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Studies on Typhlocybinae of Malaysia and Singapore

(Homoptera, Auchenorrhyncha, Cicadellidae)

With 185 Figures

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Bangkok

There are only 7 publications concerning Typhlocybinae of the region in question. But despite the very limited field of taxonomical research is to be covered in the present work (presumably less than 5% of the existing species) I decided to publish it as the local fauna is very important for resolving many zoogeographical problems.

This work is a review of 23 species known from Malaysia and Singapore in addition to 5 new records and descriptions of 5 new genera and 17 new species. The newly described taxa are: *Savitara* (type-species *S. albida* sp. n.) (Dikraneurini), *Kotwaria* (type-species *K. ramlyi* sp. n.) (Empoascini), *Sanatana* (type-species *S. malaica* sp. n.), *Otbatara* (type-species *O. parvula* sp. n.), *Nandara* (type-species *N. flavescens* sp. n.) (Erythroneurini) and 12 other new species, viz: *Orientalibra malayana* (Alebrini), *Empoasca fletcheri*, *E. amasa*, *E. dymarka*, *Usharia cassiae*, *Homa katoi*, *Jacobiasca erythrinae* (Empoascini), *Thaia* (*Nlunga*) *decembris*, *Cassianeura bimaculata*, *Mandera hepneri*, *M. joannae* and *Tautoneura ficaria* (Erythroneurini).

The type series of newly described species are deposited at the British Museum (Nat. Hist.) in London (BM) and at the Staatliches Museum für Tierkunde in Dresden (D). Curator of holotype is mentioned on the first place at certain description. All new generic names are to be treated as arbitrary combinations of letters; in all cases Gender: Feminine.

Kidraneuroidea MAHMOOD, 1967

Kidraneuroidea rubrovittata MAHMOOD, 1967

Singapore (MAHMOOD, 1967).

Uzeldikra DWORAKOWSKA, 1971

Uzeldikra citrina (MELICHAR, 1903)

Malaysia, Penang I (DWORAKOWSKA, 1979c).

The Malayan specimens differ from the Ceylonian ones by presence of very distinct whitish hypodermal pattern on vertex and pronotum, by details of pattern on fore wing and by smaller size (fore wing of the male holotype is 2.2 while that of a male from Penang is only 2.0 mm long). In male genital apparatus the only observable difference is outer (lateral) margin of apical extension of paramere convex in the Malayan specimen (DWORAKOWSKA, 1979c) while it is concave in the holotype (DWORAKOWSKA, 1971c).

Savitara gen. n.

Type-species *Savitara albida* sp. n.

Shape and proportions of head and thorax (Figs. 3, 13) resemble these of *Uzeldikra* DWOR. (DWORAKOWSKA, 1971c), only pronotum of the new genus is smaller. Face flat, parallel to vertex in its lower $\frac{2}{3}$.

Wings shape and venation (Figs. 8, 9) as in *Afrakra* DWOR. (DWORAKOWSKA, 1979c).

Genital capsule elongated (Fig. 1). Anal tube long, its basal segment sclerotized at sides and connected with an appendage. The appendage is attached to inner side of pygophore lobe and to dorsal apodeme of penis through ligaments. Both pygophore lobes are connected with each other through colourless membrane and a narrow sclerotized bridge.

Subgenital plate almost flat with a row of big macrosetae at base and rudimentary microsetae apically (Figs. 12, 14).

Pygophore side unilobate. There is a large basal apodeme and a distinct extension at hind lower angle terminating a sclerotized lower ledge. Setosity consists of one big macroseta near connection with the anal tube and numerous small gracile microsetae scattered on hind half of the lobe (Figs. 1, 5).

Connective (Figs. 11, 14) lamellate.

Paramere (Figs. 4, 14) as in *Afrakra* DWOR.

Penis (Figs. 6, 7) tubular with broad apical gonopore and a small dorsal apodeme.

Basal abdominal apodemes (Fig. 2) well developed: 9th abdominal sternite of male triangular (Fig. 14).

***Savitara albida* sp. n. (Figs. 1–14)**

Body flat, short and broad, yellowish with whitish hypodermal pattern on vertex and upper side of thorax (Fig. 13). Centre of vertex and centre of pronotum bright ochre-yellow. Fore wing pale with smoked apical pattern (Fig. 9). Length ♂ 2.9 and 3.0 mm.

Penis provided with two short apical extensions and scaly sculpture on dorsal side of the stem (Figs. 6, 7). Pygophore appendage almost straight, ornamented with a few ledges (Fig. 5).

Holotype male and paratype ♂, Malaysia, Penang I; other paratype ♂, W coast, Kuala Trengganu, all collected in 1976 by R. STILLER from lamp domes. (BM)

***Orientebra* DWORAKOWSKA, 1971**

***Orientebra malayana* sp. n. (Figs. 15–18)**

Colouration of the single specimen at my disposal is not fully developed. The fore wing shows a pattern similar to that of *O. gembata* DWOR. (DWORAKOWSKA, 1971b). Length ♂ at least 3.0 mm.

Male genital apparatus differs from that of *O. gembata* DWOR. chiefly by long and slim penis stem (Fig. 18) which in the previous species is shorter than dorsal apodeme.

Holotype male, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA. (BM).

***Empoasca* WALSH, 1863**

***Empoasca* (s. str.) *fletcheri* sp. n. (Figs. 19–29)**

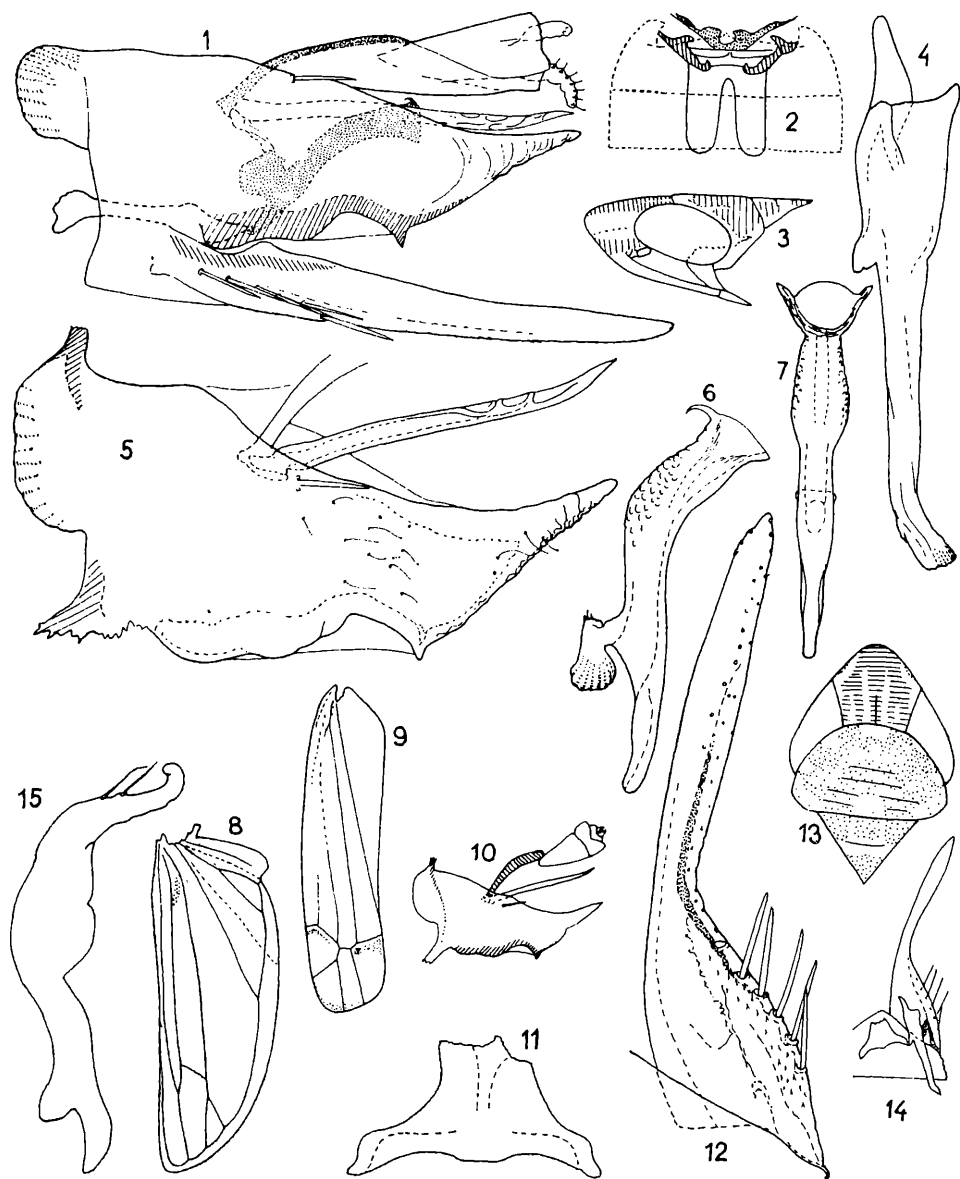
Externally not distinguishable from *E. spirosa* DWOR. et VIR. (DWORAKOWSKA & VIRAKTAMATH, 1979). Length ♂ 2.4 mm.

