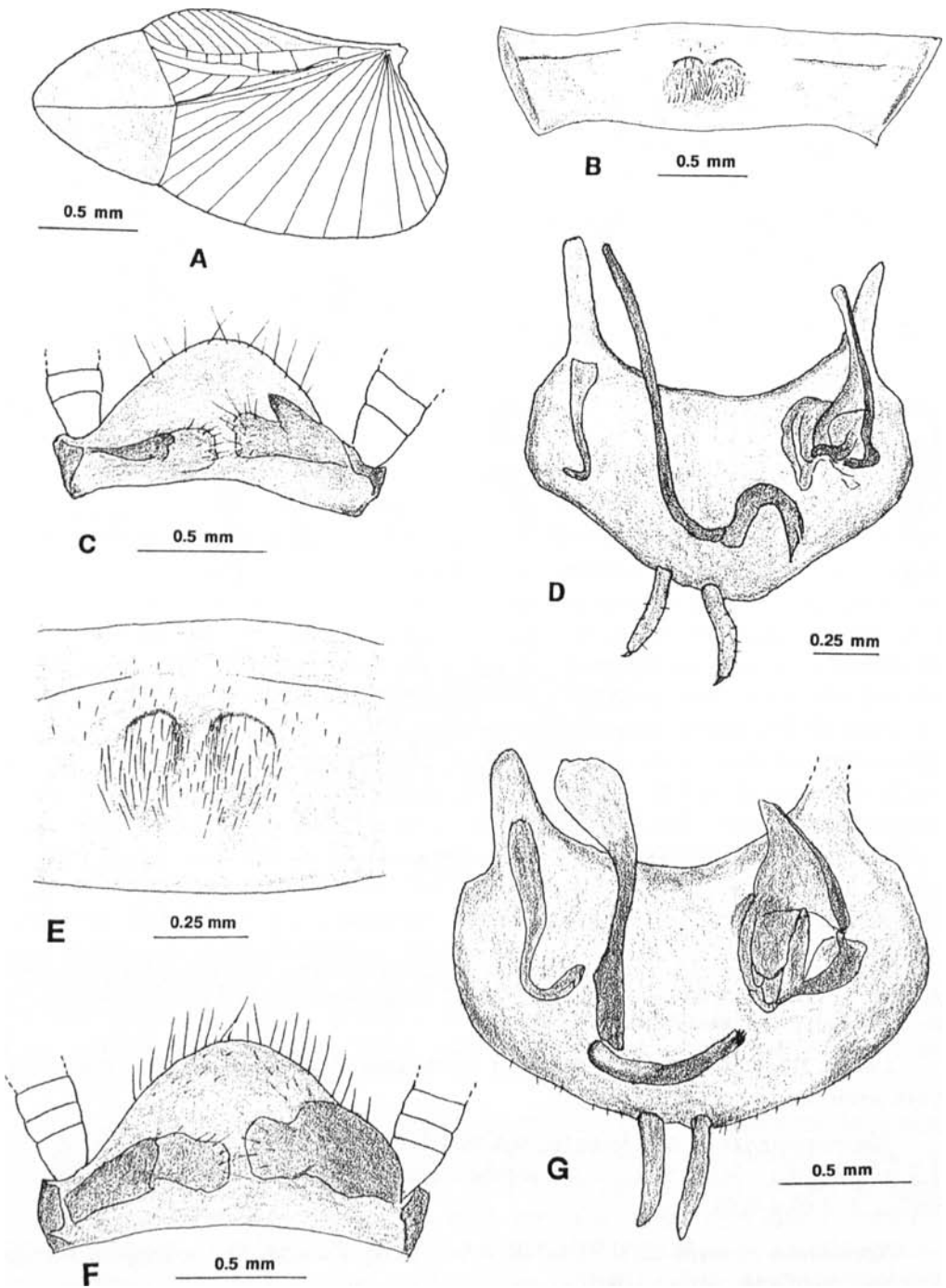


Fig. 25. *Anaplectoidea* spp. A-D, *A. modiglianii* Hanitsch, male holotype: A, hind wing; B, seventh abdominal tergum; C, supraanal plate and paraprocts (ventral); D, subgenital plate and genitalia (dorsal). E-G, *A. hyalina* Bruijning, male holotype: E, gland on seventh abdominal tergum; F, supraanal plate and paraprocts (ventral); G, subgenital plate and genitalia (dorsal).