Male genital apparatus resembles that of *E. spirosa* DWOR. et VIR. (illustrations in DWORAKOWSKA & SOHI, 1978 *E. spinosa*) but pygophore appendage in the new species is only slightly thinner apically and serrated on much longer distance (Figs. 26–29).

Holotype male, Malaysia, Penang I, 1976, lamp domes, R. STILLER. (BM). One male specimen (not type-series), Burma, Mandalay, Sep. 2–4, 1914, FLETCHER.

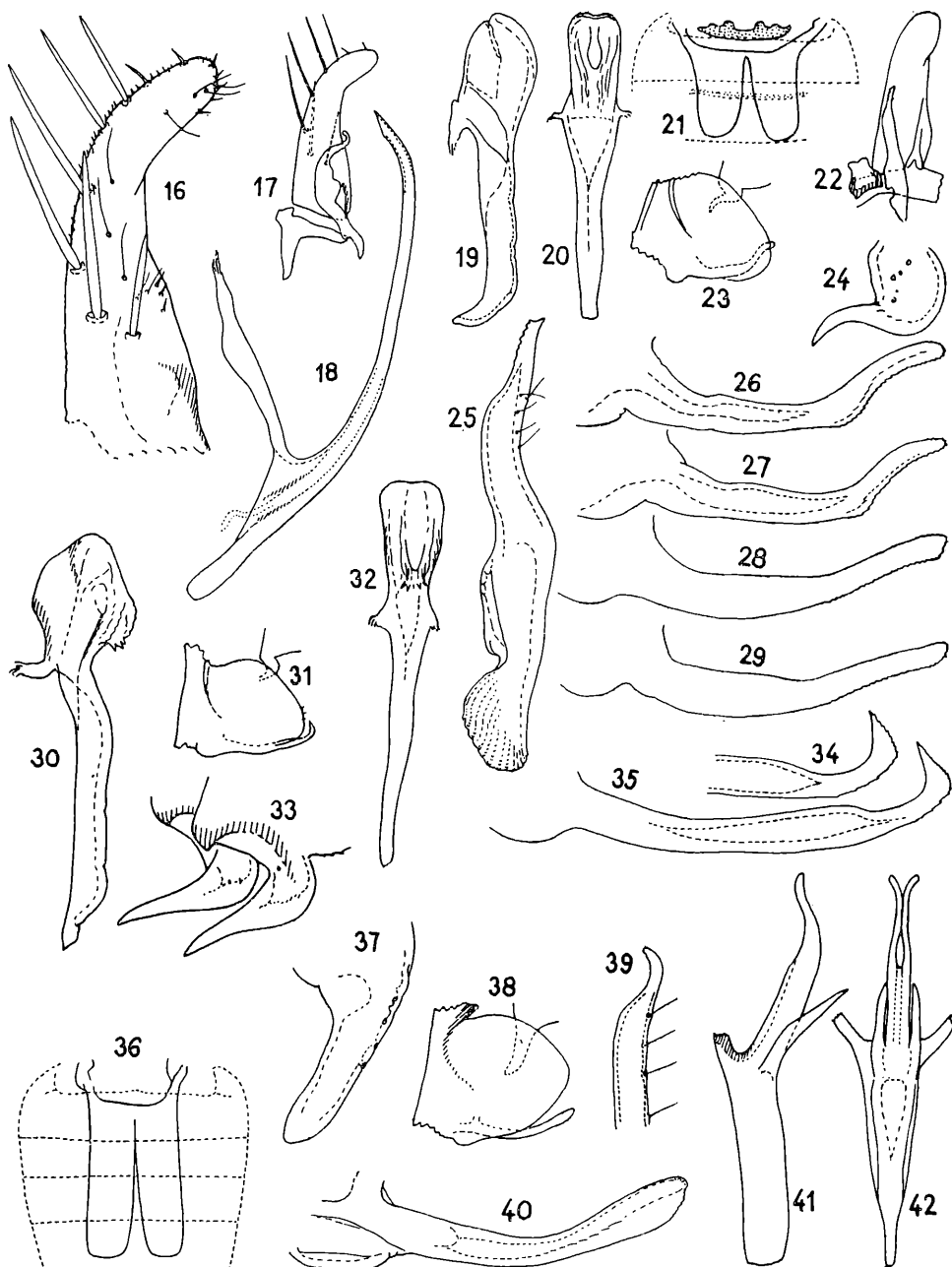
***Empoasca* (s. str.) *amasa* sp. n. (Figs. 30–35)**

Vertex distinctly produced in the midline. Upper side of body olivaceous-green, fore wing lighter. Apical cells and apices of longitudinal cells smoky. Length ♂ 2.4 mm.



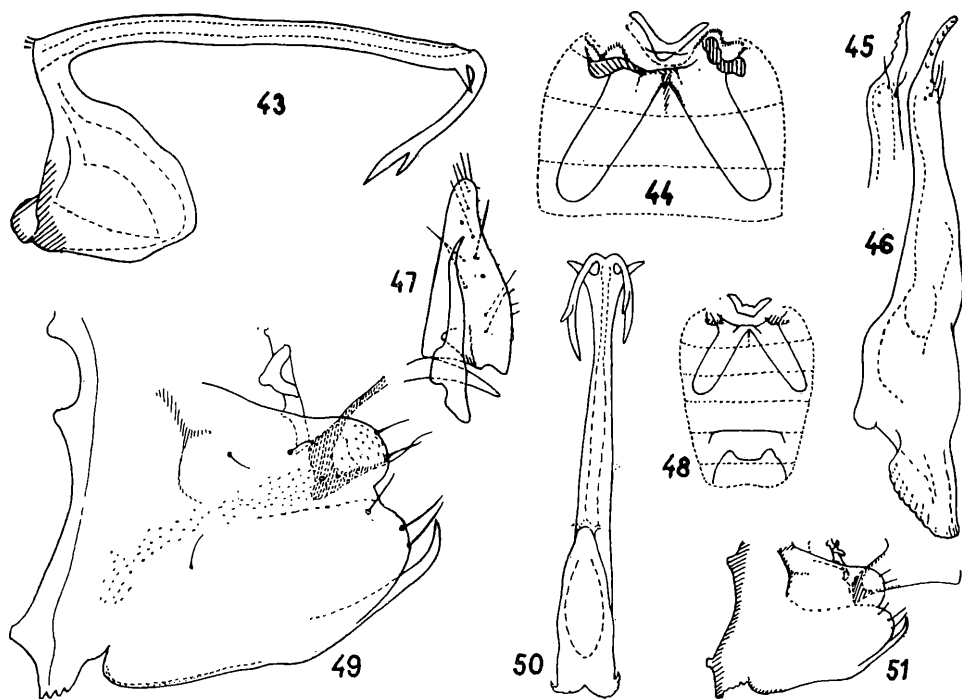
Figs. 1-15.

Savitara albida sp. n. 1: male terminalia - 2: basal abdominal apodemes - 3: head and thorax, side view - 4: paramere - 5: pygophore side and base of anal tube - 6: penis, side view - 7: penis, posterior view - 8: hind wing - 9: fore wing - 10: scheme of proportions and pigmentation of pygophore side and anal tube - 11: connective (manubrium damaged) - 12: subgenital plate - 13: head and thorax, dorsal view - 14: scheme of proportions of subgenital plate, paramere, connective and 9th abdominal sternite. - *Orientalebra malayana* sp. n.: 15.



Figs. 16-42.

Orientalabra malayana sp. n.: 16-18. — *Emposasca* (s. str.) *fletcheri* sp. n.: 19-29, 28 and 29 lower pygophore appendage of a specimen from Burma. — *E.* (s. str.) *amasa* sp. n.: 30-35. — *E.* (s. str.) *dymarka* sp. n.: 36-42.



Figs. 43–51. *Usharia cassiae* sp. n.

Male genital apparatus resembles that of *E. sama* DWOR. (DWORAKOWSKA, 1977b) but penis stem very broad in profile (Fig. 30) and teeth at its ventral edge not numerous, anal tube appendage slightly sinuate (Fig. 33) and pygophore appendage differently shaped at apex (Figs. 34, 35).

Holotype male, Malaysia, Penang I, Dec. 19, 1981, I. DWORAKOWSKA. (D)

***Empoasca* (s. str.) *dymarka* sp. n.** (Figs. 36–42)

Externally as *E. gucia* DWOR. (DWORAKOWSKA, 1977b). Length ♂ to the end of pronotum 0.5 mm.

Male genital apparatus as in *E. gucia* DWOR. except penis. In *E. dymarka* sp. n. there is no crista at ventral margin of penis stem and its apex is slightly sinuate (Figs. 41, 42) while in *E. gucia* DWOR. there is a large crista and penis apex is arcuate.

Holotype male, Malaysia, Penang I, 1976, lamp domes, R. STILLER. (BM)

***Empoasca* (*Distantasca*) *terminalis* DISTANT, 1918**

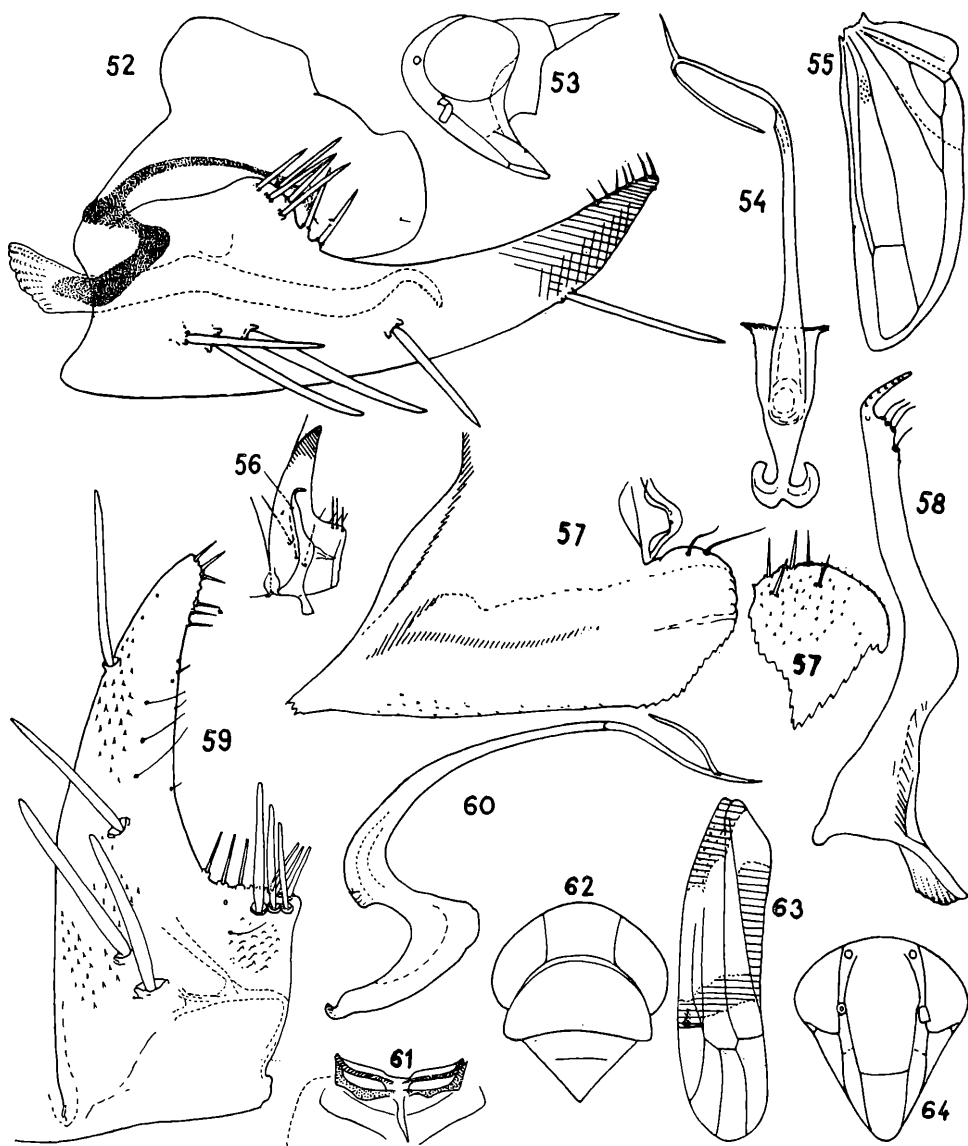
Empoasca malayana PAOLI, 1936

Malaya (PAOLI, 1936). Known from many countries of the Oriental Region.

***Acia* McATEE, 1934**

***Acia* (s. str.) *exsultans* McATEE, 1934**

Singapore (McATEE, 1934); Malaysia and many other countries of the Oriental Region (DWORAKOWSKA, 1981a).



Figs. 52–64.

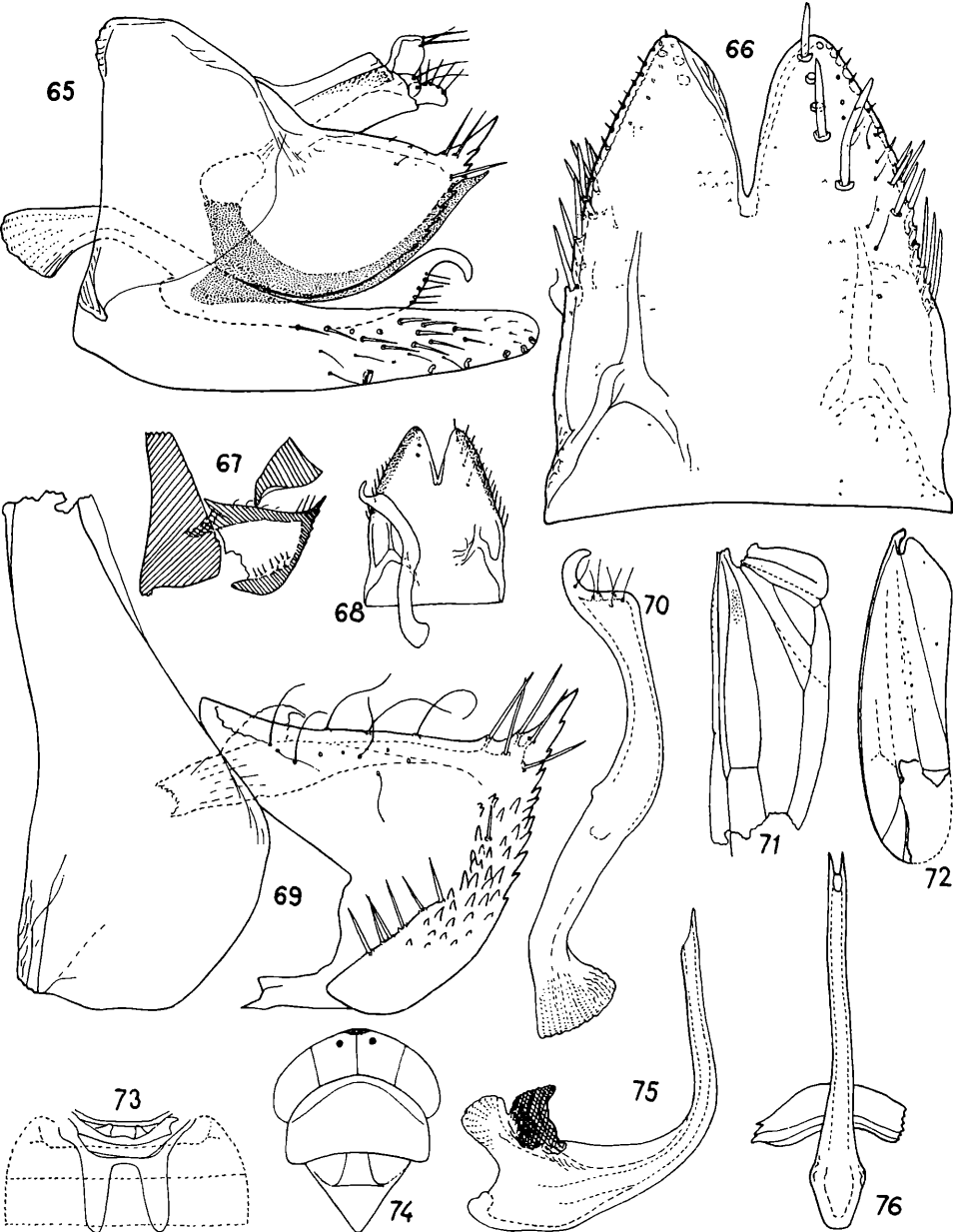
Homa katoi sp. n. 54: penis fused with connective, caudo-ventral view – 56: scheme of proportions of connective, paramere and subgenital plate being fused to the 9th abdominal sternite – 57: pygophore side (broken up into two pieces) and "upper connective" – 64: face.

Paolicia DWORAKOWSKA, 1981 (c) subgenus of **Acia** McATEE

Paoliella Dworakowska, 1981 (a) nom. praecox.

Acia (Paolicia) stilleri DWORAKOWSKA, 1981

Malaysia, Penang I (DWORAKOWSKA, 1981a).