Comments: Princis (1965: 385) listed *Anaplectoidea hyalina* Bruijning as a synonym of *dohertyi* but I am considering it separately because of distinct differences between male genitalia and paraprocts of specimens I have determined as *dohertyi* and the holotype of *hyalina* (cp. Figs. 24C, 25G). Unfortunately *dohertyi* was based on a female and males from the type locality (Sangir, Java) should be examined to confirm my identification of the other specimens from Java.

40. *Anaplectoidea modiglianii* Hanitsch (Figs. 25A-D)

Anaplectoidea modiglianii Hanitsch, 1932: 57 (male).

Redescription. Male: Head hardly exposed. Pronotum subelliptical. Tegmina and wings fully developed, the former with 14 costal veins and five oblique discoidal sectors. Hind wing with radial vein distally curved anteriorly, medioradial field with six cross veinlets, cubitus with four branches (three pseudocomplete and one incomplete), appendicular field about 38% of wing length (Fig. 25A). Front legs missing: pulvilli on fourth proximal tarsomere, tarsal claws symmetrical, dentate, arolia present. Seventh abdominal tergum with a pair of contiguous setose fossae (Fig. 25B). Supraanal plate symmetrical, hind margin entire, trigonal, apex rounded, paraprocts dissimilar (Fig. 25C). Subgenital plate almost symmetrical, with a pair of similar styli, each terminating in a small spine (Fig. 25D). Genitalia as in Fig. 25D: hook on the left side with a preapical incision; median phallomere apically strongly curved and with a few setae; right phallomere consisting of a few partly darkened sclerites.

Female: Unknown.

Color: Light chestnut brown. Head chestnut brown, antennae brownish yellow. Pronotum uniformly chestnut brown. Tegmina dark amber hyaline. Hind wing with costal and plical fold regions orangish or deep yellowish, appendicular field and veins yellowish,

Measurements (mm): Length, 5.5; pronotum length x width, 1.7 x 2.5; tegmen length, 6.0; interocular width, 0.6.

Specimen examined: [INDONESIA: SUMATRA]: Sipora: Mentawe[a]i, Sereinu, ♂ (holotype) (terminalia slide 282), v.-vi.[18]94, Modigliani, Mus. Civico, Genova; Type Orthop. 376; in HECO.

Comments: The appendicular field of *modiglianii* (and *hyalina*) is unusual for *Anaplectoidea* in being about 38% the length of the wing and its shape is similar to that found in species of *Anaplectella*.

41. *Anaplectoidea hyalina* Bruijning (Figs. 25E-G)

Anaplectoidea hyalina Bruijning, 1948: 55, figs. 32, 33 (male & female); Princis, 1965: 385 (synonymized with *A. dohertyi*; see comments).

Redescription. Male: Head with interocular space less than the distance between antennal sockets; fourth and fifth maxillary palpomeres equal in

length. Pronotum transverse. Tegmina and wings fully developed, the former with 16 costal veins and seven oblique discoidal sectors. Hind wing with 11 distally clubbed costal veins, radio-medial zone with ten or 11 cross veinlets, cubitus vein with four or five pseudocomplete oblique branches, appendicular field about 38% the length of the wing. Front femur Type A₂; pulvilli on the fourth proximal tarsomere, tarsal claws symmetrical, distinctly toothed, arolia well developed. Seventh abdominal tergum with a pair of setose fossae (Fig. 25E). Supraanal plate hind margin convexly rounded, entire, right and left paraprocts dissimilar (Fig. 25F). Subgenital plate symmetrical, hind margin convexly rounded with a pair of similar, elongated, closely spaced cylindrical styli (Fig. 25G). Genitalia as in Fig. 25G: hook on the left side, with a preapical incision; median phallomere (L2vm) and a curved L2d, forming a scythe-like structure, the curved distal end terminating in a few dark spines; right phallomere consisting of several, nonsetose sclerites.