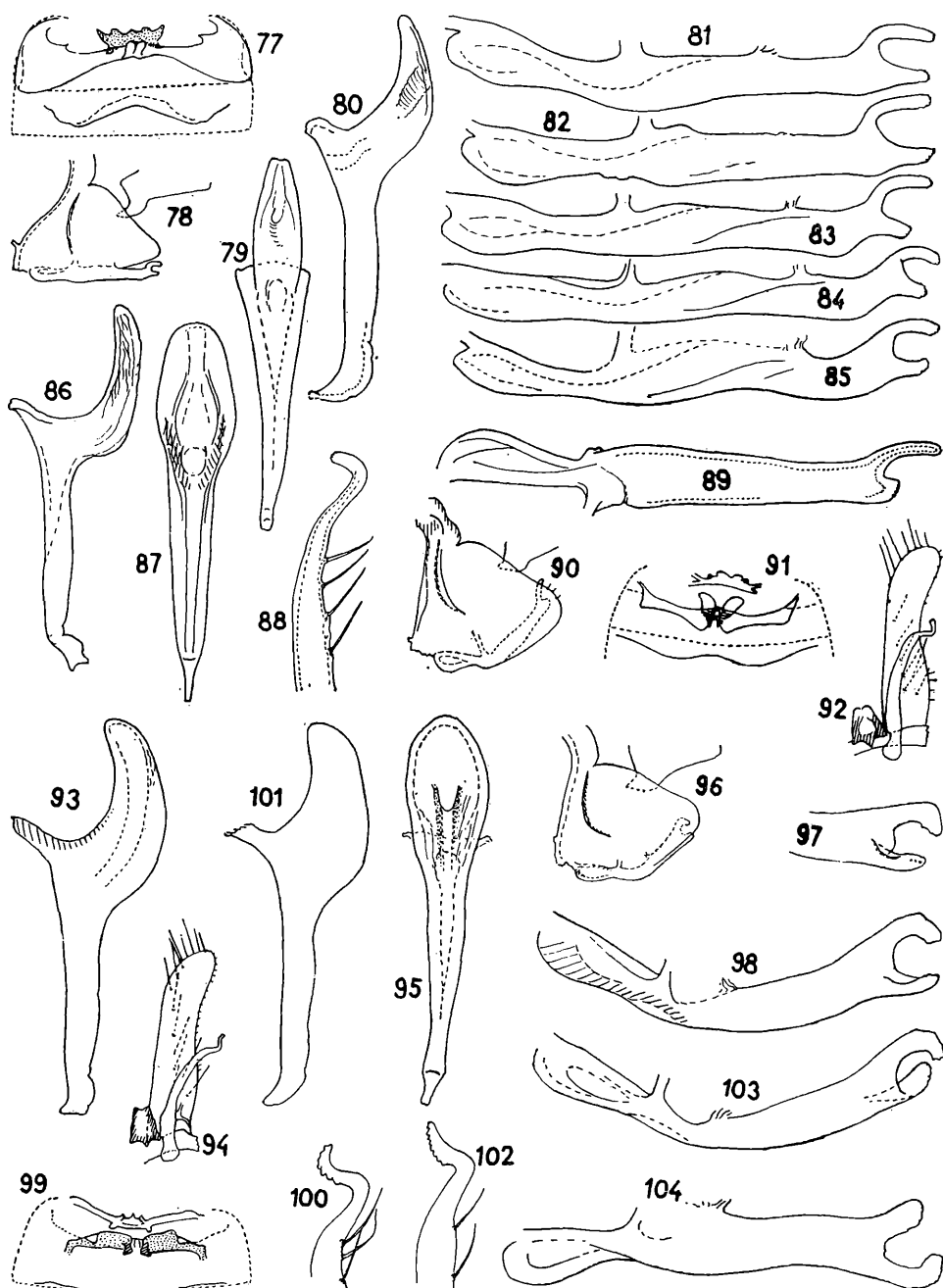


Figs. 65–76. *Kotwaria ramlyi* sp. n.

Dayus MAHMOOD, 1967

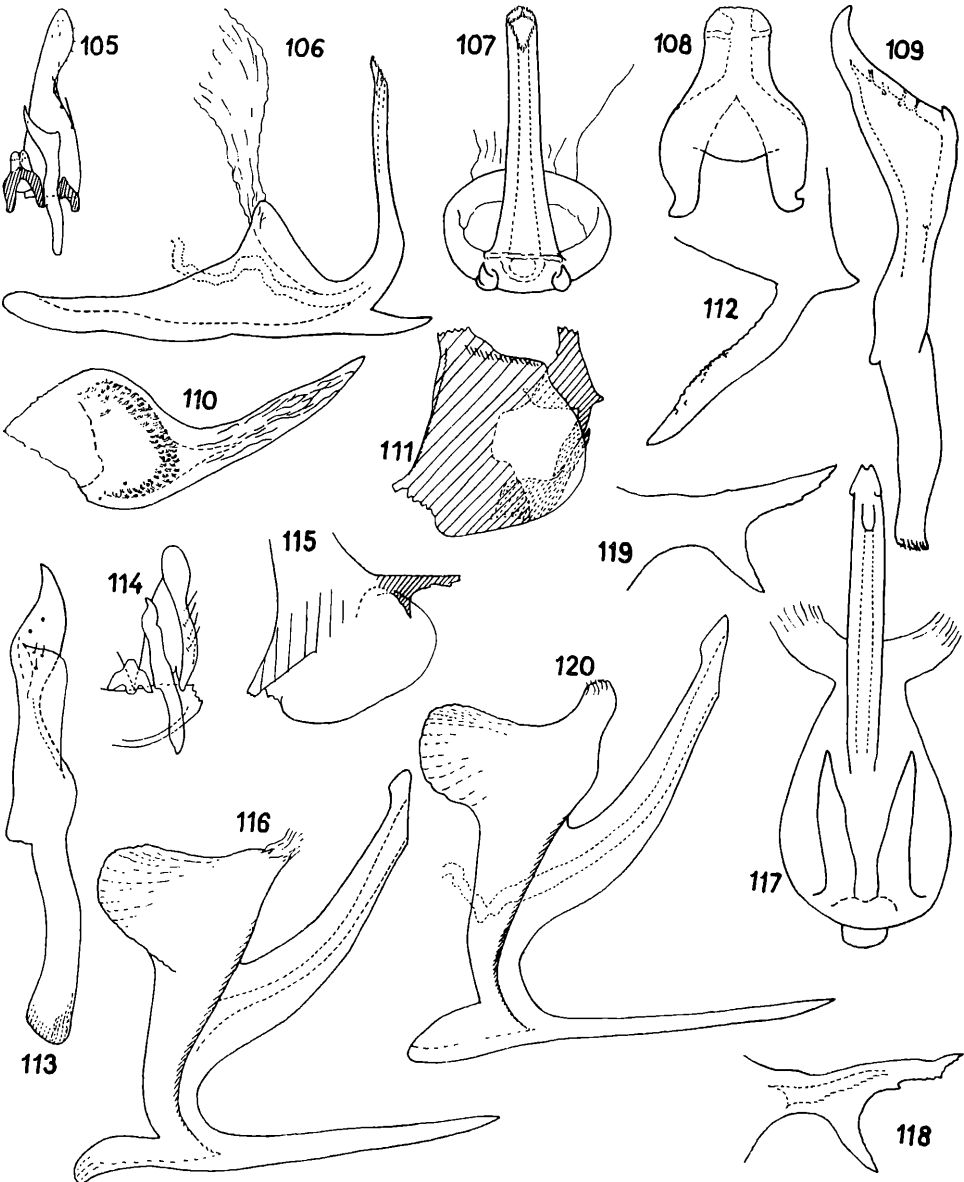
Dayus elongatus MAHMOOD, 1967

Singapore; other undescribed species of this genus was mentioned from Malaysia, Penang I (MAHMOOD, 1967).



Figs. 77-104.

Jacobiasca formosana (PAOLI): 77-85. — *J. renschi* (DWOR.): 86-92. — *J. erythrinae* sp. n.: 93-104, 101-103: specimens from Thailand.

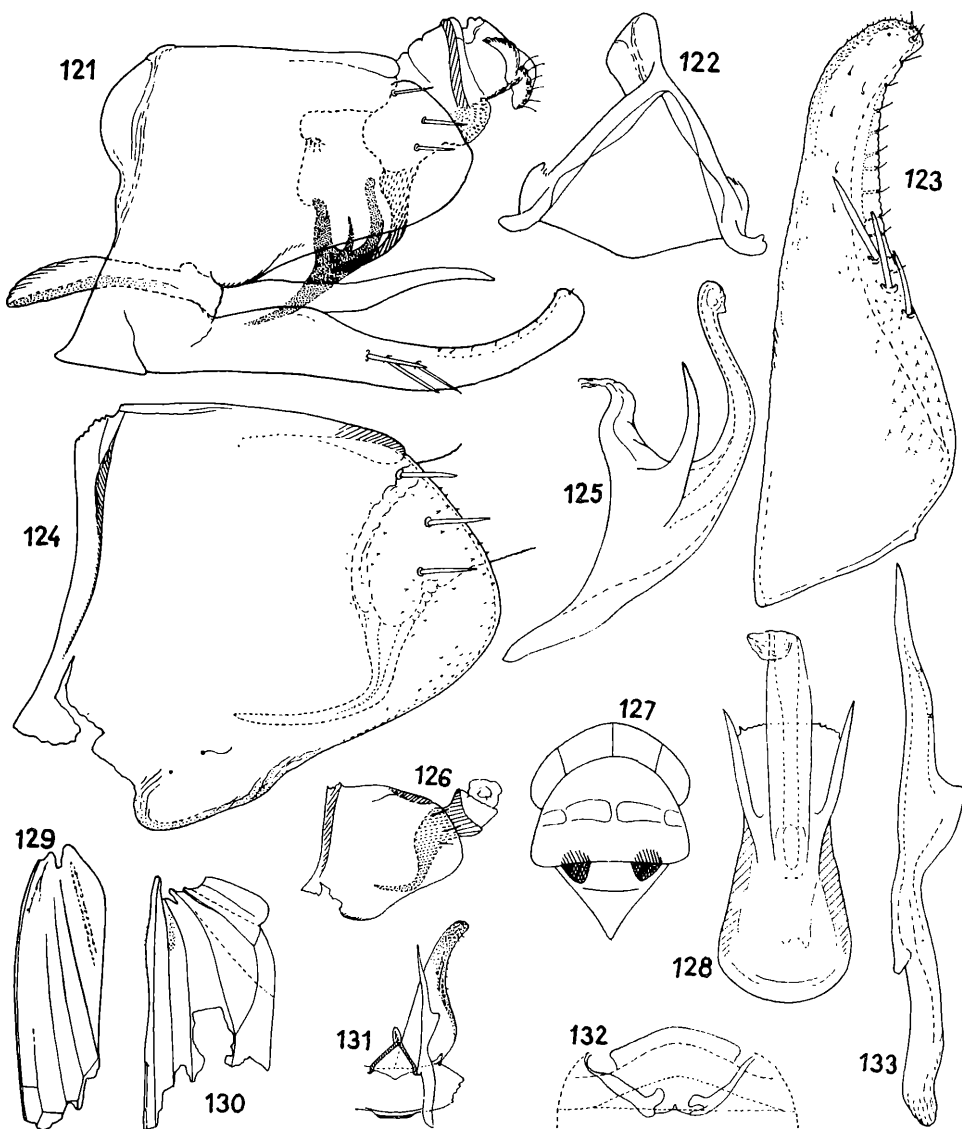


Figs. 105–120.

Thaia (Nlunga) decembris sp. n.: 105–112, 110: lower pygophore lobe. — *Cassianeura bimaculata* sp. n.: 113–120, 119 and 120: specimen from Penang I.

Baguoidea MAHMOOD, 1967

An undescribed species of this genus has been mentioned from Malaysia, Penang I (MAHMOOD, 1967).



Figs. 121–133. *Sanatana malaica* sp. n.

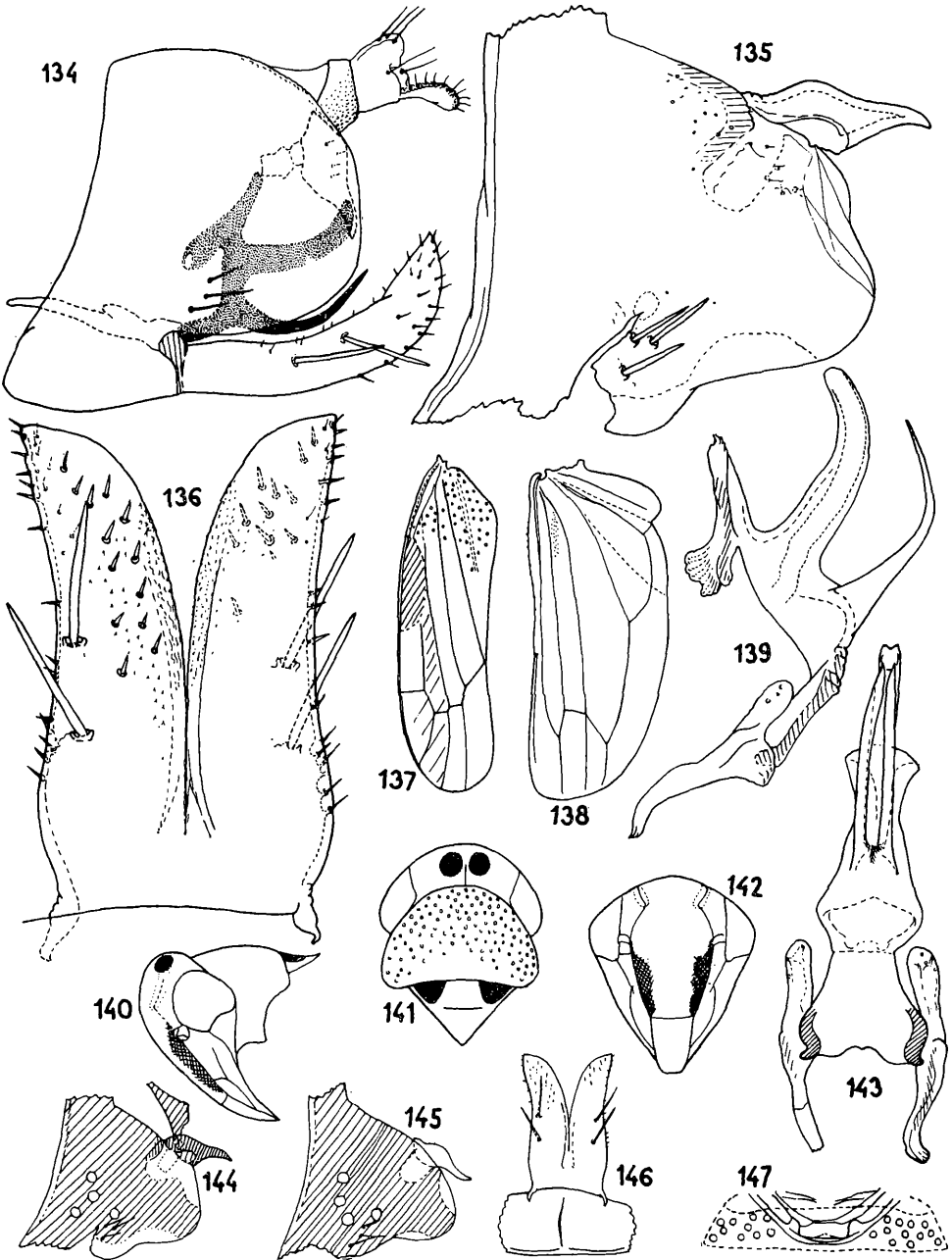
Usharia DWORAKOWSKA, 1977 (b)

***Usharia cassiae* sp. n.** (Figs. 43–51)

Centre and hind part of pronotum ochre-orange. Head and the remaining parts of upper side of thorax yellowish-beige. Fore wing golden-yellow, paler toward ochre costal margin. Length ♂ 2.1 mm.

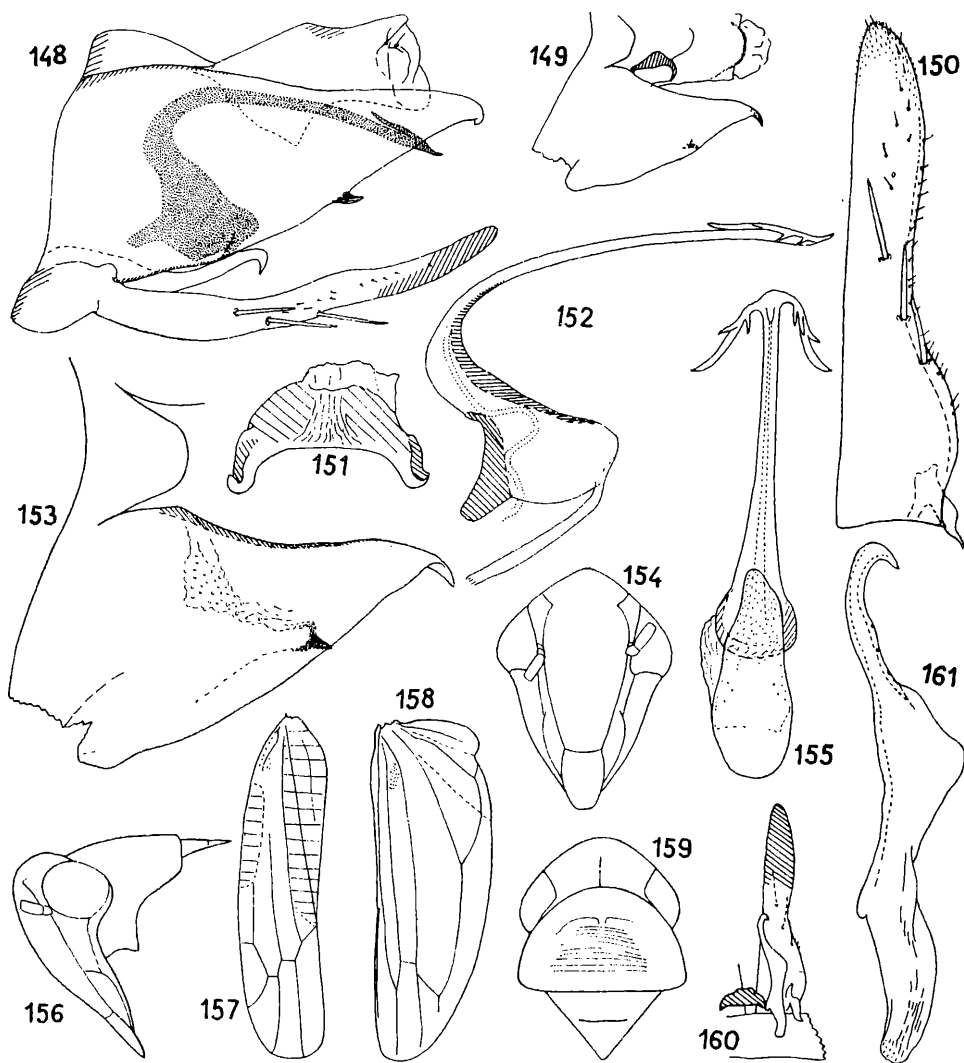
Male genital apparatus resembles that of *U. hyzha* DWOR. (DWORAKOWSKA, 1977a) but differs by presence of pygophore appendage (Fig. 49) and penis stem slim and with two pairs of apical appendages (Figs. 43, 50).