Female: Similar to male but lacks the tergal gland, and styles.

Color: Pale yellow to brownish yellow. Pronotal disk mottled with orange to pale brown. Tegmina hyaline, pale yellow to brownish yellow. Wings with costoradial zone and anterior part of appendicular field tinged with orange, posterior part of appendicular field tinged with brown.

Measurements (mm) (female in parentheses, from Bruijning). Length, 6.8 (6.5); pronotum length x width, 1.7 x 2.4; tegmen length, 7.4 (7.0); interocular width, 0.4.

Specimen examined: [INDONESIA]: W. JAVA: Ardjuna, S. of Gunung Papandajan, ♂ (*holotype*) (terminalia slide 210), xii.1931, W.C. van Heurn; in RNHL.

Comments: Princis (1965: 385) synonymized *hyalina* with *dohertyi*, but I believe the two taxa are distinct; see comments under *dohertyi*).

42. *Anaplectoidea modesta* Shelford

Anaplectoidea modesta Shelford, 1909: 611 (male); Hanitsch, 1928: 14; 1932: 58; Princis, 1965: 385.

Description. Male (after Shelford): Tegmina with 14 costals, and six or seven oblique discoidal sectors, anal vein impressed, axillaries obsolescent. Wings with nine or ten costal veins, medioradial region four times broader than mediocubital zone, with five transverse veinlets, cubitus vein three branched, first axillary vein four branched, appendicular field three eighths (about 38%) of the total wing length. Subgenital plate produced, symmetrical, with a pair of slender styli.

Color: Testaceous. Pronotal disk castaneous, lateral margins broadly hyaline. Tegmina testaceous, hyaline. Wings with veins and apical area castaneous. Abdominal basal sterna piceous, distally castaneous. Cerci castaneous. Legs testaceous.

Female: Unknown.

Measurements (mm): Total length, 7.0; body length, 6.0; pronotum length x width, 1.8 x 2.4; tegmen length, 5.0.

Holotype specimen: SRI LANKA: Wellawaya, ♂. Not examined. Shelford indicated that the type was in the HECO, but it is not in that museum (I. Lansbury, personal communication).

Comments: It is possible that this species belongs in *Malaccina* or *Anaplectella*. Shelford does not describe the front femur armament or the shape of the supraanal plate. There are only three cubitus branches; also the appendicular field is longer than broad which is more characteristic of most *Anaplectella* than *Malaccina* and *Anaplectoidea*.

**Distribution of the species of *Anaplectella*, *Malaccina*,
and *Anaplectoidea***

[Localities in brackets are from Princis' catalogue]

***Anaplectella* Hanitsch**

<i>aurea</i> Hanitsch	Singapore
<i>beccarii</i> Hanitsch	Sulawesi
<i>indica</i> Bey-Bienko	India
<i>jacobsoni</i> Hebard	Sumatra
<i>lompatensis</i> Roth	Malaysia
<i>mjoeborgi</i> Hanitsch	Sumatra
<i>notata</i> Shelford	North Vietnam, [?Borneo]
<i>ornata</i> Hanitsch	Sumatra
<i>pilatus</i> Fernando	Sri Lanka
<i>ruficollis</i> Karny	Taiwan (Formosa)
<i>samarindae</i> Hanitsch	Borneo (Kalimantan)
<i>simalur</i> Hebard	Sumatra (Simalur I.)
<i>smedleyi</i> Hanitsch	Sumatra (Mentawai & Sipora Is.)
<i>subrotundata</i> Walker	India
<i>thwaitesi</i> Shelford	Sri Lanka
(= <i>martini</i> Fernando)	
<i>tibangensis</i> Roth	Sarawak
<i>vanheurni</i> Bruijning	Java; [Borneo]
<i>warreni</i> Roth	Sri Lanka