Holotype male, Singapore, *Cassia* sp., Dec. 17, 1981, I. DWORAKOWSKA. (D)



Figs. 134–147.

Otbatara parvula sp. n. 136: subgenital plates fused basally – 139: penis fused with connective, besides two parameres, side view – 143: same, postero-ventral view.



Figs. 148–161. *Nandara flavescens* sp. n.

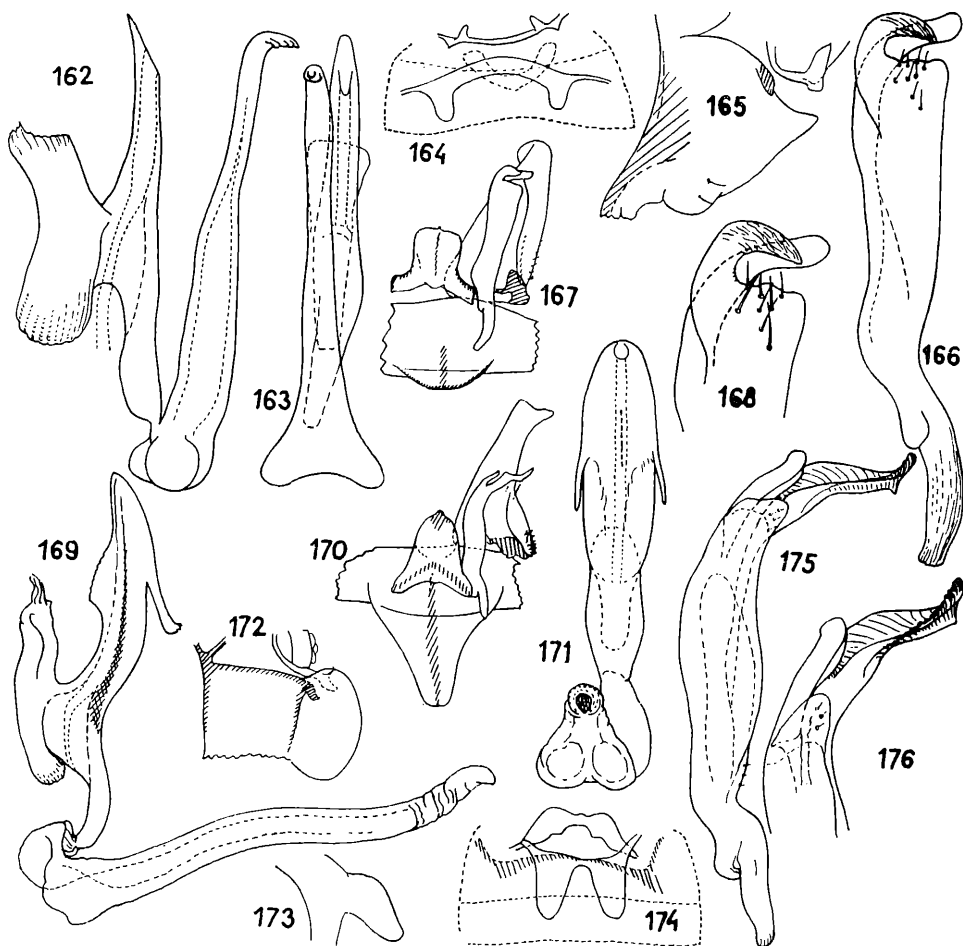
Homa DISTANT, 1908

***Homa katoi* sp. n.** (Figs. 52–64)

Externally as *Homa insignis* DIST. but red transverse band on fore wing larger and there is no blackish patch at costal margin. Length ♂ 3.3 mm, ♀ 3.4–3.6 mm.

Male genital apparatus as in *H. insignis* DIST. (MAHMOOD, 1967) apart of penis which in *H. katoi* sp. n. is very slim (Figs. 54, 60).

Holotype male and paratypes 1 ♂, 3 ♀♀, 1 larva, "Malay Peninsula Peak Taiping", Nov. 8, 1943, R. TAKAHASHI; paratype ♀, Malaysia, Kuala Lumpur, Aug. 7, 1931, Ent. Div. Agric. Dept. (BM)



Figs. 162-176.

Manderia heptneri sp. n.: 162-168. — *M. joannae* sp. n.: 169-176, 173: process of basal part of pygophore side.

Mahmoodia DWORKOWSKA, 1970

Mahmoodia mirabilis DWORKOWSKA, 1970

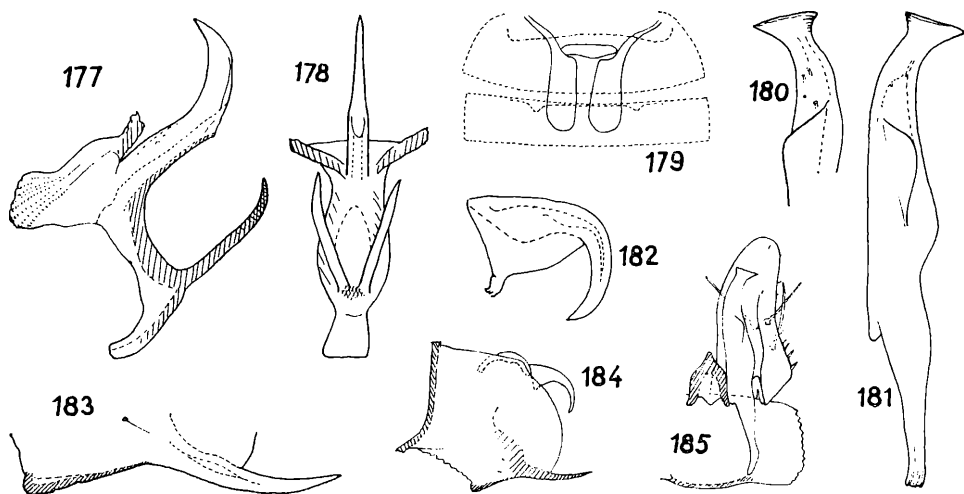
3 ♂♂, Malaysia, E coast, Kuala Trengganu, 1976, lamp domes, R. STILLER. Described from Vietnam (Dworkowska, 1970a).

Kotwaria gen. n.

Type-species *Kotwaria ramlyi* sp. n.

Body proportions and wings venation (Figs. 71, 72, 74) as in *Mahmoodia* DWOR. (DWORKOWSKA, 1970a) but coronal suture very distinct (Fig. 74).

Male genital apparatus similar to that of *Mahmoodia* DWOR. but basal part of pygophore side very well separated from terminal lobe (Fig. 67). The lobe contains two more sclerotized arches at its ventral and dorsal margin. The dorsal sclerotization is maybe homologous to the upper process of *Mahmoodia* DWOR.

Figs. 177–185. *Tautoneura ficaria* sp. n.

Pygophore lobe has numerous long gracile microsetae at its dorsal margin and a number of long rigid microsetae at lower margin and at hind upper angle (Fig. 69).

Subgenital plates shaped similarly as in *Mahmoodia* DWOR. but marginal microsetae of the "basal group" quite big and numerous, marginal microsetae form a continuous row, and macrosetae present only in subterminal part (Fig. 66).

Penis (Figs. 75, 76) tubular, completely fused with connective by ventral part of atrial rim and with a sclerotized transverse ligament by its dorsal part.

Paramere (Figs. 68, 70) as in *Mahmoodia* DWOR.

Abdominal apodemes (Fig. 73) well developed.

***Kotwaria ramlyi* sp. n. (Figs. 65–76)**

Body robust, ochre-testaceous. Whitish medial streak on frontoclypeus. Ocelli ochre-brown. A large blackish-brown patch at transition vertex to face and two roundish patches next to it on vertex (Fig. 74). Fore wing testaceous. Length ♂ 3.4 mm.

The most characteristic for the new species seems to be slightly asymmetrical penis stem (Figs. 75, 76) and sclerotized extensions of pygophore lobe (Fig. 69).

Holotype male and paratype ♂, Malaysia, Penang I, 1976, lamp domes, R. STILLER. (BM)

The new species is named in honour of Mr. RAMLY bin Mat Zin whose assistance to Mr. Robert STILLER was very helpful in getting the material used in this study.

***Jacobiasca* DWORAKOWSKA, 1972**

Austroasca (*Jacobiasca* DWORAKOWSKA, 1972a)

***Jacobiasca formosana* (PAOLI, 1936) (Figs. 77–85)**

Empoasca formosana PAOLI, 1936

8 ♂♂, 11 ♀♀, Malaysia "Malay Peninsula Peak Taiping", Nov. 8, 1943, R. TAKAHASHI.

This species has been originally described from "Peninsula Malacca Serdang" (1 ♂, 6 ♀♀ on maize) and from Taiwan (PAOLI, 1936). I have erroneously synonymized it with *Chlorita boninensis* MATS. (DWORAKOWSKA, 1972a). This is very common pest on castor.

Jacobiasca renschi (DWORKOWSKA, 1970) (Figs. 86–92)*Austroasca renschi* DWORKOWSKA, 1970 (b)

2 ♂♂, Malaysia, Penang I, 1976, lamp domes, R. STILLER. Described from Lesser Sunda Is (DWORKOWSKA, 1970b), recorded from India where it infests teak tree (DWORKOWSKA, 1980).

Jacobiasca erythrinae sp. n. (Figs. 93–104)

Externally similar to *J. renschi* (DWORK.). Vertex ochre-yellow with four indistinct whitish patches. Face whitish-yellow. Pronotum ivory at anterior margin, golden-yellow to ochre-yellow centrally and at hind margin. Scutum and scutellum ivory. Basal triangles slightly greyish and a large ochre-yellow patch at tip of scutellum. Fore wing golden-yellow at base and at hind margin of clavus, paler and paler toward costal margin. Veins in apical part of wing bordered with whitish. Tips of longitudinal cu, m and r cells as well as apical cells smoky. Length ♂ 2.7 mm.

Male genital apparatus resembles that of *J. libyca* (BERG et ZAN.) (DWORKOWSKA, 1972a) but pygophore appendage (Figs. 97, 98, 103, 104) without spoor and rather bluntly notched terminally.

H o l o t y p e male, Singapore, Erythrina coffra, Dec. 16, 1981, I. DWORKOWSKA. (D) I am thankful to Dr. C. VIDANO (Torino, Italy) for comparison of specimens of this species collected in Thailand an Terminalia catappa with *J. libyca* DE BERGEVIN.

Eurhadina (Singhardina) MAHMOOD, 1967*Singhardina* MAHMOOD, 1967**Eurhadina** (Singhardina) **robusta** (MAHMOOD, 1967)

Singapore (MAHMOOD, 1967).

Limassolla DLABOLA, 1965*Pruthius* MAHMOOD, 1967 DWORKOWSKA, 1969**Limassolla aureata** (MAHMOOD, 1967)*Pruthius aureatus* MAHMOOD, 1967

Singapore (MAHMOOD, 1967).

Thaia GHAURI, 1962**Thaia** (s. str.) **oryzivora** GHAURI, 1962*Thaia katoj* DWORKOWSKA, 1976

1 ♂, Malaysia, E coast, Kuala Trengganu, 1976, lamp domes, R. STILLER; 1 ♂, Malaysia, Setapak, rice, Dec. 21, 1938, no collector; 1 ♂, 1 ♀, Malaysia, Peak Began Serai, June 23, 1930, H. T. PAGDEN. Originally described from Thailand (GHAURI, 1962) then by me from other countries of the Oriental Region (DWORKOWSKA, 1976).

Thaia (s. str.) **typica** DWORKOWSKA, 1976

Malaysia "Malacka, Kelanton" (DWORKOWSKA, 1976).

Nlunga DWORKOWSKA, 1974 subgenus of **Thaia** GHAURI**Thaia** (**Nlunga**) **decembris** sp. n. (Figs. 105–112)

Body form as in *T. (N.) indica* (RAM. et MENON) but head with eyes slightly narrower. Head yellowish. Centre of face slightly infuscated. Anterior part of pronotum and scu-

tellum yellowish. Centre and hind part of pronotum greyish, scutum slightly brownish. Fore wing beige, smoky apically. Length ♂ 3.3 mm.

Male genital apparatus resembles that of *T. (N.) obtusa* DWOR. et VIR. (DWORAKOWSKA & VIRAKTAMATH, 1979) but lower pygophore appendage almost straight (Fig. 110) and penis processes very short (Figs. 106, 107).

Holotype male, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA. (BM)

Cassianeura RAMAKRISHNAN et MENON, 1973

Cassianeura bimaculata sp. n. (Figs. 113–120)

Upper side of head and thorax olivaceous-yellow, face pale. Two black patches on vertex. Basal $\frac{2}{3}$ of fore wing olivaceous-yellow, then colourless. Apical cells slightly smoked, veins yellowish. Length ♀ 3.5–3.7 mm.

Male genital apparatus differs from these of *C. cassiae* (AHMED) (RAMAKRISHNAN & MENON, 1973 *C. sexmaculata*) and *C. aurea* DWOR. DWORAKOWSKA, 1980a) by bifurcated pygophore appendage (Figs. 115, 118, 119), lack of processes on penis stem and by presence of praetrial processes (Figs. 116, 117, 120).

Holotype male and paratypes 12 ♂♂, 25 ♀♀, Singapore, Cassia sp., Dec. 17; paratypes 2 ♂♂, 5 ♀♀, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA. (D, BM)

Sanatana gen. n.

Type-species *Sanatana malaica* sp. n.

Body proportions (Fig. 127) and wings venation (Figs. 129, 130) similar to these of *Thaia* GHURI (GHURI, 1962) but impressed pattern on pronotum different and coronal suture very long.

Genital capsule short, tubular (Fig. 121). Anal tube short, attached to pygophore lobe far caudad, bringing very solid basal appendages (Fig. 126).

Pygophore side unilobate but notched dorsally, covered with sculpture of minute teeth in hind and upper portion. Setosity consists of several very small gracile microsetae at basal lower angle and a few big macrosetae alongside caudo-dorsal margin (Fig. 124).

Subgenital plate tapering caudad (Fig. 131). Setosity resembles that of *Thaia* GHURI but there is no distinct "basal group" of microsetae on the margin (Fig. 123).

Complex connective – penis – paramere (Figs. 121, 131) as in *Cubnara* DWOR. (DWORAKOWSKA, 1979a).

Abdominal apodemes rudimentary (Fig. 132).

The new genus is the closest related to *Thaia* GHURI and *Nlunga* DWOR. differing from both by its unique pygophore side structure.

Sanatana malaica sp. n. (Figs. 121–133)

Body yellowish-beige. Eyes and basal triangles blackish (Fig. 127). Length ♂ 3.3 mm.

Anal tube process large, arcuate (Fig. 126). Penis stem slightly sinuate. There are sclerotized lateral atrial processes at base of the penis stem (Figs. 125, 128). Apical process of paramere as long as its basal part (Figs. 131, 133).

Holotype male, Malaysia, Penang I, 1976, lamp domes, R. STILLER. (BM)

Penangiana MAHMOOD, 1967

Penangiana pallida MAHMOOD, 1967

Malaysia, Penang I (MAHMOOD, 1967).

Otbatara gen. n.

Type-species *Otbatara parvula* sp. n.

Externally resembles *Pettya* KIRK. but pronotum much shorter (Fig. 141). Face similar to that of *Musbrnoia* DWOR. (DWORAKOWSKA, 1972c) but lorae longer.

Wings shape and venation as in *Musbrnoia* DWOR. but fore wing broader (Fig. 137) and transverse cu_1 — cu_2 vein shifted apicad (Fig. 138).

Genital capsule short, spherous. Pygophore lobe folded mesad terminally (Fig. 134).

Pygophore side well integrated, pigmented and with a few large roundish colourless patches basally (Figs. 144, 145). Setosity consists of several big macrosetae at basal lower angle of the lobe and some very small gracile microsetae near connection with anal tube. Upper pygophore process free (Fig. 135).

Subgenital plates fused with each other basally (Fig. 136). Marginal microsetae short and rigid, "basal group" not distinguishable, big stout macrosetae present.

Paramere rudimentary, strongly attached to connective which is fused with base of penis. There are distinct sensory pits on apical part of not pigmented paramere (Figs. 139, 143).

Connective lamellate with no central lobe, fused with penis (Fig. 143).

Penis stem tubular, gonopore terminal, praeatrium short and broad (Fig. 139).

Abdominal apodemes very short. Abdominal tergites bearing light dots (Fig. 147).

***Otbatara parvula* sp. n. (Figs. 134–147)**

Head creamy-whitish with orangeous tint, centre of vertex more orange. Lateral frontal sutures bordered with ivory. Upper side of thorax sordid whitish. Pronotum infuscated in centre and behind, patterned with white dots (Fig. 141). The dots present also on head, scutum and scutellum but they are less distinct. Two dark patches on sides of frontoclypeus (Fig. 142), two others on vertex as well as basal triangles, dark brown. Fore wing dark testaceous with brown infuscation on clavus and at costal margin and with impressed whitish dots at base (Fig. 137). Length ♂ 3.75 mm.

Specifically characteristic in genital apparatus seem to be shape of penis and its processes (Figs. 139, 143) as well as upper appendage of pygophore (Fig. 135).