***Malaccina* Hebard**

<i>discoidalis</i> Princis	Burma
<i>guilinensis</i> Roth	China
<i>imitans</i> Hebard	Sabah
<i>obscurata</i> Bey-Bienko	China
<i>rufella</i> Hebard	Singapore; Sabah
<i>saundersi</i> Hanitsch	Sumatra (Mentawai & Siberut Islands)
<i>schali</i> Roth	Singapore
<i>sinica</i> Bey-Bienko	China
<i>pallidula</i> Bolívar	India
<i>vickeryi</i> Roth	Malaya

Anaplectoidea Shelford

<i>dohertyi</i> Shelford	Java [Sulawesi]
<i>hyalina</i> Bruijning	Java
<i>incognita</i> Roth	Unknown
<i>klossi</i> Hanitsch	South Vietnam
<i>lampongensis</i> Hanitsch	Malaysia; Sumatra; Thailand [Burma; Java]
<i>medanensis</i> Roth	Sumatra
<i>modesta</i> Shelford	Sri Lanka
<i>modiglianii</i> Hanitsch	Mentawai Is.
<i>nitida</i> Shelford	Moluccas (Batjan); Sulawesi [Burma; Sumatra]
<i>popovi</i> Bey-Bienko	China
<i>varia</i> Bey-Bienko	China

Distribution of the species by geographic localities

[Records in brackets are from Princis' catalogue]

Batjan:	<i>Anaplectoidea nitida</i> .
Borneo:	<i>Anaplectella samarindae</i> ; [<i>vanheurni</i>].
Burma:	<i>Malaccina discoidalis</i> . [<i>Anaplectoidea lampongensis</i>].
Celebes:	[<i>Anaplectoidea dohertyi</i>].
China:	<i>Malaccina obscurata</i> ; <i>guilinensis</i> ; <i>sinica</i> . <i>Anaplectoidea popovi</i> .
India:	<i>Anaplectella indica</i> ; <i>subrotundata</i> . <i>Malaccina pallidula</i> .
Java:	<i>Anaplectella vanheurni</i> . <i>Anaplectoidea dohertyi</i> ; <i>hyalina</i> . [<i>lampongensis</i>]
Malaysia:	<i>Malaccina vickeryi</i> . <i>Anaplectoidea lampongensis</i> .
Mentawai Is.:	<i>Anaplectella smedleyi</i> . <i>Malaccina saundersi</i> . <i>Anaplectoidea</i> : <i>modiglianii</i> .
North Vietnam:	<i>Anaplectella notata</i> .
Sabah:	<i>Malaccina imitans</i> ; <i>rufella</i> .
Sarawak:	<i>Anaplectella tibangensis</i> .
Singapore:	<i>Anaplectella aurea</i> . <i>Malaccina rufella</i> ; <i>schali</i> .
South Vietnam:	<i>Anaplectoidea klossi</i> .
Sri Lanka:	<i>Anaplectella pilatus</i> ; <i>thwaitesi</i> (= <i>martini</i>); <i>warreni</i> . <i>Anaplectoidea modesta</i> .
Sulawesi:	<i>Anaplectella beccarii</i> . <i>Anaplectoidea nitida</i> .
Sumatra:	<i>Anaplectella jacobsoni</i> ; <i>mjoebergi</i> ; <i>ornata</i> ; <i>simalur</i> ; <i>smedleyi</i> . <i>Malaccina saundersi</i> . <i>Anaplectoidea lampongensis</i> ; <i>medanensis</i> .
Sumba:	<i>Anaplectella simalur</i> .
Taiwan:	<i>Anaplectella ruficollis</i> .
Thailand:	<i>Anaplectoidea lampongensis</i> .
Unknown:	<i>Anaplectoidea incognita</i> .

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