H o l o t y p e male, Malaysia, E coast, Kuala Trengganu, 1976, lamp domes, R. STILLER. (BM)

***Nandara* gen. n.**

T y p e - s p e c i e s *Nandara flavescens* sp. n.

Head and thorax proportions (Fig. 159) as in *Lectotypella* DWOR. but coronal suture short. Frontoclypeus convex in its upper part (Fig. 156). Face quite long (Fig. 154), lorae large, anteclypeus broadened in its midlength, lateral frontal sutures moderately incised, antecular areas very small.

Wings shape and venation resemble these of *Davmata* DWOR. (DWORAKOWSKA, 1979b) but in *Nandara* gen. n. apex of fore wing narrower and claval vein distinct (Fig. 157). Membrane of hind wing in the new genus narrower than in *Davmata* DWOR., cross veins shifted apicad and margins provided with very few fine teeth (Fig. 158).

Male genital apparatus differs the new genus from all the others by presence of a large, sclerotized central lobe above in between two pygophore sides (Figs. 149, 153). Anal tube large, semimembraneous, without processes, connected with edge of inner wall of pygophore side (Fig. 148).

Pygophore side elongated. There is an inner wall in its apical half and at lower margin. The inner wall provided with a sclerotized process on its edge centrally and with minute rigid microsetae nearby (Fig. 153).

Subgenital plate (Figs. 150, 160) resembles that of *Koperta* DWOR.

Paramere proportions and sensory structures (Figs. 160, 161) as in *Goska* DWOR. (DWORAKOWSKA, 1981d).

Connective (Figs. 151, 160) lamellate, short and broad.

Penis attached to connective through long and narrow ligament arising from ventral margin of atrial rim. Dorsal apodeme very short, sclerotized, closely attached to atrium. Penis stem tubular, gonopore ventral (Figs. 152, 155).

Last abdominal sternite of female produced caudad in a form of a rectangular plate.

Nandara flavescens sp. n. (Figs. 148–161)

Head and thorax yellowish. Fore wing semitransparent, yellow to golden-yellow on clavus and adjacent part of corium; colourless in terminal part of sc cell. Wax-field golden-yellow. Apical cells smoky. Length ♂ 3.3–3.4, ♀ 3.2–3.3 mm.

In male genital apparatus specifically characteristic are penis processes (Figs. 152, 155) and shape of the process on inner membranous wall of pygophore side (Figs. 148, 153).

Holotype male and paratypes 2 ♂♂, 3 ♀♀, Malaysia, Penang I, Dec. 19, 1981, I. DWORAKOWSKA. (D, BM)

Mandera AHMED, 1971

Hepneriana DWORAKOWSKA, 1972: DWORAKOWSKA & VIRAKTAMATH, 1975

Mandera hepneri sp. n. (Figs. 162–168)

Vertex and anterior half of pronotum beige-yellowish. Face, scutum and scutellum pale beige. Hind part of pronotum sordid whitish. Fore wing citrine-yellow on clavus and adjacent part of corium and colourless toward costal margin. Wax-field whitish. Apical cells slightly smoky. Length ♂ 2.9 and 3.0 mm, ♀ 3.3 mm.

Male genital apparatus resembles that of *M. wroblewskae* (DWOR.) (DWORAKOWSKA, 1972b) the holotype of which is seriously damaged. However, several characters allow to distinguish the new species. In *M. hepneri* sp. n. pygophore side is elongated caudad having a few short gracile microsetae at its basal lower angle (Fig. 165) while in *M. wroblewskae* (DWOR.) it is rounded and bearing a bunch of very long hair-like setae. Apical hook of paramere is simply arcuated here and praecapical lobe covered with quite long microsetae (Figs. 166, 168). Contrary, in *M. wroblewskae* (DWOR.) the apical hook has an additional extension and the microsetae on praecapical lobe very short.

Holotype male and paratypes 1 ♂, 4 ♀♀, Singapore, *Erythrina coffra*, Dec. 16, 1981, I. DWORAKOWSKA. (BM, D)

Mandera joannae sp. n. (Figs. 169–176)

Yellowish-testaceous. Clavus dark yellow infuscated at hind margin. Apical cells of fore wing greyish. Length ♀ 3.3 mm.

Male genital apparatus similar to that of *M. alfa* DWOR. (DWORAKOWSKA, 1981b) but apical extension of paramere narrower terminally in the new species (Figs. 175, 176) and penis different. The most characteristic in penis structure, what allows to distinguish *M. joannae* sp. n. from all other species of the genus, is presence of a large crista on dorsal side of the stem (Fig. 169) and straight and very narrow paired appendages arising on quite a distance from top (Fig. 171).

Holotype male and paratype ♀, Malaysia, Cameroon Highlands, Sep. 22, 1933, *Erythrina lithosperma*, no collector. (BM)

Singapora MAHMOOD, 1967

Singapora nigropunctata MAHMOOD, 1967

Singapore, on *Pterocarpus indicus* (MAHMOOD, 1967).

Gambialoa DWORAKOWSKA, 1972 (d)

Gambialoa malayana DWORAKOWSKA, 1979

Malaysia, Penang I (DWORAKOWSKA, 1979b).

Seriana DWORAKOWSKA, 1971 (a)

Seriana asymmetra DWORAKOWSKA, 1978

1 ♂, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA. Described from Malaysia, Penang I (DWORAKOWSKA, 1978).

Seriana malaica DWORAKOWSKA, 1978

1 ♂, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA. Described from Malaysia, Penang I (DWORAKOWSKA, 1978).

Empoascanara DISTANT, 1918

Empoascanara (s. str.) digitata DWORAKOWSKA, 1979

Malaysia, E coast, Kuala Trengganu (DWORAKOWSKA, 1979d).

Empoascanara (s. str.) benigna DWORAKOWSKA, 1979

1 ♂, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA. Described from Malaysia, W coast, Penang I and E coast, Kuala Trengganu (DWORAKOWSKA, 1979d).

Empoascanara (s. str.) stilleri DWORAKOWSKA, 1978

2 ♂♂, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA; 2 ♂♂, 1 ♀, Malaysia, Perak, Taipeng, Nov. 8, 1943, R. TAKAHASHI. Described from Malaysia, W coast, Penang I and E coast, Kuala Trengganu (DWORAKOWSKA, 1978).

Empoascanara (s. str.) obtusa DWORAKOWSKA, 1979

Malaysia, Penang I (DWORAKOWSKA, 1979d).

Empoascanara (s. str.) wasata DWORAKOWSKA, 1978

4 ♂♂, 2 ♀♀, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA. Described from Malaysia, Penang I (DWORAKOWSKA, 1978).

Empoascanara (s. str.) thomasi DWORAKOWSKA, 1979

Malaysia, Penang I (DWORAKOWSKA, 1979d).

Empoascanara (s. str.) hongkongica DWORAKOWSKA, 1971

8 ♂♂, 6 ♀♀, Singapore, Jan. 29, 1982, M. R. WILSON; Malaysia, E coast, Kuala Trengganu (DWORAKOWSKA, 1979d). Described from Vietnam and Hong Kong (DWORAKOWSKA, 1971a).

Empoascanara (s. str.) quarta DWORAKOWSKA, 1979

5 ♂♂, 9 ♀♀, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA; 1 ♂, 2 ♀♀, Malaysia, Serdang, June 4, 1936, rice, H. T. PAGDEN; 2 ♂♂, 1 ♀, Kuala Lumpur, Oct. 30, 1936, grasses, no collector. Described from Malaysia, Central Malaya (Kuantan, Pahang) and Penang I (DWORAKOWSKA, 1979d).

Bza DWORAKOWSKA, 1979 subgenus of **Empoascanara** DISTANT

Empoascanara (Bza) zini DWORAKOWSKA, 1979

12 ♂♂, 10 ♀♀, Malaysia, Penang I, Dec. 18, 1981, I. DWORAKOWSKA. Described from Malaysia, Penang I (DWORAKOWSKA, 1979b).

Diomma MOTSCHULSKY, 1863

Diomma taiwana (SHIRAKI, 1912)

2 ♀♀, Malaysia, Penang I, 1976, lamp domes, R. STILLER.

Tautoneura ANUFRIEV, 1969**Tautoneura ficaria** sp. n. (Figs. 177–185)

Body shape as in *T. tripunctula* (MEL.), whitish. Fore wing colourless with a carmine-red patch at margin just behind clavus and another one at the very base of apical m vein. Sometimes additional red patches on corium present. Length ♂♀ 2.0–2.1 mm.

Male genital apparatus resembles that of *T. erythropunctata* (RAM. et MENON) (DWORKAKOWSKA, 1981d) but upper pygophore appendage much more curved in the new species (Figs. 182, 184), apical broadening of paramere bigger (Figs. 180, 181) and penis different (Figs. 177, 178).

Holotype male and paratypes 28 ♂♂, 28 ♀♀, Singapore, Ficus alba, Dec. 17, 1981, I. DWORKAKOWSKA (D, BM); 25 ♂♂, 28 ♀♀ (beyond the type-series), Singapore, Jan. 28, 1982, M. R. WILSON.

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